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ИХТИСОСЛАШГАН МАКТАБ АДАБИЁТ ДАРСЛАРИДА ЎЗУВЧИЛАРНИНГ ТАРЖИМАИ ҲОЛИНИ ЎРГАНИШДА ИЛМИЙ- МЕТОДИК ЁНДАШУВЛАР

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Чирчиқ давлат педагогика университети, Бошланғич таълим назарияси
кафедраси ўқитувчиси

АННОТАЦИЯ

Мазкур мақола адабиёт дарсларида ўзувчиларнинг таржимаи ҳолини ўрганиш жараёнида олиб бориладиган илмий-методик ёндашувлар баён этилган.

Калит сўзлар: адабиёт, мактаб, метод, таржимаи ҳол, дарсликлар.

КИРИШ

Сўнгги ўн йилликларда жамиятимизда рўй бераётган глобал ўзгаришлар таълим соҳасида ҳам бир қатор ўзгаришларни келтириб чиқармоқда. Республикамиз таълим тизимини модернизация қилиш концепциясига кўра, янгиланаётган жамиятга замонавий билимлар билан қуролланган, ташаббускор, соғлом рақобат шароитида мустақил равишда қарор қабул қилиш ва улар учун масъулиятни ўз зиммасига олиш қобилиятига эга, ҳамкорликка қодир, ўз мамлакати тараққиёти учун масъулият ҳиссини туядиган, динамизм, конструктивлик ва бошқа сифатлар билан ажралиб турадиган шахслар керак. Бироқ, бу фазилатларга эга бўлган шахсни шакллантиришда унинг маънавий ривожланиши ҳақида эътибордан четда қолдирмаслик лозим.

Ҳар қайси даврда ҳам “Қалбларни ислоҳ қилиш ва ақлларни поклаш” (В. Острогорский) вазифаси доимо адабиётга тегишли бўлган. Адабий таълим адабиёт ҳодисаларини, уларда акс этган ҳаёт ҳодисаларини идрок этиш ва баҳолашга қодир малакали китобхонни шакллантириш билан бирга тарбиявий вазифани ҳам бажаради. Концепцияда таъкидланганидек, янгиланаётган мактабда таълим мактабдан ташқари педагогик ҳаракатнинг алоҳида элементи эмас, балки таълим ва ривожланишнинг умумий жараёнига интеграциялашган педагогик фаолиятнинг зарур органик таркибий қисмига айланиши керак. Адабиёт курсида бундай органик компонент ўзувчиларнинг таржимаи ҳоли бўлиб, уларнинг таълим функцияси анъанавий равишда кўпчилик методистлар томонидан қайд этилган.



АДАБИЁТЛАР ТАҲЛИЛИ ВА МЕТОДОЛОГИЯ

Мактаб адабиёт таълимида таржимаи ҳол қайси ўринни эгаллаши кераклиги ҳақидаги савол азалдан адабиёт ўқитувчилари ва методистлар ўртасида катта эътибор ва баҳс-мунозараларга сабаб бўлиб келган. Ҳатто усули жаҳид мактабларида ҳам ёзувчиларнинг таржимаи ҳолини шахс ва фуқарони тарбиялаш воситаси сифатида ўрганиш анъанаси шаклланиган. Таржимаи ҳол ва уларни ўрганиш бўйича тавсиялар акс этган ўқув-услубий адабиётларда ижодкорнинг исми-шарифи, ижодий фаолияти каби шахслик хусусиятларининг ўзига хос томонларини ёритиш биринчи ўринга қўйилган. Ёзувчилар таржимаи ҳолини ўрганишга бундай ёндашув 19-асрнинг 60-80-йиллари методистлари В.И.Водозов, В.П.Острогорский, В.Я.Стоюнинлар томонидан ишлаб чиқилган ва амалга оширилган.

Дидактик йўналишга қўшимча равишда, таржимаи ҳол ёзувчи ижодининг ўзига хос калити бўлиб хизмат қилади, унинг ёрдами билан ўрганилаётган асарни тўлиқроқ таҳлил қилиш имконияти пайдо бўлади. Шунинг учун ёзувчининг таржимаи ҳолини ўрганишнинг яна бир мақсади ёзувчи ҳаёти ва унинг асарлари ўртасидаги муносабатни ўрнатишдир. Бундай ёндашув таҳлил қилинаётган асар матнини чуқурроқ идрок этишга ёрдам беради ва унинг моҳиятини англашнинг энг муҳим элементи эканлиги методист олимлар Г.И.Беленкий, Г.К.Бочаров, В.В.Голубков, И.Э.Каплан, Т.Ф.Курдюмова, С.А.Леонов, Н.Д.Молдавская, В.А.Николскийлар томонидан эътироф этилган.

Таржимаи ҳоллардан мисоллар ёрдамида тарбиявий таълим бериш тамойили бугунги кунда ҳам долзарблигича қолмоқда. Ёзувчилар таржимаи ҳолини ўрганиш таълим-тарбия муаммоларининг бутун мажмуасини ҳал қилади, деган ғояни методистлар В.Н.Дробот, Л.А.Шейман, Н.В.Тирманис, В.Г.Маранцман, Т.В.Чирковская ва бошқалар ишлаб чиқди ва амалга оширди.

Таълимни модернизация қилиш, дифференциаллаш шароитида ёзувчининг шахсиятини ўрганишга бўлган муносабатнинг ўзгариши замонавий методистлар учун бир қатор муаммоларни келтириб чиқармоқда.

Мамлакатимиз методистлари Қ.Хусанбоева, Қ.Йўлдошев, Р.Ниёзметоваларнинг фикр-мулоҳазаларидан келиб чиқиб, адиблар таржимаи ҳолини ўрганишда адабий таълимнинг мақсади ўқувчиларни жаҳон мумтоз адабиёти бойликлари билан таништириш ва шу асосда одоб-ахлоқ ва эстетик дидни тарбиялашдан иборат деган хулосага келамиз.

Асарни ўрганиш жараёнида ўқувчилар эътиборини муаллифларнинг шахсиятига қаратиш, уларнинг шахслик



сифатларини ривожлантиришга, интеллектуал, ҳиссий ва ахлоқий оламини бойишига ёрдам беради.

Афсуски, кўпчилик методист ва ўқитувчилар 7-12 ёшли мактаб ўқувчилари ёш хусусиятларига кўра муаллиф биографиясига қизиқа олмаслиги, кичик ёшдаги китобхон эса ёзувчининг таржимаи ҳоли билан боғлиқ ҳолда адабий асарни тушуна олмайдилар деган ғояни илгари суришади. Шу боис, адабиёт фанидан дарс соатларининг қисқариши туфайли вақт етишмаётган кўплаб ўқитувчилар амалда 8-синфгача ёзувчиларнинг таржимаи ҳолига жиддий эътибор беришни зарур деб ҳисобламайдилар. Бунинг натижаси янги тузилган дастур ва дарсликларда ўз аксини топмоқда. Натижада, таржимаи ҳоллар таҳлил қилинаётган асарларнинг ўзига хос қўшимчасига айланди, ўрта мактаб ўқувчилари орасида бадиий асарни ўзлаштириш самарадорлигини ошириш қобилияти иккинчи ўринда қолди ва уларнинг ёзувчи шахсига қизиқиш сезиларли даражада камайди.

Замонавий ихтисослаштирилган мактаблар махсус адабиёт дарслигида адабий танқидга доир маълумотлар кенг ўрин ола бошлади.

VII-XI синфларда ёзувчининг таржимаи ҳолини ўқитишнинг янгича ёндашувларини ишлаб чиқиш ёзувчининг ижоди билан боғлиқ ҳолда унинг шахсиятига бўлган қизиқишни тиклашга ёрдам беради.

Мазкур мақоланинг долзарблиги мактабда ёзувчининг таржимаи ҳолини ўрганишга янги ёндашувларни ишлаб чиқиш орқали адабий таълим самарадорлигини ошириш зарурати билан белгиланади.

Шунингдек, мавзу бўйича аниқ билимга қарамай, ёзувчининг таржимаи ҳоли мактаб дарсликларида қандай кўрсатилиши кераклиги, унинг ҳаёти қанчалик кенг ёритилиши кераклиги, ёзувчининг шахсияти ҳақида қандай маълумотлар ва фактлар танланиши кераклиги ҳақидаги саволлар ҳали ҳам ҳал қилинмаганлигини ҳисобга олиниши ҳам ечимини кутаётган муаммолардан биридир.

Ўзгарувчан дастурлар, дарсликлар ва ўқув қўлланмалар таҳлили шуни кўрсатдики, замонавий усулларда ёзувчининг таржимаи ҳолини тақдим этишнинг ўрнатилган типологияси йўқлиги, биографик жанрлар ўртасида аниқ чегаралар белгиланмаганлиги, жанрларнинг умумий қабул қилинган таснифи ва уларнинг ягона мезонлари мавжуд эмаслиги ҳам фикримиз исботидир.

Ушбу масалаларни кўриб чиқиш тадқиқотимиз йўналишини белгилаб берди.

VII-XI синфлар адабиёт курсида ёзувчининг таржимаи ҳоли жанрлари типологиясини ишлаб чиқиш ва



экспериментал текширишдан иборат бўлиб, бу ўқувчиларга ёзувчи шахсини тушунишга, ўрганилаётган асарлар ва асарлар ўртасида алоқа ўрнатишга ёрдам беради. Шу билан бир қаторда асосий мактаб курсини ва мустақил ўқиш фаолиятини ўзлаштириш жараёнида ўқувчиларнинг зарур бўлган кўп қиррали ўқиш кўникмаларини ривожлантиришга ёрдам беради.

Маълумки, ёзувчининг таржимаи ҳоли жанрларининг ишлаб чиқилган таснифига асосланган дарслар тизими бадиий асарни ўзлаштириш самарадорлигини оширади, ўқувчиларнинг бадиий адабиёт ҳақидаги тушунчаларини чуқурлаштиради, китобхонлик кўникмаларини шакллантиради.

Мақолада қуйидаги вазифаларни ҳал этиш кўзда тутилди:

1. Ўқувчиларнинг ёш хусусиятлари ва қизиқишлари асосида дастурда ёзувчи биографияси жанрлари таснифини тузиш;
2. VII-XI синфларда ҳар бир ўқув йили учун ёзувчиларнинг таржимаи ҳоли ҳақидаги билимлар ҳажмини аниқлаш ва ҳар бир ёзувчининг ўзига хос шахсиятини тушунтириш усулларини ишлаб чиқиш;
3. VII-XI синфларда ёзувчилар ҳақидаги биографик маълумотларни ўрганиш ва ўзлаштиришда узвийликни йўлга қўйиш;
4. Адиблар ҳақидаги биографик маълумотларни муайян бадиий асарлар билан методик боғланган ҳолда ўрганишни ишлаб чиқиш;
5. VII-XI синф ўқувчиларининг ёзувчининг таржимаи ҳолини “Ўз ижодининг доимий ҳамроҳи” (Ю.М.Лотман), “ичкиннинг ташқи ифодаси” (Г.О.Винокур) сифатида онгли ва асослантирилган идрок этишини ривожлантириш. .

Ёзувчининг таржимаи ҳоли устида ишлаш орқали қуйидаги натижаларга эришилади:

1. Ёзувчининг таржимаи ҳоли устида олиб борилаётган ишлар ўқувчиларнинг таржимаи ҳоли нафақат инсон туғилишидан то ўлимигача бўлган ҳаётининг биологик жараёни, балки ёзувчининг маънавий-ахлоқий камолот йўли сифатида тушунишларига қаратилган бўлиб, мактаб ўқувчиларига ҳар бир муаллифнинг индивидуал хусусиятларини, унинг ҳаётини тўлиқроқ ва чуқурроқ тасаввур қилиш имконини беради.

Масалан, 7-синф махсус адабиёт ўқув дастурида замонавий ўзбек насрининг йирик вакили Шухратнинг “Олтин зангламас” романини ўрганиш кўзда тутилган. Асарни ўзлаштиришдан олдин ўқувчилар ёзувчининг таржимаи ҳоли билан танишадилар. Ёзувчининг биографияга доир қуйидаги маълумотларнинг келтирилиши бевосита асар таҳлилида муҳим аҳамиятга эга: “Шухрат – Фулом Алимовнинг таржимайи ҳолини ўрганиб, адибнинг шоир, носир,



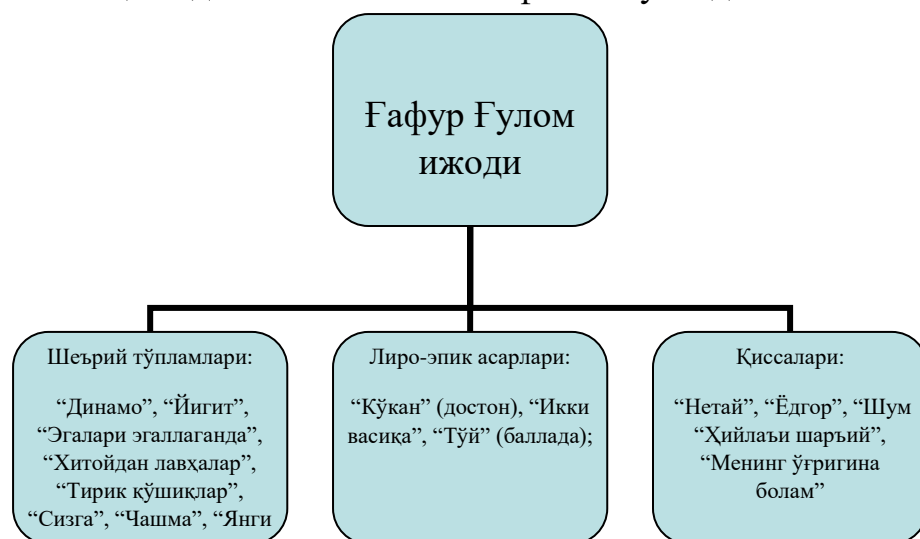
драматург ва таржимон сифатидаги ижодий фаолиятига доир маълумотларни ўзлаштирасиз. Айни чоғда ижоди энди куртак ёзиб, қувватга кираётганда иккинчи жаҳон уруши бошланиб, армия сафларида хизмат ўтаётган Шухрат тўғридан- тўғри жанг майдонларига кириб кетгани, у урушнинг дастлабки кунларидан бошлаб то Полшада кечган қонли жангларда иштирок этиб, уруш ҳақиқатларини окопларда ётиб, жароҳатларини танасида ҳис қилиб, ғалаба кунларига етишган...”

“Шухратнинг эътирофича, —Олтин зангламас романи – ҳаётининг энг асосий китоби. Тўғри, адиб мазкур асаридан кейин бир қанча китоблар эълон қилди. Икки қайта сайланмаларини чоп эттирди. Аммо —Олтин зангламас романининг илк саҳифаларидан то сўнгги варақларигача уфуриб турадиган қайноқ меҳр, қалб кўри, қувончли дамлар билан эш ҳазинлик, дард, инсонийлик, айни пайтда шафқатсиз ҳаққоният, асарда қайд этилганидек, у икки йиллик муддатда эмас, балки икки йил-у яна бутун умр давомида ёзилганидан далолат беради. Икки йил – хотира қатларига ўйиб ёзилган сатрларнинг оқ қоғозга кўчирилиши учун кетган фурсат, холос. Гарчи бу роман учун шахсий ҳаёт асос бўлса-да, муаллифнинг фикрича, ҳаёт йўли бир восита бўлиб хизмат қилган, холос.”

Дарсликда келтирилган бу каби маълумотлар ўқувчида асар юзасидан яхлит тасаввур қилиши шубҳасиз.

2. Ёзувчининг таржимаи ҳолини биографик жанрларни таснифлаш асосида ўрганиш муаллиф шахсига, таҳлил қилинаётган асарларга, умуман адабиётга қизиқишни оширишнинг самарали воситаси бўлиб хизмат қилади.

Масалан, 8-синф махсус адабиёт дарсида ўқувчилар Ғафур Ғуломнинг “Соғиниш” шеърини ўрганадилар. Шоир ижодини таснифлаб ўрганиш шеър ғоясини аниқлашда асосий омил вазифасини ўтайди.



3. Биографик жанрларнинг ҳар бирида адиблар ҳаёти ва ижоди ҳақидаги билимларни босқичма-босқич шакллантириш мактаб ўқувчиларига ёзувчи шахсиятининг янги қирраларини очиб беради, ўрганилаётган асарларни янада яхши ўзлаштиришга имкон беради ва уларнинг билимини оширишга ҳисса қўшади.

Қуйида Чингиз Айтматов биографиясига доир маълумотларнинг синфлар кесимида берилиши юзасидан тузилган жадвални келтирамиз:

Синф	Ёзувчи биографиясига доир маълумотлар
7-синф	<p>ЭЪТИРОФ рукни остида</p> <p><i>“Кўплар сирдан Чингизни ўта мағрур инсон, улуг ёзувчи, унга яқинлашиш қийин деб ўйлашади. Аслида эса, у ҳаётда жуда содда, ҳатто бола табиат бир инсон”.</i> Одил Ёқубов, Ўзбекистон халқ ёзувчиси</p> <p><i>“Улкан ютуқлардан эсанкирамайдиган, шухрат юкини полвонларча кўтариб, янада баланд чўққиларга олиб чиқадиган адиб қанақа бўлишини Чингиз Айтматов тимсолида кузатганман”.</i> Пиримқул Қодиров, Ўзбекистон халқ ёзувчиси</p> <p><i>“Чингиз Айтматов мағрибда ҳам, машриқда ҳам ўзининг мухлисларига эга. Бинобарин, юз миллионлаб китобхонларнинг қалбига кира олган бу адиб уларнинг дунёқарашларига ҳам, яшаш ақидаларига ҳам чуқур таъсир кўрсатди”.</i> Озод Шарафиддинов, адабиётшунос</p> <p><i>“Тинимсиз меҳнат, изчил ижодий изланиш Чингиз Айтматовни нафақат туркий халқлар, балки бутун жаҳон халқлари китобхонларининг ардоқли ёзувчисига айлантирди”.</i> Асил Рашидов, адиб асарлари таржимони</p>
8-синф	<p>ИЖОДКОР ҲАҚИДА ...</p> <p>Ҳаёти ва фаолияти</p> <p>Чингиз Айтматов 1928-йил 12-декабрда Қирғизистоннинг Талас водийсидаги Шакар овулида туғилган... Чингиз, унинг укалари ва сингиллари отасининг қистови билан унинг ўлимидан олдин Шакар овулига кўчиб келишган ва шу ерда улғайишган... Бўлажак адиб Қирғизистон қишлоқ хўжалиги институтини тамомлаган (1953). Қирғизистон халқ ёзувчиси Ч.Айтматов ташкил этган “Иссиқкўл форуми” халқаро тинчлик ҳаракати бўлиб муҳим ижтимоий масалаларни ҳал этишда самарали таъсир кўрсатган.</p> <p>Асарлари</p> <p>“Байдамтол соҳилларида”, “Юзма-юз”, “Жамила”, “Сарвқомат дилбарим”, “Бўтақўз”, “Биринчи муаллим”, “Момо ер”, “Сомон йўли”... Адиб асарлари жаҳоннинг 150 дан ортиқ тилига таржима қилиниб, 20 миллиондан ортиқ нусхада чоп этилган.</p>

9-синф	<p>ИККИ ЭЪТИРОФ: “Туркий адабиётимизнинг фахри Чингиз Айтматов ҳам Худо берган истеъдодлардан”. Одил Ёқубов, Ўзбекистон халқ ёзувчиси “Сайёрамизнинг турли ўлка ва мамлакатларида, мутлақо бошқа мухитда яшайдиган миллионлаб инсонлар Чингиз Айтматов яратган оламда, аввало, ўзларининг ҳаёти ва тақдирини, орзу-умид ва интилишларини, афсус ва армонларини, севги – муҳаббат қиссаларини, қалб тугёнларини кўрадилар ва шу боис уни ўз ёзувчиси, деб биладилар”. Хайриддин Султонов, ёзувчи</p> <p>МАЪЛУМОТ: Чингиз Айтматов асарлари дунёнинг 128 та мамлакатада 176 тилда, миллиондан зиёд нусхада чоп этилган. Африка ва Осиё, Европа ва Америка қитъаларида, Австралия минтақасида севиб мутолаа қилинади.</p>
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Кўриниб турибдики, дастлаб ёзувчи биографиясига доир маълумотлар ўрнига замондошларининг эътирофлари келтирилган бўлиб, 8-синфда ижодкор биографиясига тўхталиб ўтилган. 7- ва 8-синфда келтирилган маълумотлар ўрни алмаштирилса, узвийлик тамойилига риоя қилинган бўлар эди.

4. Ёзувчилар ҳақидаги биографик маълумотларни ўрганиш тизими адабиёт бўйича ўқув китобларини яратишнинг истиқболли тамойиллари ва усулларини ишлаб чиқиш имконини беради.

НАТИЖАЛАР ВА МУҲОКАМА

Амалга оширилган назарий тадқиқотлар ва тажриба-синов ишлари жараёнида олинган натижалар қуйидаги хулосалар чиқариш имконини берди.

Янгиланаётган жамиятимизда ихтисослашган таълим тизимини яратиш ва модернизация қилиш шароитида ёзувчининг шахсиятига бўлган қизиқишнинг ортиши замонавий методистлар учун бир қатор муаммоларни келтириб чиқармоқда.

Ихтисослашган мактаблар махсус адабиёт фани бўйича вариатив дастурлар ва дарсликларнинг яратилиши, улардаги ёзувчиларнинг таржимаи ҳоли ва бадий асарларнинг матншунослиги ўртасидаги муносабатларнинг ўзгариши, дастурлар ва ўқув китобларига ўнлаб янги ёзувчиларнинг киритилиши махсус адабиётни ўқитиш методикаси фанининг яратилишига асос бўлиб хизмат қилади. Ўз навбатида махсус адабиётни ўқитиш методикаси фани олдида янги контекстда ўқувчига азалдан маълум бўлган ёзувчилар биографиясини янги усулларда ёритиш масаласи кўндаланг бўлиб турибди.

Ўзгарувчан дастурлар, дарсликлар ва ўқув қўлланмалар таҳлили шуни кўрсатдики, мактаб дарслигида ёзувчи шахси қанчалик тўлиқ акс этирилиши, қайси синфда қандай фактлар келтирилиши борасида методика ҳалигача консенсус ишлаб чиқилмаган.



Аксарият ўқув китобларида ёзувчиларнинг таржимаи ҳолига этарлича эътибор берилмайди, муаллифлар ҳақидаги маълумотлар схематик, монотон, синфдан синфга такрорланади, уларда болаларнинг тафаккур хусусиятларига ва ўқувчиларнинг ёш хусусиятларига асосланган маълумотлар ва фактлар деярли йўқ. материалларни танлашда уларнинг ёш ва психологик тайёргарлиги эътиборга олинмайди. Дарсликларда биографик маълумотларни тақдим этишда узлуксизлик, биографик материални тақдим этиш билан боғлиқ терминологияда бирлик, биографик жанрлар таснифи йўқ, улар ўртасида аниқ чегаралар белгиланмаган, уларни фарқлашнинг ягона мезонлари ишлаб чиқилмаган.

Бундан ташқари, кўплаб методист ва ўқитувчиларнинг фикрича, 7-12 ёшли мактаб ўқувчилари ёш хусусиятларига кўра муаллиф шахсига қизиқиш билдирмайдилар, шу билан бир биргаликда адабий асарни ёзувчининг таржимаи ҳоли билан боғлиқ ҳолда тушуна олмайдилар.

Адабиёт дарс соатларининг қисқариши туфайли вақти етишмаётган кўплаб ўқитувчилар амалда 8-синфгача ёзувчининг таржимаи ҳолига жиддий эътибор беришни зарур деб ҳисобламайдилар, бунинг натижасида ўқувчиларда фақат биографик маълумотларни ўзлаштириш кўникмаси шакллантирилади, бадиий асарни таҳлил қилиш самарадорлиги эса иккинчи ўринга тушади, юқори синфда ёзувчи шахсига қизиқиш сезиларли даражада пасаяди.

Юқорида айтилганларнинг барчаси ихтисослашган мактабларда ижодкор биографиясини ўқитишда янгича ёндашувларни ишлаб чиқиш зарурлигини кўрсатади.

Гуманитар билимларнинг турли соҳаларига оид муҳим услубий ишларга асосланиб, биз “ёзувчининг таржимаи ҳоли” тушунчасининг хусусиятлари ва кўламини аниқлаб бердик.

V-IX синфлар адабиёт курсида ёзувчининг таржимаи ҳоли жанрлари типологиясининг ишлаб чиқилиши ёзувчи шахсини билишга, ўрганилаётган асарлар билан ёзувчи ижоди ўртасида боғлиқликни ўрнатишга ҳамда кўп қиррали ўқиш малакаларини ривожлантиришга хизмат қилади. асосий мактаб курсини ва мустақил ўқиш фаолиятини ўзлаштириш жараёнида зарур.

Ёзувчи таржимаи ҳолларининг замонавий усулларда мавжуд бўлган биографик жанрларидан келиб чиқиб, биз биографик жанрларнинг замонавий таснифини таклиф қилдик.

Ҳар бир синф учун биографик жанр танлашда биз а) ривожланиш психологиясининг хусусиятларини ва ўқувчиларнинг қизиқишларини; б) таржимаи ҳолни



ўрганишга ажратилган дарс вақти; в) ўрганилаётган ёзувчи ижодининг мазмунли аҳамияти ва унинг тарихий-адабий жараён ва мактаб ўқув дастуридаги ўрни.

Биографик жанрларнинг таклиф этилаётган таснифи асосида ёзувчи ҳаёти билан танишиш натижасида олинган маълумотлар ўқувчиларга бадиий асарни чуқур таҳлил қилиш ва мактаб ўқувчиларини санъат олами билан таништиришга ёрдам беришини таъминлашга қаратилган кўникмаларни ривожлантириш методикаси ишлаб чиқилган.

V-IX синфлар адабиёт курсида ёзувчиларнинг таржимаи ҳоли жанрларининг ишлаб чиқилган типологиясини синаб кўриш форматив экспериментнинг тузилиши ва мазмунини ишлаб чиқиш учун асос бўлди, бу эса ёзувчиларнинг таржимаи ҳолларини ўрганиш методикасини амалда синаб кўриш имконини берди. М.Ю.Лермонтов ва М.А.Булгаковларнинг ҳаёти ва фаолияти мисолида.

Таҷриба синов натижалари амалга оширилган ишлар самарадорлигини тасдиқлади. V-IX синфлар адабиёт курсида ёзувчи таржимаи ҳоли жанрларининг ривожланган типологияси, шу жумладан:

- ўқувчиларнинг ривожланиш психологиясининг хусусиятларини ва қизиқишларини ҳисобга олиш;
- V синфдан IX синфгача ёзувчилар ҳақидаги биографик маълумотларни ўрганиш ва ривожлантиришда узвийликни ўрнатиш;
- ёзувчилар ҳақидаги биографик маълумотларни аниқ бадиий асарлар билан ўзаро методик боғлаб ўрганиш;
- биографик маълумотларни босқичма-босқич ва босқичма-босқич ривожлантириш тамойили асосида ёзувчининг ҳаёти ва ижоди ҳақидаги билимларни шакллантириш: оддийдан мураккаброқ - ўқувчиларнинг когнитив қизиқишларини ривожлантиришга ёрдам беради, кўникмаларни шакллантиради. ўрганилаётган асарларнинг шоир шахсияти ва дунёқараши хусусиятлари билан боғлиқлигини кўриш, бадиий матнни таҳлил қилиш мактаб ўқувчиларига ёзувчи шахсини бутун ранг-баранглиги билан тасаввур қилиш имконини берганда шоир ҳаёти ҳақидаги билимларни қўллаш.

ХУЛОСА

Шундай қилиб, замонавий мактабларда ёзувчилар таржимаи ҳолини ўрганишга янгича ёндашувлар V-IX синф ўқувчиларида ёзувчининг таржимаи ҳолини унинг ижодининг доимий ҳамроҳи сифатида онгли ва асослантирилган идрок этишни



ривожлантиришга хизмат қилади” (Ю.М. Лотман). , "ичкининг ташқи ифодаси" сифатида (Г.О.Дистиллер).

Бизнинг тадқиқотимиз доирасидан ташқарида ўрта мактабда таржимаи ҳоли ва асарлари ўрганиладиган ёзувчилар бор эди. X-XI синфларда ёзувчининг таржимаи ҳоли устида олиб борилган ишларни кейинги тадқиқотлар учун истиқбол деб ҳисоблаш мумкин.

REFERENCES

1. Шерматова У.С. Чўлпон ижодида табиат эстетикаси // Academic research in educational sciences volume 1 | ISSUE 3 | 2020 ISSN: 2181-1385 Scientific Journal Impact Factor (SJIF) 2020: 4.804
2. Шерматова У.С. Чўлпон ижодида ватан, халқ ва инсон талқини // Academic research in educational sciences volume 1 | ISSUE 3 | 2020 ISSN: 2181-1385 Scientific Journal Impact Factor (SJIF) 2020: 4.804
3. Matkarimova S.Sh. Independent work methods for forming students' cognitive competence through literary and theoretical concepts in the system of differential literary education // Volume 1, Issue 6, September 2023 ISSN (E):2938-379X
4. Matkarimova, S. S. Q. (2021). Mumtoz adabiyot namunalarining elektron resurslarini yaratishda talmeh san'atining o'rni // Scientific progress, 1(6), 528-534.
5. Matkarimova, S. S. Q. (2020). Adabiyot fanini o'qitishda darsliklarнинг ахамияти // Science and Education, 1(Special Issue 3), 127-133.
6. Maxsus adabiyot. 7-sinf uchun darslik. Shuhrat Sirojiddinov, Bahodir Karimov, Shuhrat Rizayev, Shomirza Turdimov, Iqboloy Adizova, Abdumurod Tilavov, Dilnavoz Yusupova. 2022
7. 8-sinf adabiyot darsligi (I qism) [Matn] : darslik / J. Nurmuhammadov, S. Qambarova, O. Olimjanov, M. Yuldasheva, S. Inomjonova .- Toshkent: "Adast poligraf", 2022 .-204 b.
8. Maxsus adabiyot. 9-sinf uchun darslik.



SIMULATION AND EXPERIMENTAL INVESTIGATION OF OPTICAL PROPERTIES OF ZNS AND MGF₂ THIN FILM COATED ON GLASS

Mohammad Asif Akbaryan

Employee of the Academy of sciences, Kabul, Afghanistan

Hamed Tayeb

Teacher Assistant, Department of Physics, Farah Higher Education Institute, Farah, Afghanistan

Rahmatullah Andishmand

Employee of the Academy of sciences, Kabul, Afghanistan

ABSTRACT

Optical properties of thin films and nanomaterials, including absorption, transmittance and reflection in the visible and infrared regions of the radiation are of great importance. Materials such as ZnS and MgF₂ are common optical materials that can be used as coatings and thin films. In this paper, some samples of coatings and thin films such as ZnS, MgF₂, and Au / MgF₂ on a glass substrate were spectrally simulated in the range of 200 to 1100 nm. The transmission, reflection, and absorption spectra were studied for the simulated samples using Filmetrics and Macleod softwares. The samples were simulated for thicknesses of 10 up to 100 nm. After that, some of the corresponding real samples were made and examined with the absorption and reflection devices; the results of which have been compared with the simulated ones. The spectral analysis, reflective spectroscopy and colorimetry were also included. Furthermore, characterization of each sample were performed by Raman spectroscopy. In summary, ZnS showed 60% transmission in the visible and near-infrared regions for thicknesses of 10 to 100 nm in the simulation, and for the two real samples made at 28 and 40 nm thicknesses. The MgF₂ coating showed a reflectance of 4 to 8% for thicknesses of 10 to 150 nm in the simulations, respectively. In practice, MgF₂ coating showed a transparency of between 95 and 99%. Coating of 135 nm of MgF₂ on 7 nm of gold is found to be able to increase the transparency from 35% to 45% in the infrared region.

INTRODUCTION

Solar radiation, absorption and reflection in the optical regions, such as visible and near infrared, cause the surfaces to heat up. To prevent the absorption of heat radiation, some properties such as anti-reflectance, reflection of infrared and visible radiation with the aim of cooling the environment is important; which has been also applied for high reflection in the mirror surface of large telescopes such as the James Webb Telescope or for tens or hundreds of other applications. We know the optical properties, transmission, absorption and reflection of some materials. In this regard, ZnS, MgF₂, and many other materials can be used as suitable coatings for common optical applications. For example, they have been used for controlling the transmission, absorption or reflection of the sunlight and in



some cases, for cooling the buildings. The samples were characterized by Raman spectroscopy, FTIR infrared conversion spectroscopy, UV_Vis_NIR ultraviolet-visible-infrared spectroscopy in addition to calculating reflection, absorption and transmittance values. Therefore, here the focus of our work is on the ZnS and MgF₂. The transmission, absorption, and reflection process of the samples have been simulated and studied, and then some of those have been fabricated, analyzed and compared. ZnS is widely used for systems with an infrared wavelength of 8 to 11 μm for windows and infrared lenses. It is inherently transparent from 0.4 to 12.5 μm (1). The MgF₂ spectrum shows good conductivity and near-zero reflectance at longer wavelengths (2). First of all, some coatings such as ZnS and MgF₂ coatings have been coated on glass (in the ultraviolet-visible region). The ceramic pigments of titanium oxide or silicon has been the other materials to be studied. With visible-infrared spectroscopy methods, the amount of absorption, reflection and transmission of these materials can be investigated. Application of these studies in visible and infrared regions can be used in the cooling of buildings, apartments and industrial centers for military applications in infrared optical equipment with high transmission and reflection. They are characterized by Raman spectroscopy, Fourier transform infrared spectroscopy, and ultraviolet-visible spectroscopy, which can help to our better understanding of their optical and spectral properties of the samples. The lens of the glasses protect the eye from the sun's harmful rays, although they create reflections that sometimes obstruct clear vision. After the incidence of the light rays on the surface of the lens, they are reflected from the surface and therefore the light that passes through it is reduced. Sometimes, this reduces the resolution of the image for the person wearing the glasses. An anti-reflective coating, including MgF₂, is applied to spectacle lenses to minimize or eliminate glare and acts as an anti-reflective or anti-reflective coating (3). MgF₂ is the most widely used dielectric material for monolayer coatings. It is well known for its outstanding optical properties. It is not absorbed in the wide wavelength ranging from 120 nm to 8 mm and has a high transparency. Its refractive index is 1.38 in the wavelength of 550 nm. Additionally, it has a crystalline structure with a structure of P42 / mmm and a density of 3.171 g / cubic centimeter. Its monocrystalline form is used for ultraviolet to visible and infrared applications. Thus, MgF₂ is an important optical and coating material. Its polycrystalline structure is widely used for visible and infrared applications (1). MgF₂ is a well-known and common anti-reflective material that can be used to reduce the reflection in glasses, using various coating methods on the glass surface. ZnS is widely used for optical devices with long wavelengths from 8 to 11 micrometers for windows and lenses. It is inherently transparent from 0.4 to 12.5 μm. The absorption of this film coating is relatively constant in the visible region. When the photon energy reaches the energy gap, the absorption begins to increase. This material has two common crystal structures. One is α-ZnS phase, which has a hexagonal crystal structure of mineral vertzite with a spatial structure of P63mc and a density of 4.088 g / cm³. The other is the ZnS β phase, which has a long zinc cubic crystal structure with a spatial structure of F43m and a density of 4.090 g / cm³. It can be produced by the chemical vapor deposition process, in which zinc vapor reacts with hydrogen sulfide to form solid sulfide. Suitable optical thin films can be produced from this material. Two types and grades of ZnS are commonly available. The standard type of FLIR, which is yellow and has small crystalline grains and has a very large visible dispersion, contains both crystalline structures and impurities, especially hydrogen. The second type is produced by isostatic being pressed on a standard material, along with the production of



larger grains and the reduction of impurities. ZnS has a good heat shock resistance. In air, it can withstand temperatures up to about 600 ° C without any degradation. In the visible optical to infrared regions, it is transparent from about 0.4 to 12.5 μm , although it has a relatively high absorption near 6 μm and a refractive index of 2.002 (1).

2. Experimental experiments for producing thin layers of MgF₂, ZnS and Au by thermal deposition vacuum evaporation method in vacuum

MgF₂, ZnS and Au samples are coated in vacuum and on a glass substrate. The position of glass substrates in the deposition process were the same, and depending on the type of materials, the thickness of the considered samples and the different density of materials, different amounts of each sample were used. For example, for the case of Au, depending on the thickness of about 7 up to a few tens of nm, the amount of the applied substance has been chosen from 0.010 to 0.018 grams (for ZnS MgF₂ 0.1 grams). As mentioned, in the first step, an amount of the considered samples; MgF₂ or ZnS, in each separate experiment, is placed on a suitable and clean boat, and then the substrate glasses are also installed on the holder. Then the chamber is closed and the deposition process is initiated. It is worth noting that different time deposition and applied voltages have been considered for different thicknesses of the samples.

3. Optical studies of the samples

For measuring the absorption, transmittance, reflection and colorimetry of the samples, UV_Vis_NIR analysis (Ocean Optics HR4000 spectrophotometer) with an operating range of 200 to 1100 nm has been used in this research. This spectrometer has been equipped with the halogen-deuterium and tungsten lamps Lamps, which emit in the ranges of 200 to 500 and 500 to 1100 nm, respectively. This specified spectrum is emitted through the lamp, which are incident on the sample through the fiber. Then the required data would be collected in different modes of absorption, transmission, reflection and colorimetry by separate fibers. After the spectrum is collected by the fibers in each of the relevant modes, it enters the spectrometer and is recorded by the detector of the device. After that, the data have been analyzed by the Ocean View software; the results of which have been provided in the next section of this paper.

4. Results and discussion

High transmission is one of the important characteristics of glass. In addition, deposition of materials on the optical glasses such as BK7 or on other transparent substrates, for studying the values of transmittance, absorption, and reflection in different spectrum regions such as visible and near infrared has always been considered by researchers. Here, a review of the real laboratory glass substrate and its corresponding simulation has been provided. Then, the transmission, absorption and reflection spectra of ZnS coatings, which are widely used in visible and infrared regions, are simulated on the glass surface (quartz) from 10 to 100 nm. In the next step, some samples of these materials are actually layered on the surface of the glass substrate, according to the method described above, and then their transmission, absorption, and reflection spectra are investigated. Another sample was the MgF₂ anti-reflective coating, which was deposited on the surface of the Au coating to study their anti-reflective properties in the visible and near infrared regions, which is also simulated. Similarly, the study of spectra and their values in different conditions of absorption, transmission, and reflection in the range of 200 to 1100 nm has been investigated. The simulations were performed by Filmetrics and MacLeod



softwares was used. In addition, Raman spectroscopic studies of some of these coatings compared to their raw materials have been investigated.

1-4. The absorption, transmission, and reflection of the UV and near Infrared spectra of the ZnS thin film deposited on glass substrate

In this case, the absorption, transmission and reflectance spectra of the ZnS sample for different thickness of 10 to 100 nm were investigated and simulated. After that, the real samples at two thicknesses of 28 and 40 nm were randomly tested; the figures of which and their absorption and transmission spectra are shown in the following:

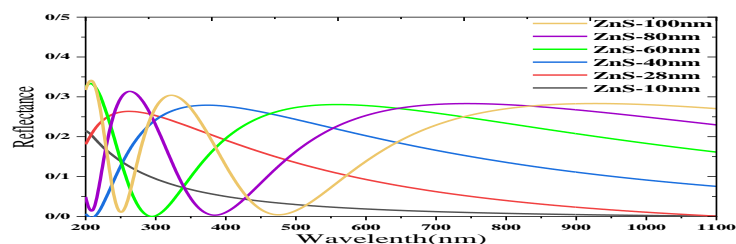


Figure 1-1 Simulation of reflectance spectra for samples with the thicknesses ranging from 10 to 100 nm for ZnS_{10-100nm}.

After that, the experimental fabricated samples of ZnS coatings with two thicknesses of 28 and 40 nm, which can have the appropriate transparency to measure the transmission spectrum, is studied. The samples and the results of their transmission spectrum are provided in the following.



Figure 1-2. The experimental fabricated coatings on the substrate in two thicknesses of ZnS-28nm, ZnS-40nm.

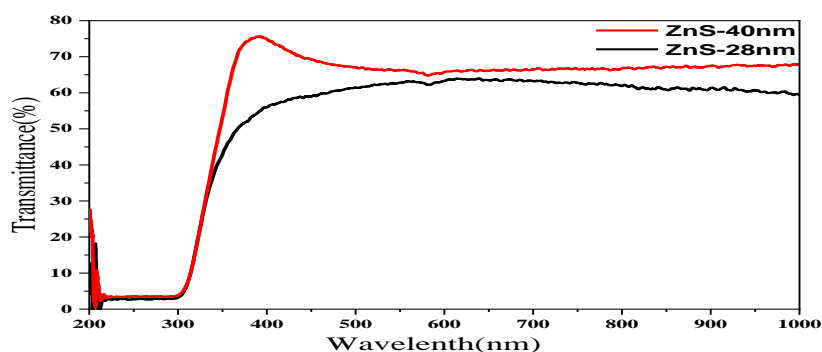


Figure 1-3. Comparison of the UV_Visible_ near Infrared transmittance spectra of the two samples of ZnS thin films with thicknesses of 28 and 40 nm coated on the glass substrate.

The above figure, which compares the ultraviolet-visible-infrared spectra of two samples with thicknesses of 28 and 40 nm being coated on the glass substrate, shows that ZnS has 60% transparency in the spectrum range of 400 to 1000 nm; although in the visible region the difference in thickness is very small, but in the infrared, about 12 nm increase in thickness has caused an increase of about 8% in the spectrum. Then, the absorption spectra of the samples made in the laboratory were measured, the results of which can be seen in the figure below.

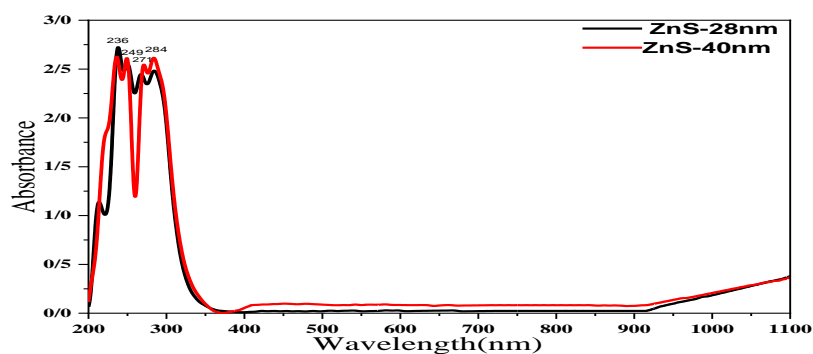


Figure 1-4. Ultraviolet Visible_ near-infrared absorption spectrum in the range of 200 to 1100 nm for ZnS samples coated on glass substrates at 28 and 40 nm thicknesses.

The absorption spectrum of the ZnS sample is seen in which there are multiple peaks such as 249, 236, 271 and 284 nm. However, according to reported studies, ZnS has a high potential for absorption of the incident light at wavelength range of 220 and 350 nm. However, a portion of this absorption may be due to ultraviolet glass substrates that clearly blocks the transmission of the spectrum. For example, the absorption in the range of 250 nm has also been reported in the Noor Azie Azura Mohd Arif paper for ZnS (4). McLeod software was used to compare the simulation results with those of the experimental samples simultaneously. As can be seen in the following figures, the transmission of ZnS coating, with a thickness of less than 40 nm on the hypothetical surface of a quartz substrate, is between 50 and 90% in the range of 300 to 1100 nm, which is approximately between 60 and 90 percentage in simulations with filmetrics.

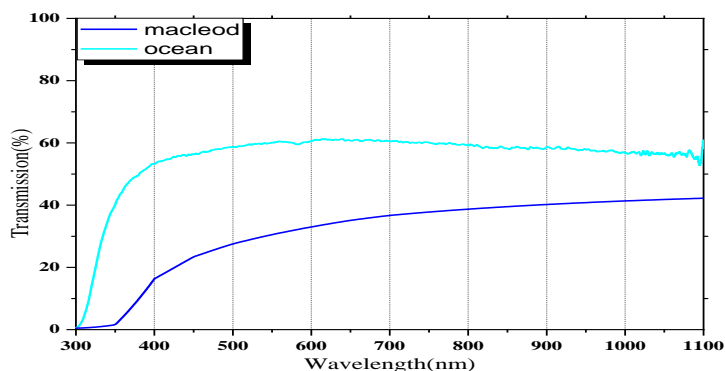


Figure 1-5. The visible-infrared spectrum of the ZnS samples with a thickness of 28 nm on a glass substrate by McLeod software compared to an experimental sample.

2-4. Ultraviolet-visible-infrared absorption, transmission and reflection of MgF₂ anti-reflective thin film on the substrate surface Glass

In the following figures, the magnesium fluoride coating on the glass surface is simulated. The simulation thickness values are from 10 nm to 150 nm. In the case of magnesium fluoride, it can be clearly seen that the reflectance was very small, ranging from 4 to 8%. Therefore, it is a very transparent coating with a transparency of more than 95%, even at thicknesses higher than 100 nm. Transparency is found to be varied between 95% and 99%. Therefore, it can be used as an anti-reflective coating on other coatings, including reflective coatings such as gold, because its adsorption is almost negligible, and in the absorption spectrum of the real sample, mainly the adsorption of the

substrate glass is seen. However, this coating may also be applied directly to the glass, causing an increase of about 10% in near-infrared transmission. Therefore, it can be easily used for ultraviolet and infrared applications.

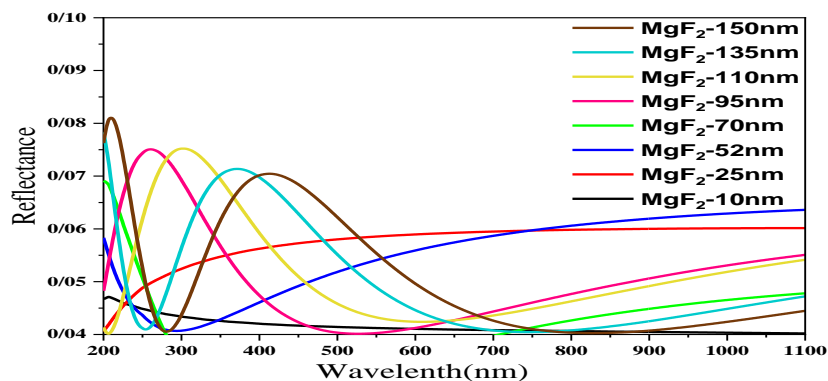


Figure 1-6 MgF₂ thin film reflectance spectrum simulated for thicknesses ranging from 10 to 150 nm.

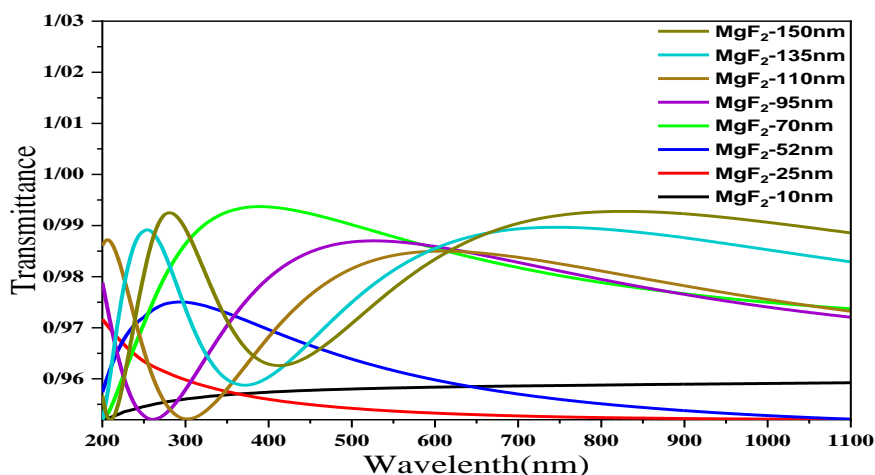


Figure 1-7 The simulated transmission spectrum of the MgF₂ thin film for thicknesses ranging from 10 to 150 nm.

3-4. Absorption, transmission, and reflection of ultraviolet_visible_infrared of the Au / MgF₂ anti-reflective / reflective thin films on the surface of glass substrate.

The following figure shows the simulation of a 7 nm gold coating and then a 135 nm coating of MgF₂, which have been investigated as an anti-reflective coating with the aim of increasing the transparency. The optical properties of AR coatings depend on the thickness of the coatings, the wavelength and the refractive index. The transmission spectrum of MgF₂ thin films produced is compared with the spectrum of samples of gold thin film coated with MgF₂.

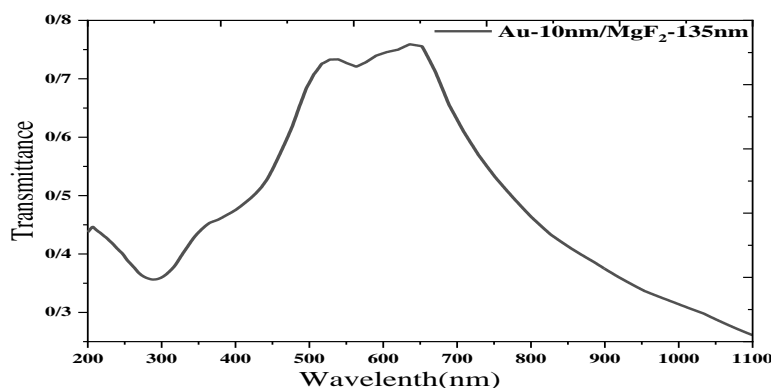


figure1-8. The simulation result of the transmission of the Au-10 nm / MgF₂-135nm sample.

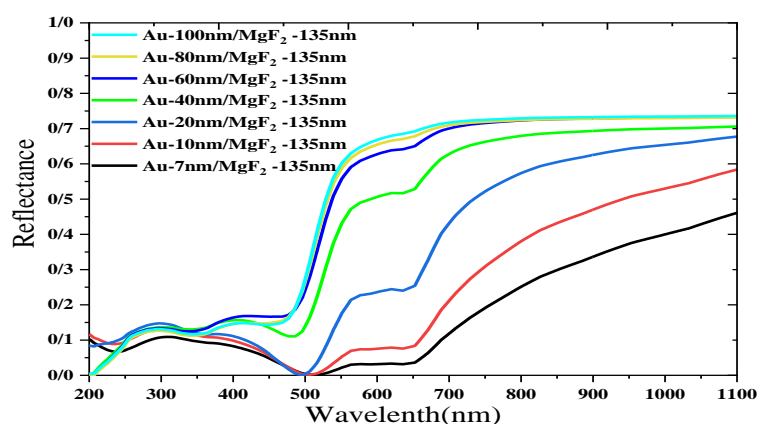


Figure 1-9 The simulation reflection of Au / MgF₂-135nm sample with thicknesses of 7 to 100 nm.

In the above simulation figures, various simulations of magnesium fluoride coating were deposited on the gold coating and then real samples were made of them, which can be seen in the following spectroscopic results of several samples.



Figure 1-10. The fabricated sample coated on the glass with dual coatings Au-7nm / MgF₂-135nm.

As shown, thin films of gold less than 8 nm thick are almost transparent, and this is true of most metals. The absorption edge at 300 nm for all materials is due to the adsorption under the glass layer. In the case of 7-nanometer and 10-nanometer-thick gold samples that have been analyzed, it can be clearly seen that they have a maximum throughput of about 500 nanometers and a drop in the UV and infrared edges. The black spectrum also shows the transmission of about 62%. From 700 nm onwards, the transmission shows a descending state that is close to infrared. All thin layers of gold precipitated by thermal evaporation method have a maximum transparency for $\lambda = 500$ nm. However, they behave differently at longer wavelengths. The following are examples of other layers of this type that are simulated in pairs, which can be seen in the following images:

5. Magnesium fluoride micro Raman spectrum of MgF₂

The micro Raman spectrum of MgF_2 samples can be seen below, which is quite similar to the samples reported by other researchers, including Barker (6).

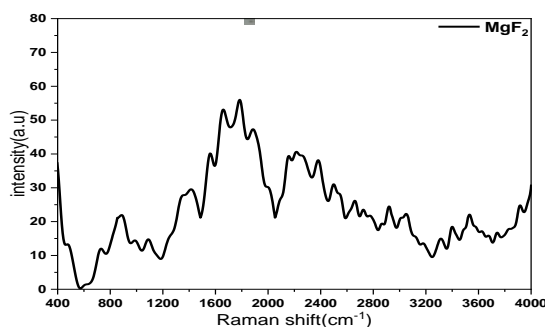


Figure 1-11 Raman spectra of MgF_2 magnesium fluoride sample.

Recently, it has been tried to make a new material for hole-passing layer by combining diamine with mineral. This effort improves the structural and chemical stability of the hole-transmitting layer, as minerals have much higher melting temperatures. In this study, magnesium fluoride $\sim \text{MgF}_2$! Selected for minerals. MgF_2 has a wide transparent region from 200 to 5000 nm, which indicates that the band gap of MgF_2 is more than 6 eV. It is found that the MgF_2 film prepared by the conventional vapor deposition method has an almost stoichiometric composition and is smooth and uniform. TPD-doped MgF_2 thin films were prepared by vapor deposition. The source materials were simultaneously evaporated from two separate graphite crucibles and placed on a substrate maintained at room temperature with a vacuum pressure of 131027 Torr. MgF_2 and TPD deposition rates were maintained during deposition using \sim INFICON XTC thickness monitors! 40 Å/min and 5-20 Å/min, respectively, TPD concentration is expressed in terms of volume percentage estimated from sedimentation rate. X-ray diffraction studies showed that TPD-doped MgF_2 thin films are amorphous and have excellent stability at room temperature. Even after heat treatment at 82°C for 2 hours, no crystallization was observed (7).

A typical XRD pattern of MgF_2 -MWCNTs is shown in Figure 1-25. The diffraction peaks of MgF_2 corresponded to (111), (210), (211) and (112) planes, respectively. In addition, there was a MWCNT peak. The diameter of MgF_2 nanoparticles made from autoclaved sulfate was larger than MgF_2 made from aged processed salts, because the MgF_2 nanoparticles grew during the autoclaving process. The size of MgF_2 nanoparticles synthesized in situ on the surfaces of MWCNTs can be adjusted by sol-gel processing of MgF_2 in different ways (8).

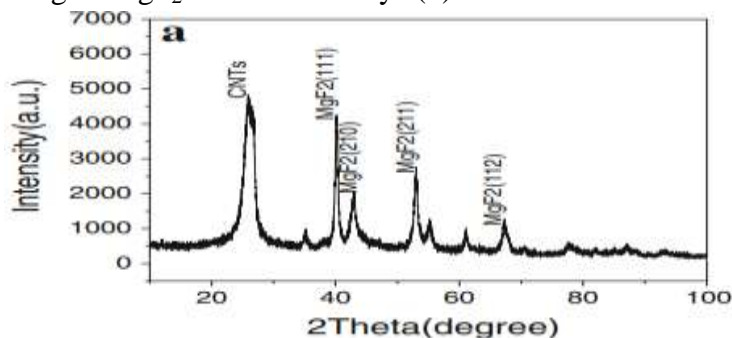
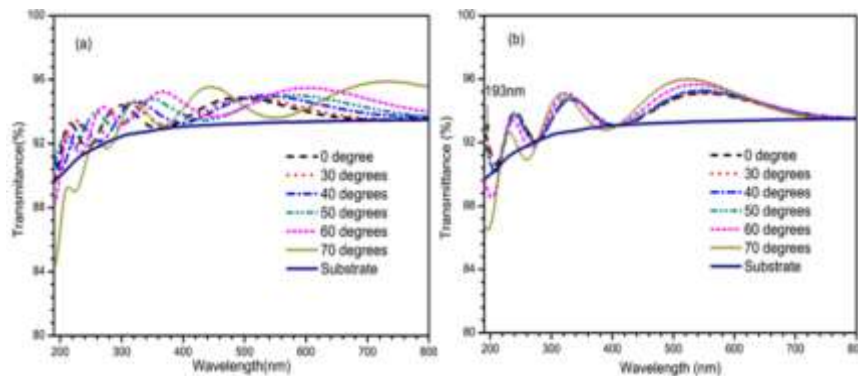


Figure 1-12 A typical XRD pattern of MgF_2 -MWCNTs

The MgF_2/ZnS bilayer can also be used as an encapsulation layer for flexible OLEDs (organic light-emitting diodes) because the flexible substrate cannot withstand high process temperatures. In addition, we can fabricate the

MgF₂/ZnS bilayer and OLEDs in one chamber, which ensures that the entire process is carried out in a high vacuum environment. Transferring devices from an evaporation system to an encapsulation system (such as sputtering or a plasma-enhanced chemical vapor deposition system) is believed to cause dark spots due to unwanted exposure of the OLED to particles, oxygen, and water vapor immediately prior to encapsulation. It becomes primary. The MgF₂/ZnS bilayer has a good water vapor and oxygen barrier capability, which has been proven by the calcium degradation test. Devices encapsulated with several pairs of MgF₂/ZnS films showed a significant improvement in lifetime compared to devices with a single pair of MgF₂/ZnS thin films. Transparent and smooth MgF₂/ZnS thin films are potentially applied to high-emissivity OLEDs and flexible OLEDs due to their good light transmission properties and easy fabrication (9). The atom-to-atom density feature of 1 vapor-deposited thin film growth can be used to produce mixed layers of one or more soluble or insoluble materials with variable composition-dependent refractive index. Although several z-7 workers have studied the refractive index changes of blend films with composition, only scanty data are available on the dispersion behavior of the optical constants of blend films. It is clear that the knowledge of dispersion of optical coefficients of mixed film materials is of great importance in designing and manufacturing optical devices. Therefore, it is desirable to study the detailed optical behavior of composite films with the aim of ensuring their usefulness for optical devices. This paper reports the results of our investigation of the dispersion behavior of the optical constants and the shape of the fundamental absorption edge of homogeneous mixed films of ZnS and MgF₂. The



wavelength dependences of the refractive index of ZnS-MgF₂ layers with different compositions as well as pure ZnS and pure MgF₂ layers are shown in Figure 1. The refractive index values of pure ZnS and pure MgF₂ layers are completely matched, well with those obtained by previous workers. From Figure 1, it is evident that the dispersion is higher for films with a high concentration of ZnS than for films with a higher concentration of MgF₂ (10). Figure 1-26 shows the measured spectrum of magnesium fluoride monolayer films produced at different deposition angles in angled deposition devices. Obviously, the minimum transmittance of magnesium fluoride films is slightly higher than that of the uncoated substrate in the wavelength range of 300 to 800 nm (11).

Figure 1-13 transmission spectra of MgF₂ films prepared with different deposition angles and comparison with uncoated substrate.

In another study, Nielson et al used sulfide doping on low density polyethylene fibers to improve solar reflectance for radiative cooling. Sometimes polyethylene fibers are injected with different structures or nanostructures such as titanium dioxide, zinc sulfide and zinc selenide (composites). For example, a

polyethylene layer with a thickness of 400 micrometers containing 15% sulphide with a solar reflectance of 84.9% and an absorption of 13.8% has been used as a cover for a radiator in daytime cooling (12). Sulfide is a direct bandgap semiconductor with an energy bandgap of about 3.65 eV. This value of the energy bandwidth may be related to the state of preparation and the amount of doping between 3.65 and 3.7 electron volts, and this threshold of zinc sulfide absorption is placed in the ultraviolet (13). In a research, the optical properties of the films were calculated in the visible light to near and mid-infrared regions, and the simulation results showed a low reflection of infrared radiation up to less than 0.02% and infrared transmission up to more than 0.80% at a wavelength of 8 to It was 13 micrometers. Then, their cooling performance has been checked. Similarly, for zinc selenide and zinc telluride, the cooling power during the day is more than 90 W/m², and therefore these types of coatings support radiant cooling during the day and night (14). We report a design and fabrication strategy to create synthetic multilayer optical filters using a thermal evaporation technique. We selectively chose a zinc sulfide (ZnS) lattice for the high refractive index layer ($n = 2.35$) and a magnesium fluoride (MgF₂) lattice as the low refractive index layer ($n = 1.38$). In addition, the microstructures of ZnS/MgF₂ multilayer films are also investigated through TEM and HRTEM imaging. The filters are made of 7 and 13 alternating layers with high refraction and low refraction, which show 89.60 and 99% reflection, respectively. The optical micro cavity achieved an average transmission of 85.13% in the visible range. The obtained results show that these filters can be an exceptional choice for next-generation anti-reflection coatings, high-reflection mirrors, and polarized interference filters. ZnS has a wide direct band gap of 3.5–3.8 eV, a high refractive index of 2.35 at 550 nm 15 with low optical absorption in the visible and infrared spectral regions, and transmission of high energy photons, 16–19 while MgF₂ has The refractive index is low. Refractive index 1.38 at 550 nm 15 and wide pass range. Extensive studies on the optical properties of ZnS films and MgF₂ report that they are quite useful for optical coatings. A high value of refractive index contrast between two types of materials (n_H/n_L) is more desirable in design. Multilayer structure because it minimizes the number of layers and their physical thickness for a given spectral function. The refractive index of MgF₂ is close to the root of the refractive index of ZnS. For these reasons, ZnS and MgF₂ are suitable options for producing interference optical filters. Hence, by using only a few layers, it is possible to obtain surfaces with a reflectivity equal to that of a silver mirror (96.6%) and surfaces that reflect more than 99%.



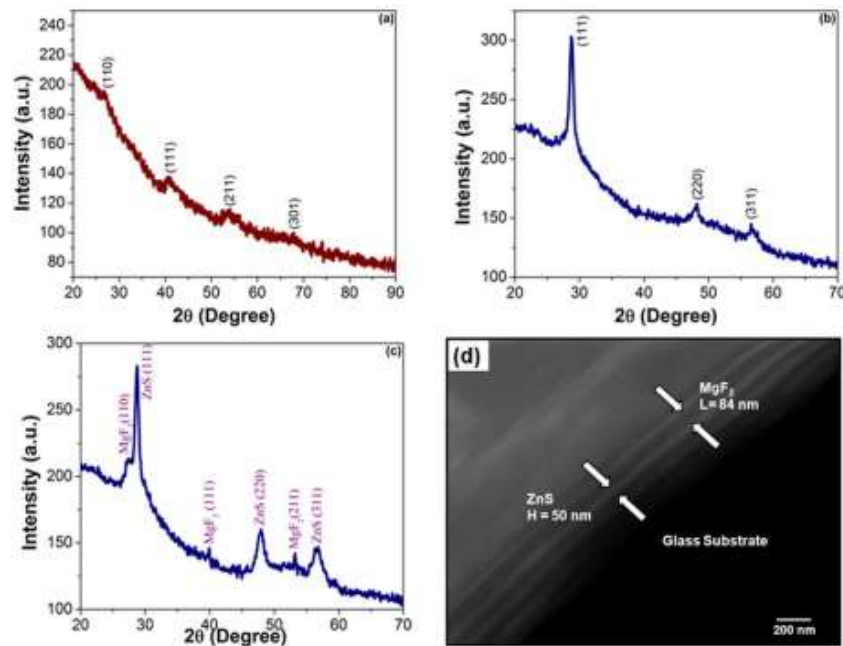


Figure 1-14. XRD patterns of (a) monolayer MgF_2 , (b) monolayer ZnS and (c) 13 multilayer ZnS/MgF_2 (d) cross-sectional SEM image of 7 multilayer ZnS/MgF_2 (15).

In this study, multi-layer anti-reflective coatings of magnesium fluoride (MgF_2) and zinc sulfide (ZnS) were prepared using the angle of view deposition (GLAD) method. MgF_2 and ZnS materials are coated on glass substrates in a Hind-Hivac model F 15 coating unit. Anti-reflective coatings were prepared at different angles of the diagonal radiant flux ($\alpha = 40^\circ, 65^\circ, 70^\circ, 80^\circ$) by thermal evaporation method. X-ray diffraction (GIXRD) analysis showed that the coated thin films at different dip angles were crystallized in a single phase with a crystalline structure. The XRD results showed the improvement of film crystallinity with increasing grain size. Optical properties were investigated throughout the measurement of transmission and refractive index spectra and extinction in the visible region. As the flux angle increased from 40° to 80° , the refractive index of the films decreased from 2.8 to 1.66. As the flux angle increased from 40° to 80° , the extinction coefficient of the films increased from 0.03849 to 0.05997. The extraordinary transparency of MgF_2 has led to its use in optical systems. MgF_2 , when used as a coating on optical window lenses, has an ideal anti-reflective property. ZnS is a remarkable wide bandgap semiconductor that is widely used in optical systems. It has a reflection loss of 24.7% and a refractive index of 2.2. ZnS is a practical and suitable material for use in anti-reflective films, due to its special features such as high versatility, wide bandgap, high transmittance and low cost. One of the suitable methods for making ZnS films is the physical vapor deposition (PVD) method. This technique has unique advantages including; Low operation cost, low material consumption, high sedimentation rate. MgF_2 and ZnS thin films are easily prepared with high optical quality using thermal evaporation systems, making the materials suitable for use in optical devices. (16). Zinc sulfide (ZnS), a remarkable infrared (IR) optical material, is used in many optoelectronic systems that require an anti-reflection (AR) and suitable protective coating to increase transmission, on windows, lenses, and domes. Figure 4 shows the IR transmission spectra of coated and uncoated ZnS samples. The coating meets the specifications with an average transmission of 96% in the desired spectral region and a peak beyond 98% at a wavelength of $4.2 \mu\text{m}$. Compared to the theoretical value presented in Figure 1-28, the measured throughput is lower.

First, the used ZnS substrate is subjected to hot pressure and its transmission rate does not exceed 71%, so its absorption drop is the reason for the transmission difference. Second, instrument-agent calibration errors and monitoring errors during layer deposition contribute greatly to this.

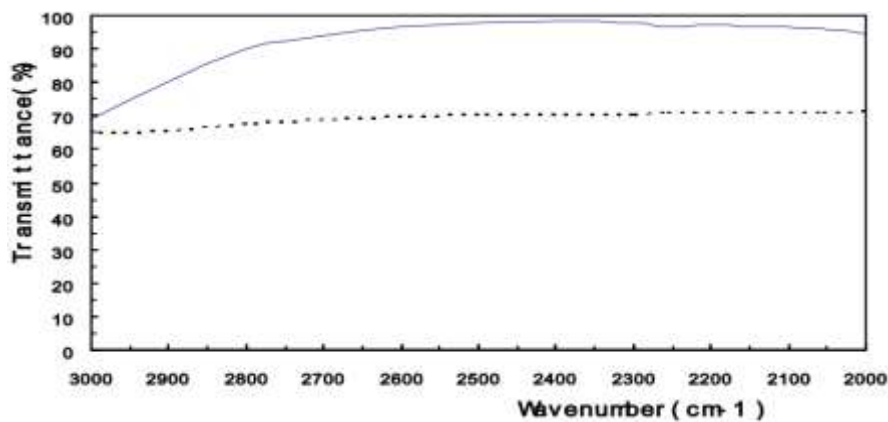


Figure 1-15 Spectra of coated (solid curve) and uncoated (dotted line) ZnS sample (17).

From FTIR spectroscopy, it was found that in the wavelength range of 8 to 12 micrometers, the average transmittance of the two-sided coated sample increases by 26% and reaches a maximum of 98%. FESEM figures show that all samples were uniform, compact with good adhesion on the ZnS substrate. XRD pattern of ZnS/MgF₂ multilayers which shows the presence of both MgF₂ and ZnS virgin phases respectively. The design was done by the Essential Macleod program (Thin Film Center Inc.), which is a comprehensive software package for the design and analysis of optical coatings. In this software, the desired characteristic (transmission/reflection/absorption) is determined by optimizing the thickness of the upper and lower refractive index layers. The design of multi-layer coating using MgF₂ and ZnS was done on ZnS substrate. Optimization was done with the simplex method at a reference wavelength of 10 micrometers (18). Magnesium fluoride (MgF₂) in particular has attracted much attention in research and has become a standard material for optical coatings. MgF₂ is known as a material with high transparency, high refractive index (1.3), good mechanical properties, hardness: 415 (Mohs), low absorption coefficient, good stability in hostile environments and good chemical stability. The high transparency of this material has made it widely used in optical windows. MgF₂ is a very good anti-reflective material used as a coating on lenses. One of the reasons for using this material as a resonance in lasers is its high anti-reflection property. A number of researchers have produced MgF₂ thin films using the GLAD method, for example: Chun et al deposited MgF₂ thin films at different angles and investigated the effect of increasing the deposition angle on their optical and structural properties. The results showed that with the increase of deposition angle, the refractive index decreased and the extinction coefficient increased. Barinoguh et al prepared MgF₂ thin films using GLAD technique and investigated their optical properties. The results showed that the effective refractive index decreases with the increase of the deposition angle. Therefore, our main goal is to design and manufacture. A monolayer MgF₂ antireflective coating and to investigate the effect of the deposition angle on its optical and structural properties, we also aim to achieve an optical transmittance of more than 98% in the large wavelength range (19). In this study, we investigated the simultaneous response characteristics of MIM nanostructures on a disk composed of magnesium fluoride (MgF₂) as an insulating layer and gold (Au) as metal layers. The MIM nanostructures on the disk are expected to have two LSP modes, which generate electric

fields outside the MIM nanostructures and inside the insulating layer, and are expected to respond independently to changes in two phases: the surrounding environment and inside the insulating layer. Furthermore, by introducing MgF_2 , which is known to absorb hydroxyl groups of water molecules as an insulating layer, MIM nanostructures with LSP mode are expected to respond to the hydroxyl group, which generates electric fields inside the insulator. Layer. By combining the individual mode distribution and MgF_2 absorption characteristics, MIM nanostructures are expected to investigate the information related to RI change in solution and changes within the MgF_2 layer related to the interaction of molecules in solution with MgF_2 (20).

RESULTS

In a nutshell, it can be seen that the types of optical coatings used in optical equipment or devices, require accurate knowledge of the values of transmission, absorption, reflection in different spectral regions such as ultraviolet, visible and infrared. The results obtained from the simulations in several cases, including ZnS, magnesium fluoride, and others, are a relatively good criterion for detecting the same properties in real and operational samples. However, each of these coatings has its own characteristics and these results are summarized below: ZnS has good transparency in the range of 200 to 1100 nm. The simulation was performed by Filmetrics and McLeod in thicknesses of 10 and 100. Thickness of about 10 nm has a transparency of more than 90%, while at thicknesses of about 100 nm this parameter has decreased to less than 60%. However, with an increase in thickness from 10 nm to 100 nm, the transparency has varied depending on the wavelength of the visible to near infrared regions. McLeod's simulation for crossing for ZnS coating, with a thickness of less than 40 nm on the hypothetical surface of a quartz substrate, is between 50 and 90% in the range of 300 to 1100 nm, which in the simulation with Filmetrics was approximately between 60 and 90%.

In the simulations, in general, the transparency in the infrared region with a thickness of less than 100 nm has been more than 60%, and therefore this material seems to be suitable for applications in near infrared areas. For any thickness and application, simulations must be performed. Comparison of the visible-infrared spectrum near two real-made samples with thicknesses of 28 and 40 nm on the glass substrate, shows that ZnS in the range from 400 nm to 1000 nm to 40 nm thickness, about 60% transparency. Although in the visible region the difference in thickness is very small, but in the infrared, about 12 nm, the increase in thickness has caused an increase of about 8% in the spectrum. Therefore, both simulations and experimental samples show at least 60% transparency, mainly for thicknesses less than 100 nm.

REFERENCES

1. Tropf, W. J.; Thomas, M. E.; Klocek, P., Infrared optical materials. In Inorganic Optical Materials: A Critical Review, 1996.
2. Hanssen, L.; Kaplan, S.; Datta, R., Infrared optical properties of materials. NIST Special Publication 2015, 250 (94), 250-94.
3. AYKUT, P. D. S. Ç. E., <RF SAÇTIRMA YÖNTEMİYLE ÜRETİLMİŞ MgF_2 İNCE FİMLERİN OPTİK ÖZELLİKLERİNİN İNCELENMESİ. 2019.
4. Mohd Arif, N. A. A.; Jiun, C. C.; Shaari, S., Effect of annealing temperature and spin coating speed on Mn-doped ZnS nanocrystals thin film by spin coating. Journal of Nanomaterials, 2017.



5. Cheng, Y.; Jin, C.; Gao, F.; Wu, X.; Zhong, W.; Li, S.; Chu, P. K., Raman scattering study of zinc blende and wurtzite ZnS. *Journal of Applied Physics* 2009, 106 (12), 123505.
6. Krishnan, R. S.; Katiyar, R. S., The Raman spectrum of magnesium fluoride. *Journal de Physique* 1965, 26 (11), 627-629.
7. Shizuo Tokito and Yasunori Taga Toyota Central Research & Development Laboratories, Inc., 41-1 Aza Yokomichi, Oaza Nagakute, Nagakutecho, Aichi-gun, Aichi-ken 854, Japan "Organic electroluminescent devices fabricated using a diamine doped MgF₂ thin film as a hole-transporting layer" *Appl. Phys. Lett.* 66 (6), 6 February 1995.
8. Feng-Ying Wang, Yue-Feng Zhu, Yin Jiang, Ren-Ping Zhang, " Fabrication and properties of MgF₂ composite film modified with carbon nanotubes", *J Sol-Gel Sci Technol* (2011) 58:587–593.
9. Yingjie Liao, Fangfang Yu, Li Long, Bin Wei , in Lu, Jianhua Zhang, " Low-cost and reliable thin film encapsulation for organic light emitting diodes using magnesium fluoride and zinc sulfide", Y. Liao et al. / *Thin Solid Films* 519 (2011) 2344–2348.
10. V. N. YADAVA, SHIV K. SHARMA AND K. L. CHOPRA, " OPTICAL DISPERSION OF HOMOGENEOUSLY MIXED ZnS-MgF₂ FILMS" *Thin Solid Films*, 22 (1974) 57--66.
11. Guo, C.; Kong, M.; Lin ,D.; Liu, C.; Li, B., Microstructure-related properties of magnesium fluoride films at 193nm by oblique-angle deposition. *Optics express* 2013, 21 (1), 960-967.
12. Hossain, M. M.; Gu, M., Radiative cooling: principles, progress, and potentials. *Advanced Science* 2016, 3 (7), 1500360.
13. Benamra, H. L'effet de la température du substrat et de la molarité sur les propriétés des couches minces de sulfure de zinc déposées par spray ultrasonique. Université Mohamed Khider-Biskra, 2013.
14. Laatioui, S.; Benlattar, M.; Mazroui, M.; Saadouni, K., Zinc monochalcogenide thin films ZnX (X= S, Se, Te) as radiative cooling materials. *Optik* 2018, 166, 24-30.
15. Garima Kedawat, Subodh Srivastava, Vipin Kumar Jain, Pawan Kumar, Vanjula Kataria, Yogya Agrawal, Bipin Kumar Gupta and Yogesh K. Vijay, " Fabrication of Artificially Stacked Ultrathin ZnS/MgF₂ Multilayer Dielectric Optical Filters" | *ACS Appl. Mater. Interfaces* 2013, 5, 4872–4877.
16. R. Zarei Moghadama, H. Omrania, M. Taherkhania, F. Shokrianb, " Fabrication of multi-layer antireflection coating consisting of ZnS and MgF₂" *Progress in Physics of Applied Materilas 1* (2021) 7-13.
17. Su Xianjun, Sun Weiguo, Wei Qingwang, XuYan, He Jiayuan, " Design and fabrication of antireflection coatings on ZnS substrate" *Proc. of SPIE Vol. 6149 614907-4*, 06/03/2013.
18. M. Gholampour, A. Miric, S.I. Karaniana and, Mohammadi, " Design and Fabrication of Multi-Layers Infrared Antireflection Nanostructure on ZnS Substrate" *ACTA PHYSICA POLONICA A*, Vol. 136 (2019).
19. M. Gholizadeh, R. Zarei Moghadam, A.A. Mohammadi, M.H. Ehsani & H. Rezagholipour Dizaji, " Design and fabrication of MgF₂ single-layer antireflection coating by glancing angle deposition" *Materials Research Innovations*, Published online: 03 Feb 2020.
20. Hirotaka Yamada, Daiki Kawasaki, Kenji Sueyoshi, Hideaki Hisamoto and Tatsuro Endo. " Fabrication of Metal-Insulator-Metal Nanostructures Composed of Au-MgF₂-Au and Its Potential in Responding to Two Different Factors in Sample Solutions Using Individual Plasmon Modes" *Micromachines* 2022, 13, 257.



EFFECTS OF BABESIOSIS ON BLOOD PARAMETERS IN SHEEP AND GOATS

Ahmadi Zahidullah

Zafari Nageebullah

Karwand Babrak

Faculty of Veterinary Science, Department of Pre-Clinic, Kunduz University,
Afghanistan

Hamdard Enayatullah

^{4*} Faculty of Veterinary Science, Department of Para-clinic, Kunduz University,
AFGHANISTAN. College of Animal Science and Technology, Nanjing Agricultural
University, Nanjing 210095, China

ABSTRACT

Babesiosis is an infectious disease caused by tick-borne, intra-erythrocytic and generally host-dependent protozoan parasite of the genus *Babesia*. *Babesia ovis*, the main etiological agent of small ruminants. The infectious agent of Babesiosis is a small form of *Babesia* parasite (1-1.5 μm in diameter), which cause severe economic losses among sheep and goats in tropical and subtropical areas. This study conducted to determine the effects of Babesiosis on blood parameters (RBC, WBC and HB) of sheep and goats in Kunduz Province. A total 24 animals (12 Sheep and 12 Goats) selected; sheep and goats divided into two groups (infected with *Babesia* and clinically control). The infected group naturally infected with *Babesia* Spp. 5ml Blood collected in an EDTA tube from jugular vein. The result showed that RBC clearly decreased in sheep and goats ($P < 0.05$) while WBC were increased, the level of HB were decreased in both species significantly ($P < 0.05$). The study indicated that *Babesia* spp. affects the blood parameters of both species and decreased RBC/HB levels respectively.

Keywords: *Babesia*, Blood Parameters, Kunduz, Sheep & Goat

INTRODUCTION

Babesiosis is a protozoan disease, caused by various species of mites, an enteric protozoan parasite of red blood cells belonging to the genus *Babesia ovis* (Wormser, Dattwyler et al. 2006). A *Babesia* parasite 1-1.5 micrometer in diameter, transmitted by ticks, causes significant economic losses in sheep and goats in temperate and subtropical regions (Sevinc, Turgut et al. 2007). *Babesia* species is transmitted by ticks (Family: Ixodidae) which causes continuous fever in animals. The main symptoms of this disease are severe and with varying degrees of anorexia, lethargy, anemia, moderate diarrhea and the presence of hemoglobin in the urine (Rahbari, Nabian et al. 2008).

Babesia disease that shows chronic symptoms is characterized by fever, anorexia, increased respiratory rate, muscle tremors, malaise, fatigue, weight loss and, in the final stage, the presence of hemoglobin urea (Urquhart 1996). Anemia is common in all animals, but hemoglobin urea



may not be seen in animals infected with *B. ovis* (Popa 1998). Chronically infected sheep usually show no major symptoms except for the presence of parasites in the blood (Kozat, Yuksek et al. 2003). Babesia is an economically important disease that causes significant losses in small ruminant production rapidly in tropical and subtropical regions of the world (Muthuramalingam, Pothiappan et al. 2014). Babesia disease is epidemiologically the third most important sheep disease in Pakistan (Branscomb 1995).

Babesia is a parasitic disease of the blood in domestic and wild animals. Babesia mites are apicomplexan parasites that infect a wide range of vertebrate hosts. Some animals may slowly recover from treatment after a long period, but some develop shock or die from renal failure (Schettters, Kleuskens et al. 2009). Four forms of Babesia has been reported in sheep and goats, mainly one major form is *B. motasi* and three other minor forms are *B. ovis*, *B. foliata* and *B. tyalori* (Soulsby 1986). While Friedhoff said that, the three species that cause Babesia disease in domestic ruminants are *B. ovis*, *B. motasi* and *B. crassa* (Mehlhorn 1989). *B. ovis* is less pathogenic in sheep than *B. motasia* and *B. crassa* and causes relatively moderate hemolytic anemia (Aytuğ, Alaçam et al. 1990). According to previous reports, *B. ovis* is the most lethal organism that causes Babesia disease in sheep in most parts of Iran (Delpy 1936). These diseases caused by *B. ovis*, *B. motasi* and *B. crassa* (Hashemi-Fesharki 1997). Two species of Babesia commonly known to be pathogenic are *B. ovis* and *B. motasi* (Uilenberg 2006). *B. ovis* is a small (<2.5 µm) *B. ovis*, the most common species causing *B. ovis* disease in sheep in Iran (Rashid, Khan et al. 2010). *B. motasi* is not highly pathogenic and appears to be moderately virulent (Soulsby 1968). Babesia can have pear-shaped, round and on gated shapes. High incidences of *B. ovis* has been identified in sheep and goats in northeastern Iran (Razmi, Naghibi et al. 2003).

Alani and Hebert described hematological and biochemical changes in sheep suffering from sarcoid and experimentally infected with *B. motasi* (Alani and Herbert 1988). Several studies have been previously conducted on the histopathology of lesions produced by *B. ovis* (Suteu, Vatic et al. 1975). To our knowledge, most studies previously conducted on hematological and biochemical changes in sheep naturally infected with *B. ovis* (Halacheva and Kyartov 1977, Yeruham, Hadani et al. 1998, Yeruham, Avidar et al. 2003). Recently study was conducted to study some hematological and serum biochemical parameters in sheep and goats naturally infected with *B. ovis* (Baby, David et al. 2001).

Babesia species cause severe economic losses in sheep and goats, especially in warm and semi-warm climates. From clinical symptoms perspectives, Babesia disease can be acute, subacute or chronic. Simply, Babesia disease is mostly divided into mild, moderate and severe disease depending on the severity of the bleeding (Lobetti, Dvir et al. 2002, Esmailnejad, Tavassoli et al. 2012). Analysis of spheroids with Babesia species showed signs of bleeding (Sayin, Dyncer et al. 1997). Red blood cell parasites, including Babesia and Plasmodium, thought to increase oxidative stress and lipid peroxidation due to the effect of blood analysis. Parasite infestation disrupts blood formation and thus causes anemia (Yur, Değer et al. 2010, KILINÇ, Göz et al. 2015).

Which is characterized by a decrease in the number of red blood cells or a sub-normal concentration of hemoglobin per unit volume of blood. Because of reduced red cell count, oxygen transfer decreases and tissue oxygen deficiency may occur. The climatic conditions of the country favor the growth and reproduction of mites, which are important external parasites in livestock and tropical Theileriosis (Sevinc,



Turgut et al. 2007, Inci, Ica et al. 2010). which caused reduction in livestock production (Shayan, Hooshmand et al. 2008). Therefore, it is necessary to investigate the effect of Babesia on the composition of the blood of animals, especially small ruminants. Since agriculture and livestock constitute the most significant part of income for rural residents livelihood. Livestock products contribute to the country economy and it is the only income source for living that incredibly contribute to our nation resilience. Given the significant humanitarian impact associated with livestock, noting the nutritional and livelihood importance of livestock, which is life saving and the fact that urban people heavy dependence on livestock.

In addition, agriculture and livestock are lagging behind in Afghanistan, and since long ago, the governor has been struggling with this backwardness, that livestock has taken a traditional form in Afghanistan as there are very few farms equipped with an advanced farming system. This study resulted to address the main challenge in reduction of livestock production, with taking preventive measures against Babesia can pave the way for improving yield productions and productivity, which will greatly contribute to the livestock sector in Afghanistan.

MATERIALS AND METHODS

Place of work

This study carried out in Kunduz Province under the direct guidance of Pre-Clinical department head, Faculty of Veterinary Sciences of Kunduz University.

Samples Size

In this study, a total of 24 sheep and goats studied. There were 12 sheep and 12 goats (divided into two groups), the control group and the infected group. Each main group was subsequently divided into 3 replicate groups; each replicate consisted of three sheep and three goats.

Blood Smear Examination

Blood was taken from the ear of the animal using antiseptics and a thin smear of the side of the slide was left to dry in the open air, after which it was fixed by methanol and after Giemza staining Oil immersion has been observed under a microscope with 100 power.

Hematological Examination

Using a sterile needle and syringe, 3 ml of blood was collected from the animal's jugular vein, placed in a tube containing anticoagulant material, and taken to the laboratory for hematological examination. Globally, the amount of red blood cells, hemoglobin and hematocrit is counted by Automated Cell Counts (ACT-8 Counter Miami-EUA) and manually i.e. by Neurochamber slide (Ozlem et al, 2015).

HB determination method

Hemometer device used to determine the amount of hemoglobin. In this method, first 20 microliters of HCL and 20 microliters of blood were taken and mixed in a Hemometer graded tube, and then left for five minutes and then its size is determined in the hierarchy.

WBC determination method

380 microliters of WBC solution were taken and then put in a 10 ml test tube. Twenty microliters of blood mixed with it and then a few drops of the solution put on the chamber slide and the cells counted under the microscope respectively.

RBC determination method



3980 microliters of RBC solution has taken, 20 microliters of blood poured into a 10 ml test tube, mixed with it, and then after pouring a few drops on the chamber slide, the cells counted under the microscope.

Statistical analysis

The obtained results were analyzed by one-way ANOVA in SPSS software, the general confidence interval is 95% and the variable is ($P < 0.05$).

RESULT

Part of this research, 24 sheep and goats chosen for this study and divided into two groups, control and infected. The animal was clinically sick and showed chronic symptoms such as fever, anorexia, anemia, moderate diarrhea and the presence of hemoglobin in the urine. The study revealed that Babesia parasite affected HB, RBC and WBC, in sheep and goats, there was a decrease in RBC and HB and an increase in WBC. The first graph shows, effects of Babesia parasite on the RBC of the sheep. There was a significant decrease ($P < 0.05$) in the RBC size of the sheep in the infected group compared to the control group.

In the second graph, the effects of Babesia parasite on the HB of the sheep are shown, and there was a significant decrease ($P < 0.05$) for HB of the sheep in the infected group compared to the control group. The third graph shows the effects of Babesia parasite on the WBC of the sheep. There was a significant increase ($P < 0.05$) in the WBC of the sheep of the infected group compared to the control group. In the fourth graph, the effects of Babesia parasite on the RBC of goats have shown. There was a significant decrease ($P < 0.05$) for RBC of infected goats compared to the control group. In the fifth graph, the effects of Babesia parasite on the HB of goats are shown, from which there was a significant decrease ($P < 0.05$) for HB in the goats of the infected group compared to the control group.

The sixth graph shows the effects of Babesia parasite on the WBC of the goats. There was a significant increase ($P < 0.05$) in the WBC of the infected goats compared to the control group.

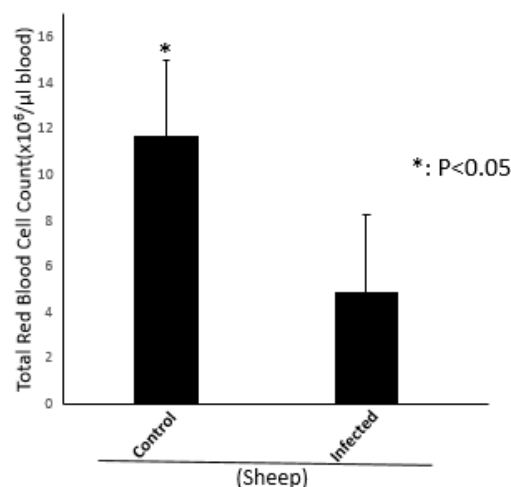


Figure 01: In the above graph, there was a significant reduction ($P < 0.05$) in the size of the red blood cells of the infected sheep compared to the control.

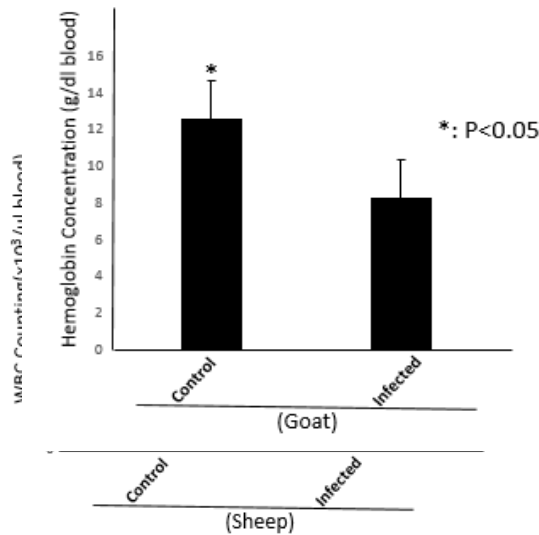


Figure 02: In the above graph, there was a significant decrease ($P < 0.05$) for hemoglobin of sheep in the infected group compared to the control.

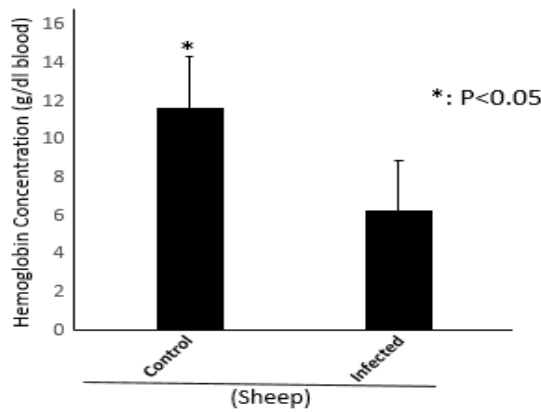


Figure 03: In the above graph, there was a significant increase ($P < 0.05$) in the size of the white blood cells of the sheep in the infected group compared to the control.

Figure 04: In the above graph, there was a significant decrease ($P < 0.05$) for hemoglobin of infected goats compared to the control.

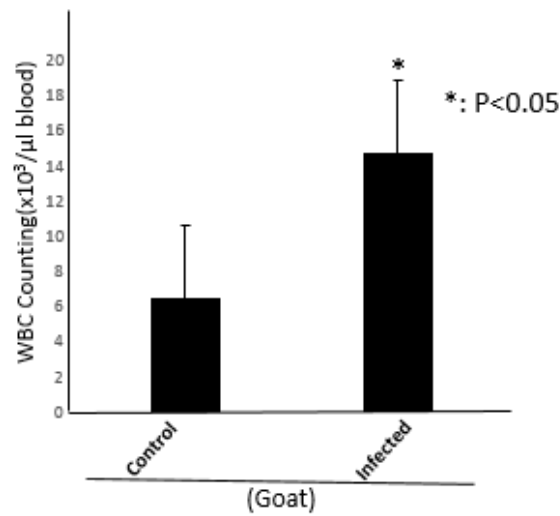


Figure 05: In was a significant the size of the cells in infected group control.

the above graph, there decrease (P<0.05) in the goats of the compared to the

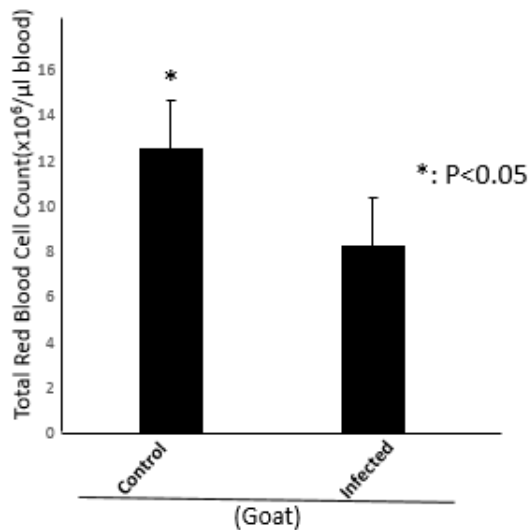


Figure 06: In the was a significant increase blood cells in the goats of compared to the control.

above graph, there (P<0.05) for white the infected group

DISCUSSION

A study conducted by (KILINÇ, Göz et al. 2015) showed varying degrees of anemia in infected sheep with hematocrit ranging from 13.2 to 30.3, as well as RBC and hemoglobin levels in infected sheep. Infertility



came along with poverty. In this study, a total of 24 sheep and goats were studied, a significant decrease in RBC and HB of infected sheep was observed ($P < 0.05$), this result is similar to the result of Ozlem.

The study conducted by (Sulaiman, Arslan et al. 2010) included 175 local goats, 27 goats on *Babesia ovis*, *B. Motasi*, *B. Foliata* and *B. Taylori*, these were infected and 25 year old normal goats selected as control. The percentage infected by *Babesia* is 15.42% and the percentage of Parasitemia varies from 3.5-10.4% with an average of 6.95%. , showed symptoms of nasal discharge, coughing, diarrhea and hemoglobin urea.

In addition, a statistically significant deficiency has seen in RBC, HB and Platelet count. A significant increase in red cell sedimentation rate and a significant increase in total white cell count, lymphocyte and neutrophil count observed (Sulaiman, Arslan et al. 2010). The present study conducted on two groups of sheep/goats, control and infected groups. A significant decrease ($P < 0.05$) was observed in RBC/HB and an increase in the number of WBC was observed, so the study results are similar to the earlier study of (Sulaiman, Arslan et al. 2010).

A study conducted by (Muthuramalingam, Pothiappan et al. 2014) to determine the incidence of *Babesia* in Tellicherry goats in a private goat farm in Thalassery, China with a total number of 168 goats for the presence of *Babesia*. The study rev(Baby, David et al. 2001)ealed that 58 (34.5%) goats infected with *B. ovis*. The incidence of *Babesia* infection was non-significant between males and females and in different age groups of goats.

Infected goats show various annual symptoms such as in appetite, depression, increased breathing rate, weakness, coughing, nasal discharge, eye discharge, diarrhea, and increased body temperature between 39.5-41,2C and caused abortion. In blood parameters, RBC count, hemoglobin concentration, PCV volume, platelet count markedly decreased and lymphocytes and neutrophil count were increased. In this study, 12 goats were considered, nine were infected and three were control, and RBC and HB were significantly decreased in infected goats ($P < 0.05$). Therefore, the results of the current study are similar to Muthuramalingan's study.

A study in 2012 by (Baby, David et al. 2001) showed varying amounts of parasites in the blood of infected sheep and goats. In addition, Razmi et al, 2003, Sevinc et al, 2007 and Aktas et al, 2007, showed the same results. A significant decrease in RBC and HB was observed in infected sheep and goats compared to healthy animals ($P < 0.05$). The present study, conducted in sheep and goats, supports the study of Bijan and other researchers.

A study conducted by (Ijaz, Rehman et al. 2013) showed a decrease in HB, PCV, RBC, thrombocyte and WBC count in infected sheep compared to healthy sheep ($P < 0.05$). In addition, there was a significant decrease in goat HB, PCV, RBC and thrombocyte count ($P < 0.05$). However, there was no significant decrease in WBC count ($P > 0.05$). This study is similar to (Rahbari, Nabian et al. 2008) who reported that blood volume was significantly different in most cases in animals infected by *B. ovis*. RBC, Hematocrit and Hemoglobin measurements clearly suggested that anemia is a consistent feature of infection.

Similar to the results of (Yeruham, Handani et al. 1992, Baby, David et al. 2001), they reported that a significant decrease in HB concentration and RBC count resulted in acute anemia caused by RBC destruction caused by *Babesia*. The present study showed that sheep and goats exposed a significant decrease in RBC and HB

compared to the healthy and an increase in the number of WBC, so this study is similar to the previous study conducted by M.

B. ovis plays an important role in causing anemia and renal dysfunction in infected animals. In this section, several extensive studies have conducted on hematological and biochemical findings of smallpox Babesia disease caused by *B. ovis*. The aim of this study was to evaluate the effects of Babesia disease on some hematological and biochemical parameters in infected small ruminants. A total of 280 sheep and 122 goats from 40 flocks randomly observed for the presence of *B. ovis* in blood. Out of these 402 samples, 67 animals (16.7%) were positive for *B. ovis*, which were 52 (18.5%) sheep and 15 (12.2%) goats respectively. Infected animals were divided into four subgroups according to the presence of parasites in the blood (<1%, 1%, 2% and 3%).

As a control group, 67 healthy animals selected in the same farm. A significant decrease was observed in the concentration of HB, PCV, RBCs, MCV and MCHC with increasing parasitemia ($P<0.05$). Also, a significant ($P<0.05$) increase in total white cell count, lymphocyte count, monocyte, neutrophil and eosinophil was shown (Baby, David et al. 2001, Azadeh, Reza et al. 2012). The present study also conducted in infected sheep and goats. There was a significant decrease in RBC and HB and an increase in WBC, so this study is similar to the previous study and confirm all above results accordingly.

CONCLUSION

Babesia parasite in sheep and goats is characterized by fever, loss of appetite, increased respiratory rate, muscle tremors, anemia, lethargy, weight loss, and the presence of hemoglobin urea in the last stage. Babesia species causes anemia due to the breakdown of spheroids. It found in large quantities in warm and semi-warm areas and transmitted by insects. This parasitic disease occurs worldwide, especially in warm and semi-warm regions. It is more common in climates. Babesia is an economically important disease that causes significant losses in small ruminant productions.

This research carried out in sheep and goats in Kunduz province. A total of 24 sheep and goats, both control and infected, were considered, and the results showed that Babesia species had a significant effect on the blood parameters of sheep and goats. When compared with the control group, there was a significant ($P<0.05$) decrease in RBC and HB in the diseased sheep and goats, and significant ($P<0.05$) increase in WBC. The study suggest that Babesia species can adversely affect the livestock productions and productivity.

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REFERENCES

1. Alani, A. and I. Herbert (1988). "The pathogenesis of Babesia motasi (Wales) infection in sheep." *Veterinary Parasitology* 27(3-4): 209-220.
2. Aytuğ, C. N., E. Alaçam, Ü. Özkoç, B. Yalçın, H. Gökçen and H. Türker (1990). "Koyun-keçi hastalıkları ve yetiştiriciliği." *Tüm Vet Hayv Hiz Yay*(2).



3. Azadeh, S., F. S. Reza, A. Sara, V. Mohsen, M.-D. Bijan and Z. R. Zali (2012). "Four years incidence rate of colorectal cancer in Iran: a survey of national cancer registry data-implications for screening." Asian Pacific Journal of Cancer Prevention 13(6): 2695-2698.
4. Baby, P., P. David, P. Ravindran and R. Ravindran (2001). "A subacute case of concurrent babesiosis and anaplasmosis in a she-goat." Veterinary Journal (India).
5. Branscomb, A. W. (1995). "Anonymity, autonomy, and accountability: Challenges to the first amendment in cyberspaces." The Yale Law Journal 104(7): 1639-1679.
6. Delpy, L.-P. (1936). Agents pathogènes observés en Iran dans le sang des animaux domestiques, Masson.
7. Esmailnejad, B., M. Tavassoli and S. Asri-Rezaei (2012). Investigation of hematological and biochemical parameters in small ruminants naturally infected with Babesia ovis. Veterinary research forum, Faculty of Veterinary Medicine, Urmia University, Urmia, Iran.
8. Halacheva, M. and N. Kyartov (1977). "Histopathological changes in splenectomized sheep infected with Babesia ovis." Vet Sci 14: 50-56.
9. Hashemi-Fesharki, R. (1997). "Tick-borne diseases of sheep and goats and their related vectors in Iran." Parassitologia 39(2): 115-117.
10. Ijaz, M., A. Rehman, M. Ali, M. Umair, S. Khalid, K. Mehmood and A. Hanif (2013). "Clinico-epidemiology and therapeutical trials on babesiosis in sheep and goats in Lahore, Pakistan." The Journal of Animal and Plant Sciences 23(2): 666-669.
11. Inci, A., A. Ica, A. Yildirim and Ö. Düzlü (2010). "Identification of Babesia and Theileria species in small ruminants in Central Anatolia (Turkey) via reverse line blotting." Turkish Journal of Veterinary & Animal Sciences 34(2): 205-210.
12. KILINÇ, Ö. O., Y. Göz, N. Yüksek, Y. BAŞBUĞAN, A. B. Yılmaz and A. D. ATAŞ (2015). "Determination of serum cardiac biomarkers and plasma D-dimer levels in anemic sheep with babesiosis." Turkish Journal of Veterinary & Animal Sciences 39(5): 606-610.
13. Kozat, S., N. Yuksek, N. Altug, Z. Agaoglu and F. Ercin (2003). "Studies on the effect of iron (Fe) preparations in addition to Babesiosis treatment on the haematological and some mineral levels in sheep naturally infected with Babesia ovis." Fak Derg 14(2): 18-21.
14. Lobetti, R., E. Dvir and J. Pearson (2002). "Cardiac troponins in canine babesiosis." Journal of Veterinary Internal Medicine 16(1): 63-68.
15. Mehlhorn, H. (1989). Babesiosis of Domestic Animals and Man, M. Ristic (Ed.), CRC Press Inc., Boca Raton, Florida (1988), £ 74, 50, Urban & Fischer.
16. Muthuramalingam, T., P. Pothiappan, P. T. Gnanaraj, S. M. Sundaram, T. Pugazhenthii and S. Parthiban (2014). "Report on an outbreak of babesiosis in tellicherry goats." Indian J Vet Anim Sci Res 43: 58-60.
17. Popa, E. (1998). "Ixodid ticks vectors of Babesiosis in animals in Romania." Revista-Romana-de-Medicina-Veterinara 8(2): 61-67.
18. Rahbari, S., S. Nabian, Z. Khaki, N. Alidadi and H. J. ASHRAFI (2008). "Clinical, haematologic and pathologic aspects of experimental ovine babesiosis in Iran."
19. Rashid, A., J. Khan, M. Khan, K. Rasheed, A. Maqbool and J. Iqbal (2010). "Prevalence and chemotherapy of babesiosis among Lohi sheep in the Livestock Experiment Station, Qadirabad, Pakistan, and environs." Journal of Venomous Animals and Toxins including Tropical Diseases 16: 587-591.



20. Razmi, G., A. Naghibi, M. Aslani, K. Dastjerdi and H. Hossieni (2003). "An epidemiological study on Babesia infection in small ruminants in Mashhad suburb, Khorasan province, Iran." Small Ruminant Research 50(1-2): 39-44.
21. Sayin, F., S. Dyncer, Z. Karaer, A. Cakmak, B. Yukary, H. Eren, S. Deger and S. Nalbantoglu (1997). "Status of the tick-borne diseases in sheep and goats in Turkey." Parassitologia 39(2): 153-156.
22. Schetters, T. P., J. Kleuskens, J. Van De Crommert, P. De Leeuw, A.-L. Finizio and A. Gorenflot (2009). "Systemic inflammatory responses in dogs experimentally infected with Babesia canis; a haematological study." Veterinary parasitology 162(1-2): 7-15.
23. Sevinc, F., K. Turgut, M. Sevinc, O. D. Ekici, A. Coskun, Y. Koc, M. Erol and A. Ica (2007). "Therapeutic and prophylactic efficacy of imidocarb dipropionate on experimental Babesia ovis infection of lambs." Veterinary parasitology 149(1-2): 65-71.
24. Shayan, P., E. Hooshmand, S. Nabian and S. Rahbari (2008). "Biometrical and genetical characterization of large Babesia ovis in Iran." Parasitology research 103: 217-221.
25. Soulsby, E. (1986). "Helminths, Arthropods, and Protozoa of Domesticated Animal Seventh Editon." London: Bailliere Tindall.
26. Soulsby, E. J. L. (1968). "Helminths, arthropods and protozoa of domesticated animals." Helminths, arthropods and protozoa of domesticated animals.
27. Sulaiman, E., S. Arslan, Q. Al-Obaidi and E. Daham (2010). "Clinical, haematological and biochemical studies of babesiosis in native goats in Mosul." Iraqi Journal of Veterinary Sciences 24(1): 31-35.
28. Suteu, E., N. Vatic and A. Cosma (1975). "New data and observation on babesiosis in sheep in Transylvania." Bull Inst Agr 29: 107-109.
29. Uilenberg, G. (2006). "Babesia—a historical perspective." Vet Parasitol 138: 3-10.
30. Urquhart, G. M. (1996). "Veterinary parasitology." (No Title).
31. Wormser, G. P., R. J. Dattwyler, E. D. Shapiro, J. J. Halperin, A. C. Steere, M. S. Klempner, P. J. Krause, J. S. Bakken, F. Strle and G. Stanek (2006). "The clinical assessment, treatment, and prevention of Lyme disease, human granulocytic anaplasmosis, and babesiosis: clinical practice guidelines by the Infectious Diseases Society of America." Clinical Infectious Diseases 43(9): 1089-1134.
32. Yeruham, I., Y. Avidar, I. Aroch and A. Hadani (2003). "Intra-uterine Infection with Babesia bovis in a 2-day-old Calf." Journal of Veterinary Medicine, Series B 50(2): 60-62.
33. Yeruham, I., A. Hadani and F. Galker (1998). "Some epizootiological and clinical aspects of ovine babesiosis caused by Babesia ovis—A review." Veterinary Parasitology 74(2-4): 153-163.
34. Yeruham, I., A. Handani, F. Galker, S. Rosen and J. Schlien (1992). "A field study of haemoparasites in two flocks of sheep in Israel." Israel Journal of Veterinary Medicine 47(3): 107-111.
35. Yur, F., Y. Değer and S. Dede (2010). "Na⁺/K⁺ ATPase activity in sheep with natural babesiosis." Acta Veterinaria Brno 79(2): 233-236.



METHODOLOGICAL PRINCIPLES OF IMPROVING THE TEACHING OF LEGAL SCIENCES BASED ON THE CLUSTER SYSTEM

F. Ibrokhimov

Doctoral student of Chirchik State Pedagogical University

ABSTRACT

In the article, the necessity of teaching Law sciences today, the issues of organizing Law lessons based on modern approaches, cluster system and innovative methods are analyzed and illustrated with examples. The importance of cooperation in the field of legal education in raising legal awareness and legal culture has been revealed.

Keywords: educational cluster, innovative and creative methods, modern pedagogical approaches, family law, constitutional law, legal custom, legal skills, high legal consciousness, legal culture.

INTRODUCTION

Raising legal awareness and legal culture in society is one of the most important conditions for ensuring the rule of law and strengthening legitimacy. In this regard, the legal foundations of our reforms in this area are being improved. In particular, on the basis of the Decree No. PF-5618 of the President of the Republic of Uzbekistan dated January 9, 2019 "On the fundamental improvement of the system of raising legal awareness and legal culture in society", the "Concept of raising legal culture in society" was approved.

RESEARCH METHODOLOGY

In the preparation of the article, objectivity, historicity and comparative analysis methods were used, and scientific researches and electronic resources in the fields of pedagogy and methodology were used as a basis.

ANALYSIS OF RESOURCES ON THE TOPIC

This decree drew attention to the issues of eliminating a number of problems and shortcomings in the field of legal education. In particular:

- in raising legal culture, first of all, work on legal education and upbringing is not carried out systematically and organically. For many years, this issue has been considered as the work of law enforcement bodies and some state bodies, and the participation of the family,



neighborhood and other institutions of civil society has not been sufficiently ensured;

- formation of legal immunity against factors that have a negative impact on the legal education of young people, respect for laws and rules of etiquette, loyalty to national values, and instilling a sense of intolerance towards violations in every person was not comprehensively approached;
- that the tasks of increasing the legal knowledge of the population are defined in a general way and there is no clear and effective mechanism for their implementation[1].

ANALYSIS AND RESULTS

As a suitable solution for solving these problems, it is necessary to organize the training of legal subjects in the educational institutions of our country based on the cluster system, as well as relying on modern approaches, with innovative and creative methods.

Educational cluster means strategic cooperation of production, service and other institutions related to its activity around one scientific and educational center for joint development. How to apply the cluster system to legal education? This implies the use of methods that serve to achieve the harmony of theory and practice in the processes of legal education. For example, legal studies should be organized in the building of the court, law enforcement agencies based on the content of the subject, the participation of students and young people as direct observers in the possible proceedings, getting acquainted with the opinions and personal attitudes of employees with practical experience, ensuring that students organize internships in such institutions, besides, it is manifested in the conduct of cooperation between law enforcement bodies and universities. Only if, in the subject of constitutional law, the parliament's powers are directly familiarized with the parliament building and its activities, and a roundtable discussion is organized with the parliament's employees (deputies), or in the family law, if it is organized in real terms with the activities of civil status registration bodies, the effectiveness of the lesson, strengthens the sense of moral entitlement of students-young people to the formation of specific legal skills, independent, analytical, reasonable thinking.

The educational cluster in civil law can be used as follows:

- students learn how to apply to state and non-state organizations independently;
- get acquainted directly with the Charters of legal entities of various forms, establish a legal entity independently, develop the Charter;



- conclusion of civil legal contracts, monitoring of notarial confirmation processes;
- participation in civil court proceedings;
- strengthen their knowledge of the subject by asking questions to practitioners (judge, prosecutor, lawyer, etc.);
- getting to know working documents related to rights and legal capacity in archive departments, etc.

Achieving "cooperation between teacher-student-practitioner" in all classes of legal subjects serves to increase legal literacy to a certain extent.

The issue of approaching the issue of legal culture on the basis of the cluster system is also expressed in paragraph 1 of the program approved by the decision of the President of the Republic of Uzbekistan No. PQ-2124 dated February 6, 2014.[2]

The issues of wide introduction of modern approaches to educational processes have been researched by many of our pedagogic scientists, and the issue (possibility) of directing them to the scope of legal sciences is before us. In modern pedagogy, the following main types of approach to education are distinguished:

Individual oriented approach. In the context of person-oriented education, as a general principle, a certain final goal - an ideal model of a person - is taken. All other components of the educational system, the conditions for its operation and self-development are developed and implemented taking into account the given final result. Using this approach in legal sciences is very effective. For example, the selection of problem situations related to the topic in matters related to the life of listeners and students' daily activities serves to increase their interest and interest;

Personal-activity approach. This approach implements the idea that the development of a person is carried out in activities. At the same time, activity is considered through a system of components: needs, motives, actions, conditions, operations, results.

It serves to strengthen the knowledge of students by participating in conference events, scientific olympiads, independent scientific projects and various scientific exams on topics studied in the field of law. This encourages the student to work more on his knowledge and skills.

Cultural approach. In the implementation of this approach, the basis of the educational process is to refer to national culture and traditions. It is impossible to imagine the upbringing of the culture of the young generation without taking into account the psychological structure, traditions, rituals, and holidays of each nation. The problems of educating students cannot be solved without relying on the moral and ethical values



of the people. A modern teacher cannot fulfill his task without relying on folk pedagogy, without instilling in the young generation a sense of respect for the traditions, language and culture of his people.

For example, a comparative analysis of the norm "Everyone has the right to education..." in Article 50 of the Constitution of the Republic of Uzbekistan, and its inclusion in our national legal system, "Seek knowledge from the cradle to the child. It is appropriate to rely on hadiths such as "Learn science even if it is from China", "Education is obligatory for every Muslim man and woman" (Some countries have certain conditions for continuous education). For example, in South Korea, a citizen who has been active in another field of social life for more than 5 years is not admitted to the educational system. Basically, according to the above norm, he can apply to a higher educational institution. an educational institution in our country is possible at any age.) Through this approach, students not only learn about constitutional law, but also strengthen their knowledge of the state and legal theory (the science of legal sources), and also serve to improve their legal knowledge. culture.

Value approach education is focused on values, among which young people often have a desire for truth, social justice, honesty and dignity, benevolence and humanity for their own health and those around them, willingness to help, opinion and there is a desire to respect differences and so on. In the preparation of legal subjects, the detailed disclosure of these issues related to each subject serves to increase the activity of students and the mood of connection to the subject. For example, in many places, the rule of "committing other actions not prohibited by law" established by legal norms supports free entrepreneurship. But in practice, there are cases where this standard is misunderstood or not used at all.

Humanistic approach. In his opinion, a person, an educated person, is a supreme value that has the right to live, to be happy, to live worthy of living. Rights and freedoms of the child, his free and creative development and self-development are the priorities of humanitarian pedagogy.

Integrative approach. Based on this approach, the legal information explained in the organization of legal studies is based on the information of other subjects familiar to the children and involves cooperation with teachers of other subjects. For example, in the issue of legal custom, with the science of history (jointly assigning assignments to collect independent information about sources such as "Laws of Hammurabi", " Russian truth", " The truth "Sali". "); in working with the sources of normative and legal documents in young people with computer science (for example, giving one



assignment from two subjects to form the skills of using sites such as lex.uz, norma.uz), etc.

Uniform and unconditional execution of laws depends on the attitude of each person to his duty and feeling of responsibility.[3] After all, "Just and mature, perfect society can be built only by educating perfect people.[4]

CONCLUSION

Legal consciousness and legal culture are one of the integral and basic forms of social consciousness and serve as a guarantee of the well-being of the society and the stable development of the country. In this regard, it is necessary to approach the system of raising legal culture on the basis of an educational cluster, to achieve the appropriate participation of representatives of all sectors in this process. There is no doubt that the participation of educational institutions, educational administration and other state and non-state organizations, various public associations will serve the effectiveness of the activity.

The widespread use of modern pedagogical methods in the processes of legal education attracts the attention of students and increases the effectiveness of legal education. Wide implementation of these issues in pedagogical practice requires a correct attitude from every member of the society.

REFERENCES

1. O‘zbekiston Respublikasi Prezidentining 2019-yil 9-yanvardagi “Jamiyatda huquqiy ong va huquqiy madaniyatni yuksaltirish tizimini tubdan takomillashtirish to‘g‘risida” PF-5618-son Farmoni (<https://lex.uz/ru/docs/-4149765>)
2. O‘zbekiston Respublikasi Prezidentining “O‘zbekiston Respublikasida Yoshlarga oid davlat siyosatini amalga oshirishga qaratilgan qo‘shimcha chora-tadbirlar to‘g‘risida”gi qarori. N PQ-2124.
3. Huquqiy yetuklik - barkamollikka eltadi. “O‘zbekiston Respublikasi Adliya vazirligi. -T.: Adolat 2011, 7-b
4. Sh.Mirziyoyev. Yangi O‘zbekiston strategiyasi. Toshkent – 2021. 421-bet.
5. G.Gulyamova. Huquqiy fanlarni o‘qitishda pedagogik texnologiyalar va pedagogik mahorat (O‘quv qo‘llanma) – T.: TDYU 2021.



YANGI O‘ZBEKISTONDA TA’LIM-TARBIYA MUTANOSIBLIGINI TA’MINLASH ISTIQBOLLARI

Abrorjon Raximjon o'g'li Pozilov
Shaturayeva Sevara Tashmurotovna

Toshkent davlat agrar universiteti Huquq va turizm fakulteti Ijtimoiy gumanitar
fanlar kafedrası o‘qituvchilari

ANNOTATSIYA

Maqolada bugungi jamiyatimizda barqaror taraqqiyotni ta’minlashdagi asosiy omil sifatida ta’lim-tarbiya uyg‘unligini ta’minlash masalalari yoritilgan. Tarixiy manbalar asosida mutaffakkirlarning ilm, ilm egallash haqidagi qarashlari tahlil etilgan. Yangi O‘zbekistonda ta’lim-tarbiya tizimida e’tibor qaratish lozim bo‘lgan jixatlar hayotiy misollar bilan bayon qilingan.

Kalit so‘zlar: ta’lim, tarbiya uyg‘unligi, milliy rivojlanish, ma’rifatli jamiyat, intellektual mulkni, Uchinchi Renessans, aqlli iqtisodiyot, “Bir million dasturchi”.

ABSTRACT

The article highlights the issues of ensuring the harmony of education as the main factor in ensuring sustainable development in our society today. On the basis of historical sources, the views of thinkers on knowledge and acquiring knowledge are analyzed. Aspects that should be paid attention to in the education system in new Uzbekistan are described with real examples.

Keywords: education, harmony of education, national development, enlightened society, intellectual property, Third Renaissance, smart economy, "One million developers".

KIRISH

Ta’lim bilan tarbiyani barobar olib borish, uyg‘unlashtirish har doim va hamma davrlarda dolzarb masala bo‘lib kelgan. Ya’ni yuqori ilm egasi bo‘la turib, tarbiya bo‘lmasa, undan jamiyat naf ko‘rmaydi, aksincha tarbiyali shaxsda ilm bo‘lmasa, u yaratuvchanlik ishlarini amalga oshirishga qodir bo‘lmaydi. Ta’lim-tarbiya – bu insonlarda ijobiy hislatlarni tarkib topishiga xizmat qiluvchi eng taraqqiyparvar omil. Ma’lumki, makon va zamonlar osha insonlar o‘rtasida ilmsizlik, bilimsizlik rishtalari o‘rniga johiliyatni keltirib chiqaruvchi salbiy holat sifatida qoralab kelingan[1].

Milliy o‘zlikni anglashda ajdodlar qoldirgan meros qadrlil



va ta'sirchan, izchil milliy dasturiy namuna bo'lib kelgan. Ammo hayotning shavqatsiz siyosiy ta'siri natijasida, mafkuraviy tazyiq oqibatida ta'lim-tarbiya uzviyligida ma'lum muddat ortga chekinish holatlari ham kuzatilgan. Milliy rivojlanish tizimida ta'lim-tarbiyaning hozirgi va o'tmishdagi holatini o'rganishda ular o'rtasida o'zaro sababiyat, bog'liqlik bor. Milliy mustaqillik, milliy o'zlikni anglash tushunchasini ifodalashda, xususan, tarbiya uzviyligini ta'minlashda – kuchli ilm, ma'rifiy makon va zamonning o'rni ilmiy jihatdan asoslashda e'tibor qaratiladigan omillar ko'rsatib o'tilgan. “Yangi O'zbekiston – ma'rifatli jamiyat” konsepsiyasini amalga oshirish yuzasidan ta'lim-tarbiyaning mutanosib tashkil etish vazifalari va bajarilishi kerak bo'lgan masalalarga e'tibor qaratilgan.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Ta'lim-tarbiya jarayonida insoniylikning turli qirralari o'rgatib kelinganki, bunda ta'lim bilan tarbiya masalalari o'ziga xos juftlik tarzida shakllansa kuchli va foydali bo'ladi. Ta'lim bilan tarbiyani barobar olib borish, uyg'unlashtirish har doim va hamma davrlarda dolzarb masala bo'lib kelgan. Bu jarayonda ijtimoiy sohaning asosi hisoblangan ta'lim tizimidagi o'zgarishlar ilm-fan, ta'lim-tarbiyaga aloqador muammolarni aniqlash, ommaga yetkazishni bugungi davr talab etmoqda. Milliy an'ana va qadriyatlarga hurmat mezoni asosida, ta'lim-tarbiya mutanosibligi o'rganishda – ilm, ma'rifiy makon va zamonning o'rni va ahamiyatini ko'rib o'tish o'rinlidir. Ta'lim-tarbiya mutanosibligini makon va zamondan ayro holda tavsiflash mumkin bo'lmaganidek, bu jarayonda o'ziga yarasha yutuqlar bilan birga muammolar, ularning yechimi bo'yicha taklif va tavsiyalar berib o'tish ham maqsadga muvofiq bo'ladi.

Ilm-fan va innovatsiyalarni rivojlantirish, ularning yutuqlarini yuqori qo'shimcha qiymatga ega mahsulotga aylantirish jarayonida intellektual mulkning ishonchli himoya qilinishi alohida ahamiyat kasb etadi. Ma'lumotlarga ko'ra, intellektual mulk ulushi Yevropada yalpi ichki mahsulotning 45, Xitoyda 12, Rossiyada 7 foizini tashkil etadi. 2020-yilning 12-oktabr kuni O'zbekiston Respublikasi Prezidenti Shavkat Mirziyoyev raisligida bo'lib o'tgan yig'ilish ham «Intellektual mulkni himoya qilish – Uchinchi uyg'onish davri uchun ishonchli poydevor bo'lib xizmat qiladi» mavzusiga bag'ishlangan edi.

Ta'lim-tarbiya uzviyligi va ko'rsatkichlarini yuqoriga olib chiqish bo'yicha O'zbekistonni 2030 yilga qadar global innovatsion indeks reytingida dunyoning 50 ta yetakchi davlatlari qatoriga kiritish bo'yicha ulkan maqsadga erishishda inson kapitalini rivojlantirishga qaratilgan strategik reja belgilab olingan.



O‘zbekiston Respublikasi Prezidenti Shavkat Mirziyoyevning “Yangi O‘zbekiston strategiyasi” kitobida “Yangi O‘zbekiston maktab ostonasidan boshlanadi” degan jummalarni o‘qish mumkin, bundan ma’lum bo‘ladi-ki, maktab faqat ta’lim beradigan maskan emas, balki barcha uchun yuksak ma’naviyat beshigi, o‘quvchi yoshlarni bolalikdan boshlab kasbga o‘rgatuvchi dargohga aylansagina o‘z maqsadiga erishishi mumkin.[2]

Insoniyat tarixida bilish faoliyati ilm fandan, voqelikni ma’naviy- amaliy o‘zlashtirishning o‘ziga xos usuli sifatida paydo bo‘lishidan ancha ilgari shakllangan. Ilmiy bilishning tabiatini talqin qilish qancha xilma- xil bo‘lsa, ilmni bilish ham shuncha xil bo‘lishi mumkin. Arab faylasufi Makkiiy o‘z tasnifida keltirgan ilmlarning soni 125 tadan ko‘p bo‘lib, hajm jihatidan bugungi kunga kelib turli-tuman va tasnifiga ko‘ra bir necha yuzlab turlarga bo‘linib ketadi.

Ilmlar va bilim umuman borliq mahsuli sifatida subyektiv xohishdan vujudga kelmay, balki sekin-asta va muttasil ravishda insonlarning ularga bo‘lgan ehtiyoji paydo bo‘lishi natijasida vujudga keladi. Ilm – bir narsaning haqiqatini bilish, idrok qilishdir. Ilm – o‘qish-o‘rganish va tadqiqot, tahlil etish bilan erishiladigan bilim; ko‘nikma, ma’lumot degani. Bilim arab tilidagi ilm kalimasining tarjimasidir. Ilm va bilim tushunchasini birinchi ma’nodan farq qilish uchun ikkinchisini “ilm-fan” deb atalsa ish oydinlashadi. Birinchi ma’noda ilm (bilim) shaxs ma’naviyatining tarkibiy jihati hisoblanadi, ikkinchi ma’noda madaniyatning tarkibiy qismi sifatida ma’naviyatning moddiy voqelikdagi izlari shaklida o‘zligini namoyon qiladi[3].

Qadim zamonlarda barcha tabiiy va ijtimoiy ilmlar asoslarini o‘z ichiga olgan yagona – falsafa ilmi bo‘lgani holda tabiiyki, hech qanday ilmlar tasnifi haqida gap bo‘lmagan. Antik davrda qadimgi Yunon mutafakkirlari Demokrit, Aflotun va ayniqsa Arastu asarlarining vujudga kelishi, progressiv ahamiyatga ega bo‘ldi. O‘rta Osiyo tarixi bo‘yicha eng qadimgi yozma manbasi bo‘lgan “Avesto”da dastlabki tafakkur durdonalari o‘z aksini topgan. Islom dinining yoyilishi va uning muqaddas kitobi Qur’onda umumbashariy tafakkurdan ilmiy tafakkurga o‘tishning e’tiqodiy asoslari mukammal tus oldi. O‘rta Osiyodan dovrug‘i dunyoga ketgan ulug‘ olimlar yetishib chiqishi, ma’lum ma’noda ta’lim-tarbiya to‘g‘risidagi ilmiy xazinalarni boyitishga xizmat qildi. Imom Buxoriy, Imom Termiziy, Abu Hafs Nasafiy, Abu Ali ibn Sino, Ahmad Farg‘oniy, Abu Rayhon Beruniy, Burhoniddin Marg‘oniy, Abu Mansur Moturidiy kabi olim va mutafakkirlarning yaratgan boy ilmiy merosi jahon madaniyati va tammaduniga bebaho xazina bo‘lib qo‘shildi.

MUHOKAMA VA NATIJALAR

Bugungi kunda ilm, ma’rifiy makon, zamon va tarbiya



haqida dolzarb muammolarni «jahonshumul» miqyosda javob berishga behuda urinmasdan, yaqin o‘tmishdagi ilm olish, ta’lim-tarbiya masalalari tarixiy tahlilidagi yutuq va muammolarni inobatga olib reja tuzib va muammolar yechimini topishga harakat qilinsa o‘rinli bo‘lardi.

Ilmlarning borgan sari rivojlanishi ularning tasnifini taqozo qildi. Bu esa ilmiy bilish masalalarini har tomonlama o‘rganishga katta zamin yaratdi, ya’ni yaratilgan ta’limotning negizida ilmlar oddiydan murakkabga, umumiydan yakkaga o‘tish tartibida joylashgan edi. Qadimgi dunyo bashariyatning borliq haqidagi tasavvurlari asosan asotir tafakkur doirasida kechgan. Bu hodisa ushbu davrga oid ilmiy adabiyotlarda ko‘p ta’kidlangan. Aslida bugungi kun odami uchun asotir yo‘q, faqat afsona bor. Asotirning afsonadan farqi shundaki, ibtidoiy odam o‘z ongida shakllangan asotirni haqiqat deb qabul qilgan, uning qahramonlarini voqeiy zotlar deb bilgan. Agar ularni g‘ayb olamiga taalluqli deb bilsa, ularga sig‘inib, ibodatxonalar qurgan, ular sharafiga qurbonliklar keltirgan.

Islom dinining muqaddas kitobi Qur’onda inson ongi, ta’lim-tarbiyasi va hayoti haqidagi cho‘pchaklardan asotir tafakkurdan ilmiy tafakkurga o‘tishning e’tiqodiy asoslari mukammal tus oldi. Xususan, Allohning Qur’onning Oli Imron surasi, 18-oyatida kelgan quyidagi so‘zi ilmning fazilatli ekaniga dalildir: “Alloh, farishtalar va ilm ahillari – adolat bilan hukm qiluvchi yolg‘iz Allohdan o‘zga hech qanday tangri yo‘q, faqat Uning o‘zi borligiga guvohlik berdilar”[4].

Ma’lum bo‘lishicha, Qur’onda “imom” so‘zi, uning hosilalari 811 marta keladi. Shuningdek, “ilm” so‘zi 782 marta, “ma’rifat” so‘zi 29 marta takrorlangan. “Ilm”, “ma’rifat” so‘zlarining sonini qo‘shsak (782 + 29), 811 bo‘ladi. Ya’ni, ilm, ma’rifat qancha bo‘lsa, imon shunchadir. Qadr surasida 30 so‘z bor. Qadr kechasini o‘z ichiga olgan ramazon oyida ham 30 kun bor. Qadr kechasi ramazon oyining 27-tuni ekanini ko‘pchilik e’tirof etadi. Shunisi hayratlanarliki, mazkur surada qadr kechasini ko‘rsatuvchi “u” 27-so‘zdir. Ma’lumki, Muhammad (s.a.v.) Makkada o‘sgan, o‘qish-yozishni o‘rganmagan omi odam edi. U yerda ilm-ma’rifat, madrasa yoki ilmiy muassasa degan narsa aslo bo‘lmagan.

Bu esa Muhammad (s.a.v.) ilmiy masalalardan mutlaqo bexabar edi, degan xulosani keltirib chiqarmasligi kerak. Lekin shunga qaramay, Qur’onda shunday ilmiy masalalar zikr qilingan-ki, ularning sirini o‘sha vaqtda ham, undan keyingi vaqtlarda ham hech kim bilmagan. Faqat ilm-fan nihoyatda taraqqiy etgan davrga kelib, ular ayon bo‘ldi.

Ilm olish fazilati haqida Qur’onning Tavba surasi 122-oyatida shunday deyiladi: «Mo‘minlar yoppasiga (jangga) chiqishlari shart emas. Ularning har bir guruhidan bir toifa



chiqmaydimi?! (Qolganlari Payg‘ambardan) dinni o‘rganib, qavmlari ularga (jangdan) qaytib kelgach, (gunohdan) saqlanishlari uchun ularni ogohlantirmaydilar?!».

Bu oyatdan ko‘zlangan maqsad ta‘lim berish va to‘g‘ri yo‘l ko‘rsatishdir. Alloh Oli Imron surasining 187-oyatida shunday deydi:

“Eslang (Ey Muhammad!) Alloh ahli kitoblardan, uni (Tavrot va Injilni) odamlarga, albatta, aniq bayon qilasiz, uni (hech kimdan) sir tutmaysiz deb ahd olgan edi”. Bu oyat ta‘lim berishning vojibligiga dalolatdir.

Inson qobiliyatini bilim va tajriba bilan oshiradi. Bilim ozuqadir. Aql va qalb u bilan oziqlanadi. Insonning qadri ilm bilan yuksaladi. Tarbiya – bu juda katta ilm. Tarbiya ilmini egallagan inson ahloqan go‘zal bo‘ladi. Alisher Navoiyning:

Elga sharaf bo‘lmadi johu nasab, Lek sharaf keldi hayovu adab.

ya‘ni, insonga nasl-nasabi va boyligi emas, hayo va odobi shon-sharaf keltiradi, – degan hikmatli so‘zi juda ham ibratlidir.

Islom dinida bayon qilingan fikrlar, hadis, pand-nasihatlarni borasida yetarlicha bilimga ega bo‘lishlariga imkoniyat yaratishga qaratilgan. Ta‘lim-tarbiya – bu insonlarda ijobiy xislatlarni tarkib topishiga xizmat qiluvchi eng taraqqiyparvar omil. Shunga ko‘ra mehnatsevarlik va muttasil ishlash kabi fazilatlar faqat tarbiya natijasida orttiriladigan fazilatlaridir. Xitoy donishmandi Syun-Szi “Chaqaloqlar hamma yerda bir xil yig‘lashadi. Katta bo‘lganlarida esa turli qiliqlar qilishadi. Bu – tarbiyaning oqibati”, – deb yozgan edi. Olmon faylasufi Immanuel Kant o‘z asarida “Inson faqat tarbiya orqali inson bo‘ladi, uning qandayligi tarbiyaning natijasidir”, – degan fikrni bildiradi.

Ilmning ulug‘ligi shu darajadagi, kim ilm talab qilish yo‘lida yursa u jannat yo‘lida yurgan deb e‘tibor qilinadi. Muhammad (s.a.v.) bir kuni Hilol ismli kishidan: «Qalaming bormi?» – deb so‘radilar. Yo‘q javobini eshitgach: «Qalamsiz yurma, ey Hilol. Chunki, ezgulik undadir. Qiyomatgacha unga sodiq bo‘lganlar chiqadi. Insonlar qalam bilan yuksaladi. Olim qo‘lidagi qalamning siyohi shahidning qoni bilan tengdir». Yana Muhammad (s.a.v.) so‘zlariga ko‘ra, ilm egalari o‘liklar orasida yurgan tiriklar bilan tengdir. Zubayr Kuduzalp: «Bilimli inson quyoshga o‘xshaydi, kirgan joyini yoritadi», – deydi.[5] Ilm qorong‘uliklarni yorituvchi mash‘aladir. Qorong‘ulikda qolgan har bir kishi unga muhtoj. Yuksak pog‘onalarga ilm narvoni bilan chiqiladi. Taraqqiy etishni va kamol topishni istagan ilmning etagini mahkam ushlasin.

Ali ibn Abu Tolib ilm xususida: «Ilm pastda turganlarni yuqori darajaga ko‘taradi. Bilimsizlik esa tepada turganlarni pastga tushiradi. Ilm mol-davlatdan ustun, chunki boyligni sen



asrayan. Ilm esa seni asraydi», – degan. Sahoba, olim va mutafakkirlarning ham ilm fazilati haqidagi ko‘plab rivoyatlari, xabar va so‘zlari kelgan. Quyida shulardan ayrimlarini keltiriladi.

Muoz ibn Jabalning mana bu so‘zi ilmning fazilatiga eng yaxshi dalillardan biri: “Ilm tanholikda hamroh, hilvatda do‘st, to‘g‘ri yo‘l ko‘rsatuvchi mayoq, xursandchilig-u hafagarchilikda ulfat, do‘stlar oldida vazir, begonalar oldida yaqin do‘st, jannat yo‘lining minorasidir”.

Ma‘lumki, O‘zbekiston Respublikasi Prezidenti Shavkat Mirziyoyev tomonidan ilgari surilgan Yangi O‘zbekistonni barpo etish strategiyasi xalqning asriy orzu-intilishlariga mos, uning milliy manfaatlariga javob bera oladigan obyektiv zarurat ta‘lim-tarbiya rivojining mutanosibligini ta‘minlashga qaratilgan dasturul-amaldir.

Yoshlarning ongu tafakkurini ma‘rifat asosida shakllantirish va tarbiyalash eng muhim vazifaga aylantirish masalasini 2020-yil 23-sentabrda qabul qilingan “Ta‘lim to‘g‘risidagi” Qonunda ham aks etgan. Mamlakatni yangi taraqqiyotga olib chiqishda, barcha kuch-g‘ayratni birlashtirish va fidokorona mehnat qilish orqali Yangi O‘zbekistonni – Uchinchi Renessansni bunyod etish mumkin.

Yangi O‘zbekistonda ta‘lim-tarbiya mutanosibligi ijtimoiy mohiyati masalalarni hal etishda quyidagi omillarni hisobga olish lozim:

fuqarolik mas‘uliyati va zamonaviy dunyoqarashga ega bo‘lgan barkamol avlod tarbiyasiga e‘tibor qaratish;

“Uchinchi Renessans poydevorni yaratish” g‘oyasi tasodifiy emas, balki tub tarixiy qiyofani dunyoga tarannum qiluvchi omil ekanini asoslab berishga xizmat qiladi.

Shu bilan birga, ta‘lim-tarbiya uzviyligi ta‘minlanishida – ilm, ma‘rifiy makon va zamonning o‘rni va ahamiyatini ko‘rib chiqishda uning o‘zagini tashkil qiluvchi tarixiy-ma‘naviy omillarga sanab o‘tish o‘rinli va ular quyidagilardan iborat:

- a) xalqning ulkan madaniy merosi,
- b) intellektual salohiyati,
- v) azaliy allomalar va tarixiy shaxslar bo‘lgan olimu-fuzalolar yashagan yurti bo‘lgani.

Turon zamini Birinchi va Ikkinchi Renessans beshigi bo‘lganini ortiqcha tavsiflashga zarurat yo‘q. Bu ishonchni yanada mustahkamlashda ilm, ma‘rifiy makon va zamon, unda ijtimoiy-iqtisodiy, madaniy-ma‘rifiy va siyosiy sohalardagi o‘zgarishlarni anglab yetishda quyidagi mezonlarga amal qilinishi kerak:



Birinchiidan, iqtisodiyot – jamiyat hayotining tanasi ekanini teran anglashda O‘zbekiston iqtisodiyotini tashkil etgan barcha sohalarida keng qo‘llanilayotgan “Aqlli iqtisodiyot”, “Innovatsion iqtisodiyot”, “Yashil iqtisodiyot” mediamakoni haqida tushunchalarini to‘g‘ri talqini bo‘yicha xalqaro tajribalarga mos keluvchi izlanishlar va ularning samaradorligi bo‘yicha ma‘lumotlardan doimo xabardor qilish.

Ikkinchiidan, ma‘naviy uyg‘oqlikka chorlovchi Burhoniddin Marg‘inoniyning “Hidoya” asari; Mahmud Ustrushoniyning (XIII asr) “Jomi’ ahkom as-sig‘ar” (Bola huquqlari Kodeksi) va hozirgi zamon inson huquqlari sohasida huquqiy savodxonlikni oshirish, inson huquqlari madaniyatini shakllantirish sohasi bo‘yicha faktlar keltiriladi.

Uchinchiidan, ilm, ma‘rifiy makon va zamon mavzusini yoritishda qonun va adolat – ustivorligi bo‘yicha Amir Temurning Oqsaroy peshtoqiga yozdirgan “Adolat – davlatning asosi va hukmdor shoiridir” so‘ziga amal qilgan holda O‘zbekiston Respublikasi Prezidenti Shavkat Mirziyoyevning taklif va tavsiyasiga ko‘ra ta‘lim-tarbiya inson shaxsini tarkib toptirish yuzasidan rejalashtiriladigan ulkan ishning bir qismi ekanini anglatish kerak. Yuqoridagi talablarga muvofiq tarbiyani jamiyatning maqsadi hamda vazifalaridan kelib chiqib tashkil etish lozim.

To‘rtinchiidan, Sh.Mirziyoyevning “Ilmni qadrlang, ilmga intiling” degan jumlasiga muvofiq “Yoshlar siymosida eng qimmatli va o‘ta muhim resurslar mujassam bo‘lib, unga har qancha investitsiya kiritisa arziydi. Chunki bu sarmoyalar bir necha barobar bo‘lib qaytadi”; “Yangi O‘zbekiston – ma‘rifatli jamiyat” konsepsiyasi; dunyoni ezgulik, mehr-shavqat, insoniylik qutqaradi; “Tarbiyada tanaffus bo‘lmaydi” kabi so‘zlarida mujassam bo‘lgan qiziqarli savollarga javob bo‘ladigan ma‘lumotlar yetkazishi bo‘yicha mulohaza va amaliy natijalar bo‘yicha ma‘lumotlar bazasi havola qilinsa maqsadga muvofiq bo‘ladi.

Xususan, mamlakatdagi eng muhim tarbiya o‘chog‘i bo‘lgan mahalla tizimi, OAV, raqamli iqtisodiyot (mobil va simli Internet tarmog‘i), “Bir million dasturchi” loyihasi, robototexnika va IT parklar, sog‘lom turmush tarzi, “Ta‘lim va tarbiya beshikdan boshlanadi”, “Yangi O‘zbekiston maktab ostonasidan boshlanadi”. Maktab faqat ta‘lim beradigan maskan emas, barcha uchun yuksak ma‘naviyat beshigiga, farzandlarni bolalikdan boshlab kasbga o‘rgatuvchi dargohga aylanishi bo‘yicha muhim ma‘lumotlar yangilab borish talab etiladi.

Hammaga ma‘lumki, inson tafakkuridan ta‘lim va tarbiya ajralmasdir, – degan g‘oya chuqur joy olgan. Ta‘lim islohotlarida shakl va vositalarga emas, sifatning tub markazida yotuvchi mazmun va mohiyatga ko‘proq e‘tibor qaratilishi maqsadga muvofiq.



XULOSA

Har kim o'z fikrini to'g'ri deb turib olsa faqat shunga amal qilish kerak, desa ham ilm-fan, tarbiya va ma'rifiy dunyoda makon va zamonda o'z o'rnini topa olmaydi va rivojlana olmaydi. Chunki biz tajribasizlik qilish, natijada xatoga yo'l qo'yib yo'ldan adashish mumkin bo'ladi. Ikkinchisidan esa ajdodlar tomonidan yetib kelgan g'oya, ilm, ma'naviyat hozirgi zamon shaxsiga mos kelmasligi ehtimoldan holi emas.

Ta'lim-tarbiya qushning ikki qanoti singari bo'lib, hozirgi makon va zamonda uning bir qanotini sindirib, yuksak parvozga erishib bo'lmaydi. Barchasini uzviy aloqadorlikda mutanosiblikda tashkil etilsa maqsadga erishiladi.

REFERENCES

1. Muhammadjon Imomnazarov. Ma'naviyatning ilmiy asoslari. – Toshkent, 2008. – B. 154.
2. Shavkat Mirziyoyev. Yangi O'zbekiston strategiyasi. – Toshkent: O'zbekiston nashriyoti, 2020. – B. 223.
3. Muhammadjon Imomnazarov. Ma'naviyatning ilmiy asoslari. – Toshkent, 2008. – B. 8.
4. Qur'oni Karim ma'nolarining tarjima va tafsiri / tarjima va izohlar muallifi Abdulaziz Mansur. – Toshkent. Toshkent islom universiteti, 2018. – B. 544.
5. Imom Abu Homid Muhammad ibn Muhammad G'azzoliy. Ihyou ulumid- din (Din ilmlarini jonlantirish). 1-kitob. Ilm kitobi. – Toshkent. Movarounnahr, 2003. B. 39-41
6. F.A.Ibrohimov. Din va huquq. Academic research in educational sciences. 2023. № 1.
7. Ibroximov Farxodjon Anvarjon o'g'li. Huquqiy fanlarni o'qitilishidagi uzviylik va uzluksizlikning mavjud holati. FarDU.Ilmiy xabarlar. 2023. № 1.
8. Ibroximov Farxodjon Anvarjon o'g'li. Mafkuraviy immunitet va uning zarurati. FarDU.Ilmiy xabarlar. 2023. № 1.



АХБОРОТ СИЁСАТИНИНГ ФРАНЦИЯ ТАЖРИБАСИ

Ҳабибулло Ибодуллаевич Ражабов

Тошкент давлат транспорт университети, доцент

rhabibullo@mail.ru

АННОТАЦИЯ

Мақолада жаҳон ахборот маконида ўзининг ўрни, нуфузини кучайтириш, миллий манфаатларини таъминлаш борасидаги Франция тажрибаси рақамлар, фактлар ва бошқа маълумотлар асосида кўрсатиб берилди. Мазкур тажрибани миллий тараққиёт йўлида фойдаланишга доир тавсиялар илгари сурилади.

Калит сўзлар: Глобал тараққиёт, ахборот омили, жаҳон ахборот макони, миллий манфаатлар, давлатнинг ахборот сиёсати, ахборот сиёсатининг Франция тажрибаси.

ABSTRACT

The article, based on figures, facts and other information, shows France's experience in strengthening its position and influence in the global information space and ensuring its national interests. Recommendations have been put forward to use this experience for national development.

Keywords: Global development, information factor, global information space, national interests, state information policy, French experience in information policy.

КИРИШ

Асримизнинг ўзига хослиги шундаки, инсон ҳаёти ва фаолияти учун энг муҳим бўлган бойликлар қаторида ахборот қайта-қайта тилга олинмоқда. Ҳаттоки, ахборот омили дунёда кечаётган жараёнларга таъсир ўтказувчи, уни бир томондан иккинчи, бошқа томонга буриб юбориш хусусиятига эга бўлган бирламчи восита сифатида эътироф этилмоқда. Замонавий ахборот технологияларидан самарали фойдаланиш давлат ва жамият манфаатларига хизмат қилувчи асосий омил эканлигидан келиб чиқиб, муайян мамлакатнинг стратегик режаларини амалга оширишда ундан унумли фойдаланиш долзарб аҳамият касб этмоқда. Мазкур жараённи қуйидаги омилар билан изохлаш мумкин:

Биринчидан, ахборот оқимларининг ортиб бориши, кучайиши ва таъсир доирасининг кенгайиши ўзига хос, қутилмаган натижаларни келтириб чиқармоқда. Ахборот



субъектлари томонидан муайян давлатнинг, жамиятнинг дунёқараши, онги ва тафаккурини ўзгартиришга бўлган уринишлар сони ортмоқда;

Иккинчидан, бир давлатнинг иккинчи бир давлатга нисбатан аниқ бир мақсадни кўзлаб тазйиқ ўтказишини қўллаб-қувватлашда ахборотнинг техник ва мафкуравий имкониятларидан кенг фойдаланилмоқда. Киберхуружлар воситасида давлатларнинг молиявий муассасалари, хавфсизлик ва бошқа турли идораларининг сайтларини бузиб кириш, зарар етказиш, мамлакатни обрўсизлантиришнинг асосий воситаси сифатида кўрилмоқда;

Учинчидан, муайян давлат, шахс, жамият, миллатнинг фақат ўзига тегишли бўлган хусусиятлари, маданияти, анъаналаридан бегоналаштириш орқали ўзининг ғоявий таъсир доирасига туширишга бўлган уринишлар жаҳонда гегемонликка бўлган интилишларнинг асосий воситаси сифатида қаралмоқда;

Тўртинчидан, олиб борилаётган ҳарбий операцияларни ахборот орқали қўллаб-қувватлаш натижасида ҳақиқий вазиятни сохталаштириш, жамоатчилик фикрини ўзгартириш, кам маблағ сарфлаб улкан натижаларга эришишнинг замонавий усул ва воситаларидан кенг фойдаланилмоқда;

Бешинчидан, бошқа мамлакатларнинг ички ишларига аралаштириш, мамлакатдаги мавжуд табиий ресурсларни ноқонуний ўзлаштириш, муайян давлат ҳудудини ўзлаштириш ҳисобига ўзининг географик территориясини кенгайтириш жараёнида мамлакатда мавжуд конституцион тузумни издан чиқаришда ахборотнинг ноқонуний воситалари қўлланилмоқда.

Глобал ахборот маконида қайсидир давлат таъсир ўтказувчи, қайсидир мамлакат эса ташқи таъсирлардан ҳимояланувчи ролини бажармоқда. Шундай экан, жаҳон глобал ахборот маконида ўз қатъий позициясини сақлай олган мамлакатгина ўзининг келажак режаларини, стратегик дастурларини амалга ошира олади. Ушбу парадокснинг моҳиятидан келиб чиқиб, ахборот технологияларининг энг замонавий воситаларини қўллай олган, ўзининг стратегик дастурларини ахборот кўмагида амалга ошираётган давлатлар тажрибасини ўрганиш, ўзлаштириш тараққиёт йўлидан бораётган мамлакатлар учун муҳим манба бўлиб хизмат қилиши шубҳасиз.

Ахборот сиёсатини самарали олиб боришнинг ривожланган давлатлар тажрибаси деганда асосан ички ва ташқи сиёсатини олиб боришда ахборот технологияларидан юқори даражада фойдаланувчи мамлакатлар назарда тутилади. Шундай давлатлардан бири сифатида Францияни келтириш мумкин.



АДАБИЁТЛАР ТАҲЛИЛИ ВА МЕТОДОЛОГИЯ

Аввало, шуни айтиш керакки, Франция ўтган аср бошларидан XX асрнинг ўрталаригача ўзи томонидан колонияга айлантирилган ҳудудларда (асосан Африка) мавқеини мустаҳкамлаш, мазкур сиёсатнинг ўз фуқаролари томонидан қўллаб-қувватлашга эришиш мақсадида миллий ахборот инфратузилмасини мустаҳкамлашга эҳтиёж сизди. Мазкур жараёнда икки муҳим жиҳатни таъкидлаш жоиз. **Биринчиси**, Африка қитъасида ўз манфаатларини рўёбга чиқариш истагида бўлган бошқа ғарб мамлакатлари ахборот майдонида Франциянинг “қора қитъа”даги ҳатти-ҳаракатларини агрессив босқин сифатида асослашга бўлган уринишларига қарши тура олувчи самарали ахборот инфратузилмасини яратиш зарурати бўлса, **иккинчиси**, мамлакат фуқаролари ўртасида урушни қораловчи, унинг аянчли оқибатларини кенг жамоатчиликка тушунтиришга уринаётган зиёлилар, муҳолифат вакилларига ҳарбий ҳаракатларни ёқлаб чиқувчи ОАВнинг фаолиятига бўлган эҳтиёж ҳар қачонгидан ҳам муҳим эди. Мамлакатни янги ижтимоий-сиёсий ўзгаришлар сари етаклаган Шарль де Голлнинг “Жаноб журналистлар, мен сизларни газетангизни ўзим нима ҳақида ўйлаётганимни билиш учун ўқийман” деган фикрлари замирида давлат ўзининг қудратли ахборот машинасиз юксак марраларга ета олмаслигига ишорадир.

Франция давлат сиёсатини қўллаб-қувватлашда ахборот имкониятлардан юқори даражада фойдаланиш мақсадида ОАВни давлат томонидан молиялаштирилиши белгиланган. О. Судоргиннинг айтишига кўра, “Францияда миллий телерадиоканаллар давлат монополияси ихтиёридадир. Фақатгина 1982 йилга келиб қонунчиликка ўзгартириш киритилиб, давлат ОАВларининг қисман хусусийлаштирилиши белгиланди”[1]. Бирок, хусусий ОАВларнинг шаклланиши ва ривожланиши ўтган асрнинг сўнггида амалга ошди. “Ана шу вақтдан бошлаб Франция телевизион тизимидаги ўзгаришлар ўша давр сиёсий ўзгаришларига, ўзига хос “мафкуравий маёқ”қа мувофиқ ўзгаришлар билан боғлиқ бўлди: давлат сектори – хусусий сектор. Ўнг либерал кўпчилик томонидан ТФ-1 компаниясининг хусусиялаштиришига жавобан сўл сиёсий кучлар Франс Телевизион компаниясининг биргаликдаги бошқарувини жорий этиб, бу ТФ-1 нинг тобора кучайиб бораётган таъсирини камайтиришга қаратилган эди” [1].

Ўтган асрнинг муҳим воқеаларидан бири – бу қудратли мамлакатлар томонидан ривожланишдан ортда қолаётган мамлакатларни ўз манфаатлари йўлида уларнинг табиий ва бошқа ресурсларидан фойдаланиш мақсадида ҳарбий, мафкуравий,



маданий ва бошқа воситалар ёрдамида ўзига тобе қилиш кучайганлиги билан характерланади. Бу борада АҚШ, Британия, Испания, Португалия ва бошқа давлатларнинг ҳатти-ҳаркатлари тарихдан маълум.

Европанинг аксарият мамлакатлари каби Франция ҳам ташқи маконда ўзининг позициясини мустаҳкамлашга алоҳида аҳамият берган. Ушбу йўналишда ҳарбий ҳаракатлар олиб бориш билан бир қаторда, француз тили ва маданиятини тарғиб қилишга ҳам жиддий эътибор қаратилган. Бу орқали, Европада ва жаҳонда француз тилида гаплашувчи инсонларни кўпайтириш, миллий тилни жаҳон тилларидан бирига айлантириш бош мақсад сифатида қаралган. Мазкур йўналишдаги йирик лойиҳалардан бири “Франкофония” (французча - l'Organisation internationale de la Francophonie (OIF) француз тилида сўзлашувчи мамлакатлар иттифоқининг ташкил этилиши муҳим аҳамият касб этди. Ушбу лойиҳа француз тилида мулоқот қилувчи 54 мамлакатнинг маданияти, миллий хусусиятлари француз манфаатлари асосига қурилган дейишга асослар етарли. Шу билан бирга, халқаро майдонда Францияга рақиб бўлган бошқа юқорида номлари келтирилган мамлакатларга нисбатан Франциянинг стратегик устунлигини таъминлаган.

Россиялик тадқиқотчи Н Журавлеванинг бу борадаги фикрлари эътиборга молик: “Франкофония Франциянинг буюк давлат мақомига даъвосини кучайтиради ва Европа Иттифоқи доирасида ўз аҳамиятини сақлаб қолади. Франциянинг Франкофония сиёсатини амалга ошириш орқали эришадиган асосий натижалари, биринчи навбатда, “француз дунёси”нинг геосиёсий “базасини” кенгайтиришдадир. Унинг асосий марказлари бугунги кунда Европа франкофонлари (французлар, валонлар, франко-швейцариялар), америкалик франкофонлари (француз канадаликлари) ва африка франкофонлари (собик Франция мустамлакаларининг бир қатор аҳолиси) ҳисобланади”[2].

1970 йилда асос солинган мазкур лойиҳа Франциянинг ахборот-мафкуравий макондаги устунлигини таъминлади. Шундай қилиб, Франкофония глобал ахборот, маданий-мафкуравий ва сиёсий лойиҳа кўринишида, бошқа воситалар қатори Франция ташқи сиёсатининг қўллаб-қувватловчи куч сифатида муҳим роль ўйнади ва ўйнамоқда. Журавлевага кўра, Франкофония ташқи ахборот сиёсатининг ҳақиқий тарғиботчиси сифатида “Англия-Америка дунёсига мафкуравий қарама-қаршилик вазифасини бажаради. У ўзини маданий хилма-хилликни ҳимоя қилиш ва универсал "кўп қутбли маданий ватан" яратишга қаратилган энг муваффақиятли лойиҳалардан бири сифатида эълон қилишга муваффақ бўлди. 2) Франкофония ҳам Франция давлатининг, ҳам



нодавлат ташкилотлари кенг тармоғининг муҳим ва самарали фаолиятига айланди”[2].

Франция ахборот сиёсатида киберхавфсизлик масалалари ҳам барча ривожланган мамлакатлар сингари асосий ўринда турувчи воситалардан биридир. Франциянинг миллий рақамли хавфсизлик стратегиясида “Ҳар қандай молиявий муассасалар, шунингдек, жисмоний шахслар учун хавфсиз кибермакон”[3] яратишга устувор аҳамият берилган бўлиб, ички хавфсизликни таъминлашга қаратилган “рақамли автономия стратегияси”га ўтиш зарурати белгилаб қўйилган. “Рақамли автономия” интернетнинг турли хавф-хатарларидан холи бўлиш имконини беради. Бироқ, “рақамли автономия стратегияси” Францияда киберхавфсизликни таъминлашга қаратилган ягона лойиҳа эмас. “2011 йилда Молия вазирлигига қилинган киберхужумларга муносабат сифатида Франция ўзининг биринчи ихтисослашган стратегияси – “Ахборот тизимларининг мудофааси ва хавфсизлиги тизими”ни ишга туширди. Шунингдек, ҳукумат томонидан мамлакатнинг кибермудофаа салоҳиятини сақлаб қолиш Бешинчи Республиканинг стратегик автономияси ва халқаро нуфузини сақлаб қолиш билан бевосита боғлиқ деган ғояни ишлаб чиқилди”[4]. Юқорида келтирилган ҳужжатларнинг ўзига хос томони шундаки, ишлаб чиқилган миллий кибермудофаа тизими интернет орқали амалга ошириладиган киберхужумлар таъсир доирасидан ташқарида бўлиши билан алоҳида аҳамият касб этади.

ХУЛОСА

Ахборот сиёсатининг Франция тажрибасини кузатиш ва таҳлил қилиш жараёнида мазкур сиёсатнинг куйидаги муҳим жиҳатлари алоҳида қайд этиш эҳтиёжи туғилмоқда:

Биринчидан, тараққий этган мамлакатлар тажрибасидан шу маълум бўлмоқдаки, миллий ривожланиш йўли ва стратегиясини ишлаб чиқишда ахборот омилининг имкониятларидан тўғри ва оқилона фойдаланиш кутилган ижобий натижаларга эришиш имконини беради;

Иккинчидан, мамлакатда “рақамли стратегия”ни ишлаб чиқиш ва унинг қонунчилик асосларини мустақамлаш, амалга ошириш давлатни ахборот сиёсатининг энг муҳим устувор вазифаларидан биридир. Мазкур стратегия шахс, жамият ва давлатнинг глобал интернет тармоғи орқали уюштириладиган киберхужумларидан ҳимоя қилувчи самарали воситадир;

Учинчидан, халқаро тажрибага кўра, барча давлат ва нодавлат муассасалари ҳамда ахборот субъектлари ўртасида



аниқ ва режали ҳамкорликнинг йўлга қўйилиши жамиятда ахборот таҳдидларининг барча кўринишларига қарши тура оладиган тизимни яратиш, шакллантириш учун муҳим восита бўлиб хизмат қилади;

Тўртинчидан, фуқароларга ахборот хизматлари кўрсатувчи субъектларнинг иқтисодий, сиёсий, ҳуқуқий имкониятларини мустаҳкамлаш, кенгайтириш орқали миллий ахборот контентини жаҳон стандартларига мослигини таъминлаш. Ахборот сиёсатини миллий давлатчилик анъаналари учун хизмат қиладиган замонавий моделларини яратиш, давлатнинг ички ва ташқи сиёсатини фуқаролар томонидан қўллаб-қувватланишига қаратилган миллий дастурларни ишлаб чиқиш давлатнинг барқарорлиги кафолатидир;

Бешинчидан, мамлакатнинг “рақамли суверенитети”ни мустаҳкамлашга қаратилган илмий изланишларни молиялаштириш, киберхавфсизликни таъминлашнинг назарий-методологик асосларини ривожлантиришнинг халқаро тажрибасини ўрганиш, миллий хусусиятларга мос жиҳатларини ўзлаштириш орқали кибермаконда мустаҳкам ва қудратли давлат бўлиб қолишнинг асосий йўлларида биридир.

REFERENCES

1. Судоргин О. А. Современная информационная политика государства: мировой опыт и российская практика//диссертация на соискание ученой степени доктора политических наук. Москва, 2011. С-147.
2. Журавлёва Нина Николаевна. Информационная политика государства по продвижению национальной культуры за рубежом (на примере России и Франции). Автореферат диссертации на соискание ученой степени кандидата политических наук. Санкт-Петербург 2008. С-22.
3. French National Digital Security Strategy. URL: https://www.ssi.gouv.fr/uploads/2015/10/strategie_nationale_securite_numerique_en.pdf.
4. <https://russiancouncil.ru/analytics-and-comments/analytics/frantsiya-kiberrespublika-na-marshe>.



O‘ZBEKISTONLIK LAR NING IKKINCHI JAHON URISHI YILLARIDA PARTIZANLIK HARAKATLARIDAGI ISHTIROKI

T. X. Normetov

Chirchiq OTQMBY Gumanitar fanlar kafedrası katta o‘qituvchisi

ANNOTATSIYA

Mazkur maqolada Ikkinchi jahon urishi yillarida o‘zbek erkaklari va ayollarining urushda ko‘rsatgan qahramonliklari aks etgan.

Kalit so‘zlar: Urush, okkupatsiya, jasorat, mardlik, g‘alaba, tinchlik.

KIRISH

Urushning birinchi oylaridayoq frontga yuborish haqida o‘zbekistonlik yoshlardan O‘zbekiston harbiy komissariyatlariga 32000 ariza tushdi[1].

1941 yildan boshlab respublikada korxon va front uchun kadrlar tayyorlash (keng) tarmog‘i tashkil etildi. Urush yillarida minglab o‘zbek jangchilari barcha frontlarda kurash olib borib, qahramona jasorat ko‘rsatib, shosh-sharafga erishdilar. Ulardan 120000 nafari orden va medallar bilan taqdirlangan, 280 nafari esa ko‘rsatgan jasorati uchun eng yuksak unvon – Sovet Ittifoqi qahramoni unvoniga sazovor bo‘lgan[2].

O‘zbekiston Respublikasi Birinchi Prezidenti I.Karimov shunday degan edilar: “... urush veteranlari bizning Vatanimiz va xalqimizning mayoqlaridir. Janglar maydonida o‘z kelajagi uchun, musaffo osmon uchun kurashgan barcha vatandoshlarimizni biz yod etamiz. Yuksak haqiqatni unutishga hech kimni haqqi yo‘q va biz bunga yo‘l qo‘ymaymiz”[3].

ADABIYTLAR TAHLILI VA METODOLOGIYA

Yurt iqtisodiyotini qayta qurish bilan birga respublikaga armiya uchun jangovar zaxira yaratishga to‘g‘ri kelgan. O‘n minglab yigit-qizlar umumiy majburiy ta‘limdan o‘tganlar front uchun jangovar zaxira va qo‘mondon kadrlarni tayyorlagan O‘rta Osiyo harbiy okrugi bu borada muhim rol o‘ynagan. Bu yerda 1941 yil noyabr oyidan 1942 yil mart oyigacha 14 ta milliy diviziya va brigadalar, ulardan 9 ta o‘qchi batalyon, 5ta kavaleriya diviziyasi shakllangan[4].

Brest qal‘asi himoyasida hamo‘zbekistonlik jangchilar alohida ajralib turgan. Ular – Doniyor Abdullayev, Xojiboyev, Axmad Aliyev, N.Sodiqov, A.Abdullayev, YE.A.Lise, F.I.Layenkov, Og‘amirza



Aliyev, Raximboy Arslonov, Tursun Xidirov, Nurum Sidiqov va ko‘plab boshqalar[5].

180 nafar Toshkent piyodalar bilim yurti tarbiyalanuvchilari (hozirgi O‘zbekiston Respublikasi Qurolli kuchlar Akademiyasi), ya’ni o‘zbek jangchilari Moskva himosidagi jangchilar orasida, mashhur Panfilovchilar diviziyasi qatorida va boshqa Qizil Armiya qism va birlashmalarida alohida qahramonlik ko‘rsatdilar.

G‘ulom Abdukarimov Moskva ostonasi janglarida Panfilov (panfilovchilar) diviziyasi tibbiy sanitar batalyonining bosh jarrohi bo‘lgan. Og‘ir mudofaa janglarida, 1941 yil 17-18 noyabr kunlarida (12-hal qiluvchi nemis qo‘shinlarning hujumi) 120 nafar jangchini operatsiya qilib, hayotini saqlab qolgan. Abdukarimovga uning do‘sti Zarif Ibragimov yordam bergan. Panfilov diviziyasi tarkibida leytenantlardan Pilyugin, Mamadali Madaminov, Abdulla Tagayev, M.V.Valitov va boshqa o‘zbek jangchilar qahramonlik ko‘rsatishgan[6].

Birinchi va ikkinchi kavaleriya jangchilari ham sharaflilik nomga loyiqdirlar. Ular orasida Moskva ostonasidagi urushda jangovar xizmatlari uchun yuqori unvonlar bilan taqdirlangan o‘zbek yigitlari bor: pulemyotchi Sharofutdinov Toji, serjant Otaboyev Jumaboy, sapyor Ashirov Xoldor, kavaleriyachi Boqiyev Abdurahmon, tank pulemyoti komandiri, Jo‘rayev Sulton, pulemyotchi Karimov Komil, sanitar instruktori Zulfiqorov Abdullajon, Namangandan artilleriyachi Abdusattor Raximov yuksak Qahramon unvoniga sazovor bo‘lganlardandir.

Jangchilar orasida o‘zbek qizlari ham bor edi. Zeboxon G‘aniyeva – yuksak qahramonlik taqdiriga ega inson. Jangovar mukofotlar kavaleri, qo‘shiq va hikoyalar qahramoni, snayper, razvedkachi, filolog, raqqosa, aktrisa. Uning nomi bilan bugungi kunda qo‘shiq va raqs ansambli faoliyat olib boradi.

Stalingrad janglarida ham o‘zbeklar mardlik va jasurlik namunasi bo‘lganlar. Buyuk Pavlov uyi mudofaasida jangchilar orasida Turg‘unov bor edi. O‘chmas (o‘lmas) qahramonlikni katta serjant Usmanov ko‘rsatdi. U granata bilan birga o‘zini tank ostida tashladi va uni portlatib yubordi. Yana Stalingrad ostonasida jasurlarcha halok bo‘lgan Toshkent davlat pedagogika instituti sobiq talabasi Yelena Stempkovskaya haqida alohida aytish kerak. U vafotidan keyin Qahramon unvoniga sazovor bo‘lgan. 2738 nafar o‘zbek yigit-qizlari “Stalingrad ozodligi uchun” medali bilan taqdirlanganlar[6].

Kursk shahridagi jangovar operatsiyalarda O‘zbekistonda shakllangan jangovar birlashmalar faol qatnashishgan. Shular orasida Qizil Bayroq ordenli 162-o‘qchilar diviziyasi bor edi. O‘zbekistonlik jangchilar frontning boshqa hududlarida ham mardonavorlik ko‘rsatishgan.



Oryol shahrini ozod etishda Fargʻonalik paxtakor pulemyotchi Ahmadjon Shukurov xizmatlarini alohida eʼtirof etish kerak. Shu yigit sharafiga rus Zolotoryovka qishlogʻi Shukurovka nomiga oʻzgartirilgan.

Dneprni kechib oʻtishda (1943 yil noyabr) koʻpgina oʻzbek jangchilari oʻzlarining harakatlari bilan ajralib turishdi. Ulardan 100 nafarga yaqini - T. Mirzayev, V. Nabiyev, D. Usmanov, A. Qurbonov, F. Yuldashev, P. M. Rjevskiy, A. Uzoqov, N. A. Sarayev va boshqalar Qahramon unvoniga sazovor boʻlishdi.

Fashizm ustidan gʻalaba qozonishda va okkupatsiya (bosib olingan yerlarni ozod etishda) qilishda partizanlik harakati alohida rol oʻynadi. Partizanlarning katta kuchlari Ukrainaning shimolida, gʻarbida va janubi-gʻarbida, Belorussiyada, Leningrad, Smolensk va Oryol viloyatlarida, Qrimda oʻz harakatlarini olib borishgan. Butun urush yillari davomida dushman hududida 6200 ziyod bir milliondan oshiq turli millat vakillaridan tashkil topgan partizan otryadlari va maxfiy guruhlar ish olib borganlar. Ular orasida M. Topivoldiyev, D. Abduraimov, D. Qosimov, T. Ismailov, S. Fayziyev, M. Axmedov va boshqalar alohida hurmatga loyiqdirlar.

Mamadali Topivoldiyev va uning 60 kishilik otryadining dushman hududida koʻrsatgan moʻjizaviy jasoratlari va qahramonliklari butun frontga namuna boʻldi. Mamadali Topivoldiyevga Qahramon unvoni berilgan va uning nomi Belorusda juda mashhur.

Mamadali Topivoldiyev Qizil Bayroq ordeni, “Jasorat uchun”, “Vatan urushi partizani” medallaribilan taqdirlangan, 1944 yil 15 avgustda esa unga Sovet Ittifoqi Qahramoni unvoni berilgan. Oʻzbek xalqining botir oʻgʻloni sharafiga Pisarevo belorus qishlogʻi Topivoldiyevkaga, Krugloye posyolkasi esa Topivoldiyevoga oʻzgartirilgan. Afsonaviy Kazbek jasoratlari haqida “Unutilmas qoʻshiq” nomli badiiy film (1974 yilda oʻzbek va belorus kinematografchilari bilan hamkorlikda) va “Ikki xalq oʻgʻloni” nomli hujjatli film (2011 yil, rejissor M. Yuldashev) olingan.

Turkiston ofitseri Sergey Savvich Belchenko 1927-1932 yillarda Oʻrta Osiyo harbiy okrugi chegerachi qismlarida xizmat olib borgan. 1941 yildan Belorussiyadagi partizan harakatlari tashkilotchisi va faol qatnashchisi boʻlgan, 1942 yil maydan partizanlar harakati Gʻarbiy shtabi boshligʻi, 1942 yil sentabrdan partizanlar harakati Markaziy shtabi vakili, Kalininsk fronti Harbiy kengashi aʼzosi, 1943 yilda partizanlar harakati markaziy shtab boshligʻi oʻrinbosari etib tayinlangan.

Ukrainada dushman bilan kurashgan S. A. Kovpak, A. N. Saburov, A. F. Fyodorov, M. I. Naumov partizan otryadlarida yuzlab oʻzbek qasoskorlari bor edi. Ular toʻsatdan hujumlar uyushtirib, strategik koʻpriklar va temir yoʻllarni portlatishardi. Oʻzbek jangchilari haqida bor Sovet Ittifoqi Karamoni S. A. Kovpak va A. F. Fyodorov, ukrain partizanlan



komandiri, Sovet Ittifoqi Karamoni, general-mayor P.P.Vershigora memuarlarida o'qish mumkin.

NATIJALAR VA MUHOKAMA

Masalan, afsonaviy Kovpak partizanlar birlashmasida o'zbek xalqining 20 nafar mard o'g'lonlari bo'lgan. Shular orasidagi Abduxamid Saydaliyev haqida alohida aytish kerak. U birlashma bilan birga Putivlyadan Karpatgacha, Karpatdan Polesyegacha, Polesyedan Polshadagi San daryosigacha, so'ng Varshava va Belovejsk Pushasigacha borgan. Bir qancha o'zbekistonliklar Ukrainada jang olib borayotgan birlashmalar partizanlar qismlari safini to'ldirdilar. Ular dushman fronti ortida diversion (qo'poruvchi) guruhlarda mardlarcha jang olib borishdi. Masalan, 1942 yil avgust oyida Temirov boshqaruvi ostidasi diversion guruh ikki vagonni izidan chiqarib yubordi. Bu jangda dushmanning 45 askari yakson qiliggandi.

Tarix zarvaraqlarida Ukrainadagi yashirin tashkilotda mardlarcha kurashgan o'zbekistonli jangchilar haqida o'qish mumkin. Masalan, termezlik, ip yigirish fabrikasi sobiq ishchisi, jasur qiz Yevdokiya Bogatiryovaning Makeyevka shahridagi Donbass yerto'lasida (podpolye) olib borgan faoliyati misol bo'la oladi. U front chizig'i orqalirazvedka guruhlarini tarkibida janubiy front partizanlar harakati shtabiga yuborilgan edi. Bogatiryova bir necha bor front chizig'i orqali partizanlar harakati shtabiga ma'lumotlarni yetkazib bergan. Razvedka operatsiyalarida ham muvaffaqiyatga uchragan. Lekin bir kuni dushman jazo otryadi uning va uning safdoshlari iziga tushdi. Jangchilar asirga olinib, dahshatli qiynoqlardan keyin Chistyakovo qamoqxonasida otib o'ldirilgandi. Xalok bo'lganlar orasida Dusya Bogatiryova ham bor edi.

O'zbekistonlik partizan vakillari otryadi Leningrad viloyatidagi 2- Leningrad partizanlar brigadasida edi. 1942 yil fevral oyida otryad tuman markazida joylashgan dushman garnizonini va yirik temir yo'l Dedovichi stansiyasini tor-mor etishda ajoyib natija ko'rsatdi. Jang paytida o'z jangovar harakatlari bilan o'zbekistonlik Odamboy Muratov, Nigman Rajabov, Yunus Nigmatullin va boshqalar ajralib turganlar.

Bryanshinadagi janglarda I.Musayev, A.Hakimov, I.Qosimovlar nomlari alohida ahamiyatga ega bo'ldi. Ularning qahramonliklari yuqori davlat mukofotlari bilan taqdirlandi.

Polshadagi qarshilik harakatlarida o'zbekistonlik jangchilarning hissasi katta bo'ldi. Ular deyarli barcha partizan birlashmalarida bo'lib, ba'zilar esa shu otryadlarning tashkilotchi komandirlari va shtab boshliqlari edi. Polshalik tadqiqotchilar hisobiga ko'ra Polshadagi



lagerlardan 65000dan ortiq sovet fuqarolari qochgan. Qochganlarning katta qismi – 20000dan oshiq - Polsha jangchilari bilan birlashib, fashistlarga qarshi kurashda faol qatnashganlar.

Ularning tarkibida o‘zbekistonliklar ko‘p edi. Masalan, samarqandlik Sayfulla Nurullayev. U dushman asirligidan qochib, Lyublino rayonidagi Yanovsk o‘rmonlarida kurash olib borayotgan partizan otryadiga qo‘shildi. Jilenko guruhi tarkibida 1944 yil 7 iyunda o‘zining jangovar do‘stlari bilan Lyublin-Krasnik temir yo‘lida 5 ta harbiy eshelonni portlatib yubordi. Shunda 50 nafar fashist o‘ldirilgan va 140 nafari yaralangan edi. Shunga o‘xshash harakatlar ko‘p edi. 1941-1943 yillarida asirlikdan qochgan o‘zbekistonliklar Yevropa mamlakatalarida dushman tomonidan okkupatsiya qilingan fashistlarga qarshi kurashuvchi guruhlar safini to‘ldirdilar.

XULOSA

Tarix zarvaraqlarida G‘arbiy Yevropa mamlakatlaridagi Qarshilik Harakatlari haqida ham ma‘lumotlar o‘z aksini topgan. Urush oqibatida Italiya, Fransiya, Norvegiya, Avstriya, Germaniyada bo‘lib qolgan o‘n minglab sobiq sovet fuqarolari antifashistik harakatlarga qo‘shila boshlaganlar. Ular dushmanga putur yetkazish harakatlarida, diversiyalarda qatnashishar, qo‘llariga qurol olib partizanlar otryadlarida gitlerchi bosqinchilari bilan kurashar edilar.

1943 yil sentabr oyida Italiyada, sobiq nemis “ittifoqdoshi” ning shimoliy va markaziy qismlari fashistlar tomonidan okkupatsiya qilingandan so‘ng, birinchi zarba beruvchi partizan brigadalari shakillana boshladi. Ular Italiya milliy qahramoni Garibaldi nomi bilan atalardi. Garibaldichilar qatorida o‘zbekistonlik Stepan Opanasenko, Axmad Mamajonov, Mixail Mirumyans, Vladimir Greyev, Turg‘un Qo‘chqorov, Sharif Samadov, Omon Berdiyev, Pyotr Kolesnikov va boshqalar mardlarcha jang olib borishgan. Fashistlar qo‘liga tushib, ular tushkunlikka tushmadilar, misli ko‘rilmagan harakatlar oqibatida ozodlikka chiqib, partizanlar otryadlariga qo‘shildilar.

Masalan, 1943 yilda Germaniyadan asirlikka tushgan guruhlar bilan Karrari shahridagi karyerlarda ishlash uchun yuborilgan andijonlik T. Quchqorov va A. Mamajonovlar mahalliy aholi vatanparvarlari yordami bilan tog‘larga qochishgan. Karrari shahrini ozod etishda o‘zbekistonliklar mardlarcha jang olib bordilar. Mamlakatni Gitler bosqinchilaridan ozod etgan jasur o‘zbek o‘g‘lonlarini Rimda Italiyaning mashhur jamoat arbobi Palmiro Tolyatti iliq kutib olgan.

Ozodlik Korpusi ko‘ngillilari o‘zlarining jangovar samarqandlik do‘sti Samatov Sharipni italncha ism bilan Aleksandro deb atashar edi. U otryadda razvedchkachi bo‘lib,



bo'limni boshqarar edi. Samatov dushman qurollarini olish kabi xavfli operatsiyalarida qatnashar, kazarmalarni portlatar, harbiy omborlarni yoqib yuborar edi. Dushmanga qarshi operatsiyalardan birida esesovchilar uni tutib olishib, "San-Vitore" qamoqxonasiga qamab qo'ydilar. Qo'rqmas partizan barcha qiynoqlarga chidadi, o'z do'stlarini sotmadi. 1945 yil 1 may kuni Samatov qatl etilishi kerak edi. Lekin 25 aprel kuni Italiya milliy ozodlik Komiteti xalq qo'zg'olonini ko'tardi va mamlakatning shimoliy hududlarini dushmandan ozod etdi. Sh Samatov ozodlikka chiqdi.

Germaniyaga qarshi urush 1945 yilda g'alaba bilan yakun topdi. Jang maydonlarida qolgan yuz minglab qurbonlar evaziga mamlakat ozod etildi. Jahon fashizm zulmidan qutqarildi.

REFERENCES

1. Usmonov K. O'zbekiston tarixi (1917-1991). - T., Shark. 2008y
2. I.A.Karimov. Vatan sajdagox kabi mukaddasdir. - T., O'zbekiston, 1996. 81 bet
3. Jurayev. M. va boshqalar Yangi O'zbekiston tarixi. 2 kitob. T.: Shark. 2000.
4. Usmonov.K. i dr. O'zbekiston tarixi (1917-1991). - T., Shark. 2008y.
5. Ziyoyev X. O'zbekiston mutaqlligi uchun kurash tarixi. - T., 2001y
6. Mustaqil O'zbekiston ensiklopediyasi. 2001-2004 y.



ХУДОЖЕСТВЕННОЕ НАСЛЕДИЕ СТИЛИСТИЧЕСКИХ ШКОЛ ВОСТОКА. МИНИАТЮРА. ТРАДИЦИИ И НОВАТОРСТВО В ТВОРЧЕСТВЕ Д.ТОШЕВА

Айрин Батыровна Аллабергенова

Доцент кафедры «Fashion design»

Ташкентский Международный Университет KIME

E-mail: ayrin_5@mail.ru

АННОТАЦИЯ

Статья повествует о творчестве художника-миниатюриста из Бухары Даврона Тошева, о его источниках творчества, методах работы и средствах художественного выражения. Миниатюристы и каллиграфы Бухары издавна участвовали в создании рукописей, и творчество этого самобытного художника подтверждает этот исторический факт. Все произведения Тошева базируются на богатом художественном и литературном наследии древних стилистических школ Востока.

Ключевые слова: миниатюра, художественное наследие, стилистика, бумага, рукописи, муракка, композиция, традиции, образный строй, изысканность, колорит, изящество линий, яркость, цвет, сюжетность.

ABSTRACT

The article is dedicated to works of famous miniaturist artist from Bukhara – Davron Toshev. The author emphasized sources of creativity, methods of work and media of artistic expression used by the miniaturist in given research. Miniaturists and calligraphers from Bukhara were famous for their art and have been involved in the creation of manuscripts centuries ago. The works created by Toshev once more prove the upper mentioned fact. His works were based on the rich artistic and literary heritage ancient stylistic schools of the East.

Keywords: miniature, artistic heritage, stylistics, paper, manuscripts, murakka, composition, traditions, imagery, sophistication, color, grace of lines, brightness, color, plot.

ВВЕДЕНИЕ

Создание миниатюры – серьезный труд, состоящий из многих этапов, требующий большого терпения, опыта и конечно любви. Для Даврона Тошева, художника из Бухары,



миниатюра - вся его жизнь. Создание каждой его работы требует много времени, месяцами, а иногда и годами художник отдает свои силы и любовь, что бы мы зрители имели возможность созерцать драгоценную вязь образов и красок.

Миниатюра звучит по-французски *miniature*; по-итальянски *miniatura*, от латинского *minium* - киноварь, сурик, которыми в древности расцветивались рукописные книги. Все произведения Тошева базируются на богатом художественном и литературном наследии древних стилистических школ Востока. Уходящая корнями в глубины человеческой истории духовная мистическая суфийская традиция, любовная лирика Саади, философские рубаи Омара Хайяма и Алишера Навои – все это богатейшее наследие является неиссякаемым источником творчества для этого художника.

МЕТОДОЛОГИЯ

«Узбекская литература, – рассказывает Д. Тошев, – бесконечный, неисчерпаемый мир вдохновения, в котором я живу. Я стараюсь передать посредством своего творчества бессмертные строки мудрости, любви и истории». Этот художник хорошо знает историю своей родины, почитает, воспекает и любит ее культуру. Одним из любимых и изучаемых им поэтов является великий Алишер Навои, чья поэзия много лет служит источником вдохновения для создания великолепных миниатюр, иллюстрирующих творчество поэта. Ведь, как писал знаменитый английский писатель Г.К. Честертон - «Вся разница между созданием и творением сводится к следующему: создание можно полюбить лишь уже созданным, а творение любят ещё несотворенным...».[1]

Даврон Тошев относится к редким мастерам романтического склада, которые, именно вынашивают в себе образ следующей миниатюры, заведомо любя ее всем сердцем.

Для своих миниатюр художник использует знаменитую самаркандскую бумагу, ведь свое время Самарканд был первым местом на Среднем Востоке, где она стала производиться вручную. Как отмечал известный востоковед Адам Мец, производство самаркандской бумаги произвело в IX-X вв. настоящий переворот на Востоке, средневековый автор ас-Са'либи сообщал, что производимая в Китае и Самарканде бумага вытеснила из употребления египетский папирус и пергамент, на котором писали предки.

[2]



Сегодня для особой пикантности и аромата в "бумажное молочко" добавляются кукурузные рыльца, шерстяные и шелковые нитки, лепестки роз и фиалок. Такую ароматную бумагу использовали, как основу для реставрации старинных рукописей и книг, написания миниатюр, как декоративный материал при изготовлении сувенирных книг и альбомов, например, таких, как муракка. Первоначально слово «муракка» означало одежду, сшитую из разноцветных лоскутков, которую носили суфии - мистики. Позднее так стали называть альбомы, составленные из разных миниатюр и образцов каллиграфии. В такой альбом собирались лучшие образцы каллиграфии и живописи, которыми его обладатель наслаждался в часы досуга. У Г.А.Пугаченковой в книге «Миниатюры Средней Азии» есть такие строки об этом - «При всей условности миниатюр современники воспринимали их вполне реально. В этом отношении замечателен рассказ представителя гератской золотой молодёжи, автора увлекательных мемуаров, бежавшего от бесчинства иранских кизылбашей в Среднюю Азию, Зайнутдина Восифи. Он описал маджлис, устроенный Алишером Навои, в котором участвовала интеллектуальная элита Герата. В числе приглашенных был художник Камаледдин Бехзад, который принес в дар Навои его портрет на фоне цветущего сада. Восхищенный Навои спросил своих гостей: "Что приходит вам на ум в отношении оценки и восхваления этого замечательного изображения?". Один из них воскликнул, что ему захотелось сорвать цветок, изображенный на миниатюре, и воткнуть в чалму. Другой сказал, что испытал такое же чувство, но испугался, как бы не вспугнуть при этом изображенных на миниатюре птиц. Третий возразил, что этим он разгневал бы изображенного на миниатюре Навои. Четвертый воскликнул, что за такую дерзновенную выходку он его ударил бы посохом, с которым изображен Навои. Довольный этой перепалкой поэт сказал: "Почтенные собеседники хорошо просверлили жемчужину смысла" (т. е. ощутили жизненную достоверность и высокое мастерство художника). После чего он одарил их богатыми одеждами, а Бехзаду подарил коня в полном снаряжении».[3]

Миниатюристы и каллиграфы Бухары издавна участвовали в создании художественных рукописей. Мусаввир писал миниатюры, музахиб наносил позолоту, хаттот работал переписчиком, афшангар окрашивал бумагу, заргар украшал переплет металлическими украшениями. Миниатюрист Даврон Тошев достойно продолжает династию мусаввиров Бухары, являясь ярким представителем этой школы, твердо сохраняющим традиции, но в то же время создающим новые



сюжетные композиции. Его творчество нельзя истолковывать как простое копирование: у художников и поэтов Востока считалось законным приемом дать свой ответ, свою вариацию на излюбленную зрителем или читателем тему. [4]

Не секрет, что копирование работ мастеров прошлого всегда являлось одним из важных составляющих этапов обучения и только кропотливое изучение стандартных изобразительных композиций, использование натуральных красителей, практическое воспроизведение миниатюры с помощью специальных инструментов (лупы, кистей, каламов) может дать полное понимание этого сложнейшего процесса. Даврон Тошев обучил всем секретам и приемам миниатюрной живописи, более чем двадцать учеников, сохраняя тем самым классическое наследие и преемственность поколений в этом неповторимом виде искусства. Его миниатюры давно уже вышли за рамки чисто иллюстративных сюжетов и представляют собой самостоятельные произведения живописного искусства.

Несмотря на то, что восточная миниатюра несёт в себе ряд условностей - отсутствие перспективы и светотени, одноразмерность ближних и дальних планов, смещение представления о масштабных соотношениях, которые, казалось бы, ограничивают возможности изображения, Даврон Тошев мастерски передает атмосферу и очарование поэтического Востока. Приемы высокого мастерства этого художника, отточенный линейный рисунок, виртуозное построение композиций, талантливое цветовое решение дают в итоге драгоценный арт-объект, сверкающий разноцветными красками и орнаментами, подобный драгоценным ювелирным россыпям.

Например, в его миниатюре портретного жанра «Девушка на лошади» на которой мы видим изображение молодой девушки, мастер, несомненно, придерживается классических норм, но решает их по новому, в романтической манере. Редко используемая в миниатюрах диагональная композиция придает этой миниатюре ощущение движения, а плавность линий и внутренняя психологическая выразительность создают особую поэтику портрета. Этому художнику удалось найти некий метафорический ключ к изображению традиционных образов чувственной лирики.

Высокий уровень исполнения, рафинированность приемов отличают и множество других работ мастера, например миниатюра к произведению Джамии «Юсуф и Зулайхо» или ряд миниатюр к произведениям Алишера Навои, несмотря на различные композиционные решения, их тематику отличают



благородная декоративность образного строя, изысканность колорита, крепкая композиция, изящество линий, сочность и яркость цвета. Глядя на эти работы, зритель видит каледойскоп цветов, напоминающих пестрый восточный ковер, и в то же время благодаря мастерскому владению искусством композиции, посредством размещения фигур и сооружений, мастер создает внутреннее движение, глубину и пространственность изображения. Сложность композиции, декоративность, богатство колорита, духовная содержательность формы характеризуют творчество этого художника. Даврон Тошев художник умный, образованный, неустанно изучающий миниатюры прошлых столетий различных школ, таких, как Гератская, Тебризская, Исфаханская, Среднеазиатская, Ширазская и других.

Во всех его работах чувствуется продуманное начало, но вместе с тем мир его творчества - всегда мир чувственно-эмоциональный, мир глубоко созвучный изящной поэзии Востока.

Возвышенный мир образов, изысканный, цветистый своей метафоричностью язык восточной поэзии, ее ритм и музыкальность вдохновляют художника на создание богатейших узорных композиций, изысканных цветовых сочетаний, прекрасных портретных работ с тончайшим линейным рисунком.

Но, чтобы увидеть истинный смысл, который вкладывали в свои стихи классики того времени, и соответственно понять глубину искусства миниатюры, прежде всего, необходимо понять, что восточная поэзия тесным образом связана с суфизмом, в основе этого мистического учения лежит любовь (махабба, хубб). Один из основных принципов суфизма - "Ишк Аллах, Мабут Аллах" ("Бог есть Любящий и Возлюбленный"). Фраза известного исследователя литературы Востока Н. И. Пригариной, точно подмечает, тот факт, что "суфизм принес возможность говорить о вере в терминах любви". Поклонение Красоте, Любовь к Богу у суфиев облекались в форму земной любви. Персидский мистик и философ Шихаб ад-Дин Йахйа ас-Сухраварди ал-Мактул основоположник философии озарения на Ближнем и Среднем Востоке, в аллегорическом трактате «Му'нис ал-'ушшак» («Неразлучный друг влюбленных»), посвященном мистической любви, выводит образы, часто определяемые как персонифицированные абстракции. Автор, развивая авиценновскую теорию разумов, вместо тройного созерцания разумом самого себя выводит триаду образов или сущностей, именуемых Красота, Любовь и Печаль. [5]



У знаменитого персидского мистика и поэта Руми, есть такие строки – «Где бы ты ни был и в каком бы состоянии ни находился, всегда старайся быть влюблённым». Присущее суфиям сильное стремление к этической чистоте и безупречности способствовало закреплению за ними в арабском мире ещё одного названия - Рыцари Чистоты (Сахаба-и-Сафа).

Мир восточной миниатюры - это всегда метафора, синтез реальности и художественного вымысла, и именно миниатюра явилась рукописным итогом многовекового отбора и развития изобразительного искусства, в котором синтезированы национальные художественные традиции и романтическая метафоричность, каноны мастерства и зашифрованная образность, неразрывная связь с фольклором. Анри Матисс говорил: "Восток всегда был для меня откровением... Миниатюры, например, открыли мне пути для реализации моих ощущений. Со своими деталями это искусство требует более обширного, по настоящему пластичного пространства. Оно помогло мне выйти за пределы обычной живописи". [6]

Особый эмоциональный настрой миниатюрам Даврона Тошева придают ритм и линия. Это крайне важные средства художественной выразительности, разная тематика миниатюр художника предполагает различный темп ритма и эластичность линий. В его работах ясно прослеживается ритм и чередование линий, композиционных блоков, цветовых пятен, плоскостей разного размера и форм, например в батальных сценах – частый темп ритма, усиленные, напряженные линии, а в репрезентативных сценах приёма и пиршеств темп ритма медленный и спокойный, в портретной тематике линия поднимается до эмоционального, психологического звучания, неуловимой для глаза тонкости. Это мастер широкого диапазона, виртуозно владеющий разнообразными приемами художественного письма, в работах, которого всегда заключена какая-то особая, возбуждающая чувства зрителя энергия.

У Омара Хайяма есть такие строки, которые как нельзя лучше характеризуют творчество этого художника:

Этот мир – эти горы, долины, моря –
Как волшебный фонарь. Словно лампа – заря.
Жизнь твоя – на стекло нанесенный рисунок,
Неподвижно застывший внутри фонаря...

Мусаввир Даврон Тошев верен своему принципу, который гласит, что искусство должно доставлять человеку радость, поэтому он создает благородное красочное зрелище, праздничное и приятное для глаз.

«Когда завершился XX век, человечество в очередной раз подводило итоги прошедших тысячелетий. Газеты и журналы спрашивали читателей: «Какие изобретения и открытия оказали сильнейшее воздействие на человеческую цивилизацию?» Ответы были разными, но все сходились в одном: самое главное, чему научилось человечество, — это фиксировать, хранить и передавать информацию. Такая возможность появилась с изобретением письменности и книгопечатания. В течение многих веков люди читают и собирают книги, потому что в них память народа, его духовная культура. Древние города Бухара, Самарканд, Тараз, Отрар и другие некогда имели школы-медресе, книжные лавки, богатейшие библиотеки, а где книги и манускрипты, там и искусство миниатюры, поэтому этот вид искусства такой же древний, как человеческая цивилизация». [7]

ЗАКЛЮЧЕНИЕ

Во многих музеях мира хранятся шедевры миниатюр, созданных более двух тысячелетий назад, но дар работать в этой области дается немногим. Мусаввир Даврон Тошев является блестящим примером, художником, который воплотил в реальность свою жизненную задачу – стать настоящим хранителем традиций среднеазиатской миниатюры, а для этого нужно иметь не только талант художника, крепкую руку, зоркий глаз, невероятное трудолюбие, но и огромное сердце поэта, полное любви и поисков духовности.

Персональные выставки Даврона Тошева проходят в Париже, Бонне, Брюсселе Лионе, Гренобле, Сионе, он участник многих международных и республиканских выставок, его работы находятся в Ассоциации «Амир Темур», «Ибн Сина», музеях и частных коллекциях Европы и России. С уверенностью можно сказать, что благодаря этому удивительному мастеру самобытное, драгоценнейшее искусство восточной миниатюры шествует по миру, сея прекрасное, благородное и вечное.

REFERENCES

1. Иванова Ю. Афоризмы. Сила искусства. Изд-во: Фолио.г. Харьков. 2008. стр 2
2. Мец Адам. Мусульманский ренессанс. М. Из-во «Наука», 1966г, стр.363
3. Пугаченкова Г., Галеркина О. Миниатюры Средней Азии в избранных образцах. М., 1979 г. стр 9-10
4. Исмаатов Б. Пантеистическая философская традиция в персидско-таджикской поэзии IX-XV вв. Душанбе, 1986.стр.89.



5. Дроздов В. А. Мистическая любовь в иранском суфизме. Востоковедение: Ф.исследования. Вып. 26: Сб. статей. СПб.: Изд-во С.-Петербур. 2005, с. 129-138.
6. А.Костеневич, Н.Семенова. Матисс в России.М.1993г, стр.123
- 7.<http://www.tarih-begalinka.kz/ru/timetravel/page3282/>
8. Азимова М. Б. Восточная миниатюра. Молодой ученый. 2014. №10.
9. В.Сидоренко.ст. «Миниатюра Востока», centrasia.ru



THE EFFECTIVENESS OF THE FEED RATION FOR SHEEP IN THE MEAT INDUSTRY

Feruz Shavkatovna Normukhammedova

Samarkand State University named after Sharof Rashidov, Samarkand

e-mail: feruzanormukhammedova9@gmail.com

ABSTRACT

The article presents data from scientific studies on the effect of feeding sheep different green hydroponic feed on the dynamics of their live weight. The superiority of the sheep of the experimental group fed with hydroponic feed over the sheep of the control group was established in terms of live weight dynamics, absolute and average daily weight gain. When talking about the efficiency of fattening sheep by feeding them with various supplementary feeds, the efficiency of enriching the ration of meat sheep is important. Rules and regulations regarding supplementary feed and critical to the nutrition and utilization of sheep.

Keywords: Absolute growth, daily growth, live weight, ration, sheep in the direction of meat and fat.

INTRODUCTION

One of the distinctive features of animal husbandry in our republic is that it is one of the most important branches of agriculture. Firstly, the soil and climatic conditions in some areas (steppes, semi-deserts, mountains and foothills) create favorable opportunities for efficient use of pastures, and secondly, raising animals does not require high costs in terms of natural conditions. Livestock farming is considered one of the main areas in ensuring food security, as meat production is essential in the field due to the abundance of nutritious and valuable products such as meat, milk, eggs, and other valuable products in terms of content of various nutrients. The total number of livestock and poultry in our Republic accounts for 50% and more of the total number, and this situation does not provide enough scientific research in the field. Nowadays, both public demand and market demand for meat products are increasing, so one of the most important issues is the high productivity of meat production, characterized by high-quality breeds that lead to increased production. Our local breeds fully respond to these requirements, because depending on which market or supermarkets or meat shops in our Republic you go to, 80-90% of all sold meat is precisely attributed to high-quality breeds or their genotypes. Therefore, more than half of the



livestock and poultry in our Republic are directly related to these high-quality breeds. .[1],[3]

METHODS

Nowadays, using genetic possibilities of high-quality breeds and completing their breeding characteristics from an hereditary aspect, selecting seedlings for meat production based on breeding farms, selecting them in acquired offspring, and creating genotypes of this breed are considered important tasks for achieving high productivity in meat production.

In various fields of animal husbandry, especially in poultry farming, research has been carried out on the use of hydroponic feeds for feeding animals and the effective and disadvantages of using hydroponic feeds have been identified.[2],[5] In sheep breeding, however, there have been few studies conducted in this direction. The purpose of the research is to determine the effectiveness of feeding hydroponic feeds with different hydroponic feeds. The feed sheep were divided into control and experimental groups, with the control group cows receiving 0.45 kg of fodder per head, the first experimental group sheep receiving 3.0 kg of corn silage, the second experimental group sheep receiving 3.0 kg of barley silage, and the third experimental group sheep receiving 3.0 kg of maize cob silage as additional feed. The same applies to the forages - they were also divided into 4 groups, with control group forages receiving 0.3 kg of fodder per head, the first experimental group forages receiving 2.0 kg of corn silage, and so on. Fortifying sheep feed for meat and fat involves enhancing the nutritional content of the feed to promote healthy growth and development in sheep, particularly to increase muscle mass and fat deposition. This practice is commonly employed in the livestock industry to improve the quality of meat produced by sheep. Here are some key points to consider when fortifying sheep feed for meat and fat:

Protein content: Sheep require a high protein diet to support muscle growth. Including high-quality protein sources such as soybean meal, fishmeal, or alfalfa in their feed can help meet their protein requirements. Adequate protein intake ensures proper muscle development and contributes to increased meat production.

Energy sources: To enhance fat deposition, it is important to provide energy-dense feed ingredients. Grains like corn, barley, oats, or wheat are commonly used as energy sources in sheep diets. These grains should be finely ground or processed to improve digestibility.

Essential fatty acids: Including essential fatty acids like omega-3 and omega-6 in sheep feed can impact meat quality positively. These fatty acids contribute to marbling, tenderness,



flavor, and overall meat quality. Sources of essential fatty acids include flaxseed, fish oil, or other vegetable oils. Vitamin and mineral supplementation: Ensuring adequate vitamin and mineral intake is crucial for optimal growth and development of sheep. Key vitamins include vitamin A, D, E, B-complex vitamins (especially B12), as well as minerals like calcium, phosphorus, selenium, copper, zinc, manganese, and iodine. A well-balanced mineral premix or custom mineral supplementation can be added to the feed. Fiber content: Although fiber is not directly linked to meat production or fat deposition in sheep, it plays a vital role in maintaining digestive health. Adding roughage sources such as hay or silage provides necessary bulk for proper rumen function. Feed additives: Certain feed additives can aid in improving feed efficiency, enhancing nutrient absorption, and promoting growth. Probiotics, prebiotics, enzymes, and growth-promoting additives like ractopamine or beta-agonists are commonly used in commercial sheep feeds to achieve desired meat and fat production goals. However, their use should comply with local regulations and guidelines.. Consultation with a nutritionist: Formulating a balanced diet requires expertise in sheep nutrition. Consulting with a professional animal nutritionist can help develop a customized feeding program specifically tailored to the needs of your flock, taking into account factors such as breed, age, weight, and desired meat quality. It is important to note that while fortifying sheep feed can enhance meat and fat production, other factors such as genetics, overall management practices (housing conditions, health care), and exercise also play critical roles in achieving desired outcomes

RESULTS AND DISCUSSION

The research investigated the dynamics of live weight, absolute and daily increase of sheep fed with various hydroponic feeds and then additionally fed with such feeds for an 8-month period. The dynamics of live weight increase of sheep were generalized in the second table. From the table data, it is possible to see that various hydroponic feeds have different degrees of influence on the live weight of sheep, and the highest result was observed in sheep fed with clover feed. During the research, the data obtained from the experiences of moving and wandering during the 8-month-old age period were analyzed. The indicators of stable weight, their increase, and daily gain were studied, and the obtained information was processed using the method of variation statistics. .[4]



Table 1

Absolute and daily growth rates of live weight of lambs,kg, n=20

№	Groups	At the age of 5 months			At the age of 6 months			At the age of 8 months		
		Growth indicators								
		Period duration, day	Absolute growth,kg	Daily growth,kg	Period duration, day	Absolute growth,kg	Daily growth,kg	Period duration, day	Absolute growth,kg	Daily growth,kg
1	Control	150	31.4	0.208	30	-0.1	-0.003	60	5.1	0.085
2	Group 1	150	33.7	0.224	30	1.2	0.04	60	9.3	0.155
3	Group 2	150	32.6	0.217	30	0.9	0.03	60	8.6	0.143
4	Group 3	150	32.4	0.216	30	0.8	0.026	60	7.5	0.125

Depending on the type of hydroponic feed from the table data, the value of the ration can vary, and it is possible to see the superiority of a ration with added winter barley. It is necessary to emphasize that the offspring of sheep fed with alfalfa hay in this condition were born with a statistically significant higher birth weight (5.3 ± 0.06 kg) compared to offspring from other groups (4.8-5.1 kg), and such superiority was observed to be maintained at the age of 5 and 6 months ($P < 0.05$; 0.001). The superiority in birth weight with alfa hay feeding compared to the control group in controlling the weight gain of lambs from 6 months to 8 months with a treatment period of 60 days was found to be 8.3 kilograms ($P < 0.001$) with hydroponic feed, 6.0 kilograms ($P < 0.001$) with barley feed, and 4.54 kilograms ($P < 0.001$) with corn silage feed.

Table 2

Dynamics of changes in live weight of lambs,kg n=20

№	Groups	Live weight in kilograms							
		At birth		At the age of 5 months		At the age of 6 months		At the age of 8 months	
		X±Sx	Cv, %	X±Sx	Cv, %	X±Sx	Cv, %	X±Sx	Cv, %
1	Control	4.8±0.0	6.8	36.1±0.13	1.88	38.0±0.13	1.88	40.4±0.15	1.5
2	Group 1	5.3±0.06	6.2	38.9±0.14	1.79	40.1±0.14	1.69	49.5±0.12	1.49
3	Group 2	5.1±0.07	6.8	37.6±0.12	1.59	38.5±0.13	1.68	47.2±0.13	1.37
4	Group 3	5.0±0.07	7.0	37.3±0.12	1.65	38.1±0.12	1.65	46.5±0.13	1.56
		X-P≤0.05 x)P≤0.001							

CONCLUSION

The increased absolute and daily weight gain of the experimental animals fed with hydroponic feed ingredients is attributed to the more efficient utilization of nutrients in the organism. It is observed from the data in the table that the absolute and daily weight gain of the sheep raised on hydroponic maize is highest at 8 weeks of age, which should be taken into account for practical purposes.

When discussing the effectiveness of supplementing feed with various additional feeds, it is important to consider the efficiency of balancing the ration for livestock. For example, supplementary feeds contain high-quality proteins, high-energy carbohydrates, and essential vitamins and minerals. This ensures the healthy nutrition of livestock and helps them develop in a good way. Rules and regulations regarding supplementary feeds are very important for the feeding and utilization of livestock. If supplementary feeds are not given in the correct order, necessary nutrients may not be taken in the right amounts for the health and development of livestock. Similarly, balancing the ration for meat production is also important. To use meat efficiently, it should be used with other feeds. This allows for obtaining a balanced amount of proteins, fats, vitamins, and mineral substances in meat. Rations supplemented with such methods are very important for the health and development of animals and provide great support in these processes.

REFERENCES

1. Калашников А.П. Нормы рационы кормления сельскохозяйственных животных. Москва – 2003, С.131-136.
2. Курапаткин С.А. Молочная продуктивность коров при использовании в рационах гидропонного зелёного корма. Автореферат. к.с.х.н. Оренбург 2003, С. 20-22.
3. Плохинский Н.А. Руководство по биометрии для зоотехников. Москва 1969, 256 с.
4. Ружанский И. Использование гидропонного зеленого корма в рационе селско хозяйственных животных и птиц. [Электронный ресурс Агровестник, 02.11.2016.УРЛ: хттхс: // агровест /нет.]
5. Шитикова А.В., Жогин И.М., Абарнова.А.А., Бесков В.А. Гидропоника – алтернатива традиционному зелёному корму. Ж. Кормо производство. ФГБОУВОРГАУ-МСХА им. К.А.Тимирязова. № 4.2020 г.



ТАРИХИЙ СИЙМОЛАР ДАВЛАТ БОШҚАРУВИ ТИЗИМИДА ДАВЛАТ ХИЗМАТИНИНГ ЎРНИ ХАҚИДА

Бехзоджон Қуролович Маликов

Тошкент давлат транспорт университети “Халқаро оммавий ҳуқуқ” кафедраси
катта ўқитувчиси

АННОТАЦИЯ

Мазкур мақолада халқимизнинг юксак маънавият, адолатпарварлик, маърифатпарварлик каби эзгу фазилатлари асрлар оша ривожланиб, сайқалланиб келаётгани, Шунингдек ҳозирги кунда давлат хизматлари соҳасида амалга оширилаётган ислоҳатлар, давлатчилигимизни такомиллаштирилиши, давлатни бошқариш масалалари каби ғоялар ҳам ўтмишимизда Абу Наср Форобий, Юсуф Хос Ҳожиб, Амир Темур, Алишер Навоий каби буюк мутафаккир аждодларимизнинг таълимотлари илмий жиҳатдан таҳлил қилинган.

Калит сўзлар: давлат хизмати, давлат хизматчиси, тузук, таълимот, модел, тарих, фозил одамлар шаҳри, президент, қонун, ҳокимият, сиймо

ABSTRACT

In this article, the noble qualities of our people, such as high spirituality, justice and enlightenment, as well as reforms implemented in the field of public services, improving our statehood, and issues of public administration, have been developed and honed over the centuries. The teachings of great thinkers such as Alisher Navoi have been subjected to scientific analysis.

Keywords: civil service, civil servant, constitution, doctrine, model, history, city of virtuous people, president, law, power, figure

КИРИШ

Маълумки, Ўзбекистон мустақилликка эришган дастлабки кунларидан бошлаб ўзининг бош стратегик мақсадини белгилаб олди. Бу – бозор иқтисодиётига асосланган демократик ҳуқуқий давлат барпо этиш, кучли фуқаролик жамиятини шакллантиришдан иборатдир. Бу мақсадга эришишдаги Ўзбекистоннинг ўзига хос ва ўзига мос тараққиёт йўли Ўзбекистон Республикасининг биринчи Президенти Ислам Каримов томонидан белгилаб берилди.

Биз барпо этаётган демократик ҳуқуқий давлат энг



аввало, умумжаҳон цивилизациясига, давлат қурилиши соҳасида ривожланган давлатларнинг эришган тажрибаларига, ўзимизнинг миллий кадриятларимизга асосланган бўлиши лозим.

Маълумки, иморатнинг мустаҳкамлиги унинг пойдеворига боғлиқ. Пойдевор қанчалик бақувват бўлса, иморат ҳам шунчалик узоқ ва мустаҳкам туради.

Халқимизнинг таянчи – буюк аждодларимиз қолдирган маънавий мероснинг ўзи катта бир хазинадир. Бу хазинадан оқилона фойдаланиш керак.

Халқимизнинг юксак маънавият, адолатпарварлик, маърифатпарварлик каби эзгу фазилатлари асрлар оша ривожланиб, сайқалланиб келмоқда. Ҳозирги кунда амалга оширилаётган давлатчилигимизни такомиллаштирилиши, давлатни бошқариш масалалари ҳам Абу Наср Форобий, Юсуф Хос Ҳожиб, Амир Темур, Алишер Навоий каби буюк мутафаккир аждодларимиз таълимотларига уйғун ҳолда ҳал қилиниши лозим.

АДАБИЁТЛАР ТАҲЛИЛИ ВА МЕТОДОЛОГИЯ

Мамлакатимиз тарихида шундай вақтлар бўлганки, алоҳида шахслар ёки сиёсий партиялар ўзларини қонунлардан ҳам устун қўйганлар. Бу борада ўтмиш хазиналаридан бири Абу Наср Форобийнинг «Фозил одамлар шаҳри» тўпламида Талҳису навомиси Афлотун (Афлотун қонунлар моҳияти) асарида шундай деб ёзади: «Афлотун соҳиби қонун биринчидан, қонунларни жорий қила олиши, иккинчидан, фармон беришни билиши зарур, дейди. Агар у ўзи буюрган нарсани жорий эта олмаса, агар бошқалар бўйсунган нарсага ўзи амал қилмаса, у ҳолда унинг кўрсатмалари қонуний кучга эга бўлмайди ва унинг сўзлари қўл остидагиларга таъсир этмайди. Қонунга амал қилмаган раҳбар ўзи қаҳрамон бўлмай туриб аскарларга раҳбарлик қиладиганларга ўхшайди, бундайларга ҳавас қилиб бўлмайди».

«Афлотун... айтадики, бошқарув турларининг сони қонунчиликнинг сонига мутаносибдир, чунки ҳокимият қонунларга бўйсунди, улардан ҳосил бўлади ва уларга асосланади. Бошқарув ҳам қонунларнинг сонига ва кадриятига боғлиқ. Яхши бошқарув яхши қонунларга боғлиқ, ёмон бошқарув-ёмон қонунларга, етук бошқарув-етук қонунларга боғлиқ».

Юсуф Хос Ҳожиб ўзининг «Қутадғу билиг» асарида давлат хизматини амалга ошираётган арбоблар қандай хусусиятларга эга бўлиши лозимлиги тўғрисида батафсил ёзади. У ким вазир бўлиши мумкинлиги тўғрисида шундай дейди: Вазир «пишиқ ва одил бўлиши, бошқаларни ҳам шу йўлга ундаб туриши лозим. Вазирлик

улуғ иш. Бу ишга ишончли, етук ва сара, укув-идрокли, доно ва юмшоқ кўнгил, айни пайтда дадил ва журъатли кишилар керак»

«Вазирликка ростгўй, ёзув-чизув ишларидан тўла хабардор бўлган киши керак. Унинг хулқ-атвори кўпчиликка манзур, тили билан дили бир бўлиши лозим. Уят-андиша эгаси, дили кирсизлар бу амалга муносибдир. Кўзи тўқ, абжир, билағон, сезгир, яхши ёмоннинг фарқига борувчилар вазирликка лойиқ бўлади».

«Бошлиқ тили ва кўнглини тўғри тутадиган бўлса, унинг ходимлари, қўл остидаги ишчилари ҳам тўғрилиқ йўлини танлайди».

МУҲОКАМА ВА НАТИЖАЛАР

Амир Темур «Куч-адолатдадир» деган шиорга қатъий амал қилиб давлатни бошқарган, адолат фақат жиноят ва жазо, меҳнат ва роҳат, ҳуқуқ ва масъулият ўртасидаги мутаносиблик бўлибгина қолмай, одамларга, давлатга жамиятга улкан куч бағишлашини кашф этган эди. Бу шиорнинг улкан ижтимоий аҳамиятга эга эканлиги шундаки атрофдаги кўпчилик мамлакатларда бу масала ҳақидаги тасаввурлар адолат кучдадир, шаклида ифодаланарди. Амир Темур ҳам катта салтанат эгаси, улкан куч-қудрат соҳиби сифатида ўша тасаввурнинг сақланишидан манфаатдор эди. Лекин у адолат кучда эмас, куч адолатда эканини баралла айтиш учун ирода ва қатъиятдан ташқари улкан заковат ва донолик соҳиби эканини намоён қила билди.

Соҳибқирон шу икки сўздан иборат шиори билан ўзидан олдин яшаган барча файласуфларнинг ўнлаб, юзлаб китобларда баён қила олмаган фикрни ифодалади. Соҳибқиронгача яшаган файласуфлар адолат нима экани, таркиби қандайлиги, даражаси, моҳияти кабилар тўғрисида бош қотирган бўлса, буюк Амир Темур икки сўз ёрдамида адолат инсонга ва давлатга нима беришини кўрсатиб берди. Ўз даврида ҳеч бир давлатда бўлмаган ва тарихда камдан-кам учрайдиган лавозим – «Адолат амири» лавозимини таъсис этган.

Маълумки, давлат бошқарувида муҳим масалаларни ҳал қилишда тегишли кишилар билан маслаҳатлашиш лозимлиги давлат бошқарувининг асосий принципларидан бири бўлиб ҳисобланади. Бу ҳақда бобокалонимиз Амир Темур шундай деган эди: «Пирим Зайнуддин Абубакр Тойбодий менга ёзмишларким, Абулмансур Темур, салтанат ишларида тўрт нарсага амал қилган, яъни: 1) кенгаш; 2) машварату маслаҳат; 3) қатъий қарор, тадбиркорлик ва ҳушёрлик; 4) эҳтиёткорлик. Чунки кенгаш ва машваратсиз салтанатни барча қилган ишлари ва айтган гаплари нотўғри бўлган жоҳил одамга қиёс қилиш мумкин; унинг айтган



сўзлари ва қилган ишлари бошга пушаймонлик ва надомат келтиргай. Шундай экан, салтанат бошқаришда машварату маслаҳат ва тадбиркорлик билан иш юргизгин, токи оқибатда надомат чекиб пушаймон бўлмагайсан. Шуни ҳам билишинг керакким, салтанат ишларининг бир қисми сабру тоқат билан бўлғай, яна бир қисми билиб-билмасликка, кўриб-кўрмасликка солиш билан битур.

Пирнинг сўзларидан Темур жуда тўғри хулосалар ҳосил қилиб, давлатни бошқаришга оид бўлган ўз сиёсатини амалга оширишда фойдаланади. У ёзади: «...Шунга кўра давлат ишларининг тўққиз улуши кенгаш, тадбир ва машварат, қолган бир улуши эса қилич билан бажо келтирилишини англадим».

Темурнинг фикрича давлатни идора қилишда шошма-шошарликка, манманликка зинҳор йўл қўйиб бўлмаслиги ва бунда муҳим сиёсий масалаларни фақат кенгаш ва тадбир орқали амалга оширилсагина тўғри бўлишлиги, хатога йўл қўйилмаслигига эътибор беришга даъват қилади.

«...Тажрибамда кўрилганким, - деб ёзади Темур, - ишбилармон, мардлик ва шижоат соҳиби, азми қатъий, тадбиркор ва хушёр бир киши, минг-минглаб тадбирсиз, лоқайд кишилардан яхшидир...».

Мустахкам ирода, бағрикенглик, иймон-эътиқод, миллий ғурур туйғуси, диёнат, сиёсатда маслаҳат, мулоҳазалилик, ўйлаб иш қилиш, халқимизнинг кўп минг йиллик тарихи, миллий урф-одатлари ва анъаналарига, миллий кадриятларига, меросига садоқат, оташин ватанпарварлик – булар Амир Темур ҳаёти, маънавий-маърифий таълимотининг мазмунини ташкил этади десак хато қилмаймиз. Унинг бу таълимоти ҳозирги кунда ҳам раҳбар ходимлар учун дастуруламал вазифасини ўтаса фойдадан холи эмас деб ҳисоблаймиз.

Маълумки, Амир Темурдан кейин унинг адолат тўғрисидаги таълимоти Алишер Навоий томонидан янада ривожлантирилди. Авваллари ўз мамлакатада адолатли шоҳ бошчилигида адолатли давлатга эришиш орзусида бўлган Алишер Навоий дўсти Хусайн Бойқаро ҳокимиятни қўлга олгандан кейин унинг таклифига биноан давлат аппаратида хизмат қила бошлади. Бу ерда шу нарса характерлики, шоир фақатгина хаёлан ташқарида кузатувчи сифатида адолатли давлатни орзу қилиб қолмасдан, балки бевосита феодал давлат аппаратида шоҳдан кейинги энг юқори мансаб – вазирлик лавозимигача бўлган вазифаларда хизмат қилиб, Хусайн Бойқаронинг давлатини адолатли давлатга айлантириш учун кўп йиллар давомида ҳаракат қилди, аммо Алишер Навоий Хусайн Бойқаро раҳбарлигида адолатли давлат қуриш мумкин эмаслигини тушуниб етгач, 1476 йил вазирликдан истеъфо бериб, маърифатпарвар шоҳ орзуларидан узоқлашиб, эндиликда кўп вақтини хаёлий образлар яратишга, шу жумладан ўзининг

бутун бир ҳаёлий давлати бўлмиш – «Садди Искандарий» достонини ёзишга киришди.

Алишер Навоийнинг улуғлиги шундаки, у мавжуд адолатсиз сиёсий тузумни жаҳон миқёсида адолатли асосда қуриш зарурлигини тушунади, лекин қандай қилиб, қайси куч билан буни амалга ошириш мумкинлигини тасаввур қила олмайди ва шу сабабли ҳам бу улуғвор ишни фақат Искандарга топширади.

Навоийнинг эътироф этишича, мамлакатнинг ободлиги, иқтисодий, моддий жиҳатдан мустақамлиги, элу-юртни тинч осойишталиги, одамларнинг фаровон ҳаёти кўп жиҳатдан шоҳга, унинг адолати, ҳалол-покизалиги, инсоф-диёнатига боғлиқ.

Шулардан хулоса қилиб, ҳозирги кунда ҳам ҳар бир тармоқнинг, соҳанинг, вилоят ёки туманнинг тараққиёти унинг биринчи раҳбарига боғлиқ деган фикрни билдириш мумкин. Бундай раҳбарлар Навоий меросига асосланиб иш кўрсалар ўз жабҳаларида адолатни таъминлаб тегишли натижаларга эришадилар.

Навоий ичкиликбоз ва порахўр қозиларни қолаверса бошқа ислом дини ҳуқуқшуносларини, жумладан қонуншунос муфтиларни қаттиқ танқид қилиб, ундайларни ўлдирмоқ ва уларни дўзах ўтига етмасданок қуйдирмоқ керак дейди. Модомики, ҳукми элнинг моли ва жонига тааллуқли экан қози ва муфтиларнинг шиори тўғрилиқ ва адолат бўлиши керак, деб таъкидланади.

Қозилар ва қонуншунос муфтилар ҳалол, инсоф-диёнатли бўлиши, қонун йўлидан бир қадам ҳам тоймаслиги ҳақида Навоий томонидан эслатиб ўтилган ушбу илмий фалсафий ғоялар миллий истиқлол мафкурамиз учун ҳам, ҳозирги кундаги судьялар ва ҳуқуқни муҳофаза этувчи органларда ишлаётган хизматчилар учун ҳам, умуман ҳар қандай раҳбар ходимлар учун ҳам муҳим аҳамиятга эгадир.

ХУЛОСА

Хулоса қилиб шуни айтиш мумкинки, биз юқорида келтирган буюк мутафаккир бобокалонларимиз айтиб ўтган ҳикматлар мамлакатимиз ҳаётининг бугунги кунда ҳам катта аҳамият касб этади.

Республикамизда қонун чиқарувчи, ижро этувчи ва суд ҳокимиятини амалга оширишда иштирок этаётган давлат хизматчилари, раҳбар ходимлар мустақил Ўзбекистон олдида улкан вазифалар турганлигини тушуниши, давлат томонидан ўзларига юклатилган катта масъулиятни ҳис қилиши, биринчи навбатда халқ



манфаатини ўйлаши, халқнинг ишончини оқлаши, Ўзбекистон Республикаси Президенти Ш.М.Мирзиёев бошлаган тараққиёт йўлидан бир ёқадан бош чиқариб, собитқадамлик билан бориши лозим. Ана шундагина кўзланган мақсадга эришиш - адолатли, демократик ҳуқуқий давлат барпо этиш, кучли фуқаролик жамиятини шакллантириш мумкин бўлади.

REFERENCES

1. Абу Наср Форобий. Фозил одамлар шаҳри. Тошкент, А.Қодирий номидаги халқаро мероси нашриёти, 1993 й.
2. Юсуф Хос Хожиб. Қутадғу билиг. Тошкент, «Юлдузча», 1990 й.
3. Бобоев, З.Ғофуров. Ўзбекистонда сийсий ва маънавий-маърифий таълимотлар тараққиёти. Тошкент, «Янги аср авлоди», 2001 й.
4. Маликов, Б. Қ. (2021). ШАРҚ МУТАФАККИРЛАРИНИНГ ДАВЛАТ ХИЗМАТЛАРИГА ДОИР СИЁСИЙ ҚАРАШЛАРИ. Scientific progress, 1(4), 207-212.
5. Маликов, Б. Қ., & Икромов, Д. Р. Ў. (2022). ШАРҚ ТАЪЛИМОТИДА ҚОНУН УСТУВОРЛИГИ ҒОЯЛАРИ. Academic research in educational sciences, 3(TSTU Conference 2), 483-487.
6. Qurolovich, M. B. (2023). ALISHER NAVOIYNING VATAN VA DAVLAT XIZMATCHISI SIFATIDAGI SIYOSIY QARASHLARI. PEDAGOGS jurnali, 27(1), 78-81.
7. Беҳзоджон Қуролович Маликов ЎЗБЕКИСТОНДА ДАВЛАТ ХИЗМАТИНИ ТАРТИБГА СОЛИШДАГИ МУАММОЛАР // Academic research in educational sciences. 2021. №2. URL: <https://cyberleninka.ru/article/n/zbekistonda-davlat-hizmatini-tartibga-solishdagi-muammolar> (дата обращения: 20.12.2022).
8. Маликов, Б. Қ. (2021). ШАРҚ МУТАФАККИРЛАРИНИНГ ДАВЛАТ ХИЗМАТЛАРИГА ДОИР СИЁСИЙ ҚАРАШЛАРИ. Scientific progress, 1(4), 207-212.
9. Маликов, Б. Қ., & Икромов, Д. Р. Ў. (2022). ШАРҚ ТАЪЛИМОТИДА ҚОНУН УСТУВОРЛИГИ ҒОЯЛАРИ. Academic research in educational sciences, 3(TSTU Conference 2), 483-487.
10. Маликов, Б. Қ. (2021). ЁШЛАРНИ САЛБИЙ МАФКУРАВИЙ ТАХДИДЛАРДАН ХДМОЯ КИЛИШ-ДАЁТИЙ ЗАРУРИЯТ YANGI O'ZBEKISTONDA ILM-FAN VA TA'LIM ILMIY-METODIK JURNALI. ISSUE, 1(1), 202-206.
11. Маликов, Б. Қ., & Абдураимов, О. К. Ў. (2022). ХУҚУҚИЙ БАРКАМОЛЛИК ВА МАЪНАВИЯТ. Academic research in educational sciences, 3(TSTU Conference 2), 449-453.



12. Маликов, Б. Қ., & Дехқонбоев, Ш. Б. Ў. (2022). ХУҚУҚИЙ МАДАНИЯТ ХУҚУҚИЙ ДЕМОКРАТИК ДАВЛАТ БАРПО ЭТИШНИНГ МУҲИМ ОМИЛИ. Academic research in educational sciences, 3(TSTU Conference 2), 462-466.
13. Маликов, Б. Қ., & Эшқурбонов, А. И. Ў. (2022). АДОЛАТЛИ ЖАМИЯТДА ОДИЛ СУД СИФАТИ. Academic research in educational sciences, 3(TSTU Conference 2), 467-472.
14. Маликов, Б. Қ., & Хамроқулов, Б. К. Ў. (2022). ЎЗБЕКИСТОН КОНСТИТУЦИЯСИДА ИНСОН ВА ТАБИАТ ҚАДРИ. Academic research in educational sciences, 3(TSTU Conference 2), 473-478.
15. Маликов, Б. Қ., & Хамроқулов, С. К. Ў. (2022). ИСЛОМ КАРИМОВ АСАРЛАРИДА КОНСТИТУЦИЯ ВА ҚОНУН УСТУВОРЛИГИ ҒОЯЛАРИ. Academic research in educational sciences, 3(TSTU Conference 2), 479-482.
16. Маликов, Б. Қ., & Болиева, Н. Қ. Қ. (2022). ХУҚУҚИЙ НИГИЛИЗМНИНГ ИЖТИМОИЙ ХАВФИ. Academic research in educational sciences, 3(TSTU Conference 2), 458-461.
17. Маликов, Б. Қ., & Бўриев, З. Б. Ў. (2022). ЖАМИЯТ ТАРАҚҚИЁТИДА ХУҚУҚИЙ ОНГНИНГ АҲАМИЯТИ. Academic research in educational sciences, 3(TSTU Conference 2), 454-457.
18. Qurolovich, M. B. (2023). ALISHER NAVOIYNING VATAN VA DAVLAT XIZMATCHISI SIFATIDAGI SIYOSIY QARASHLARI. PEDAGOGS jurnali, 27(1), 78-81.
19. Qurolovich, M. B. (2023). YOSHLARNING SIYOSIY FAOLLIGINI RIVOJLANTIRISHNING O'ZIGA XOS HUSUSIYATLARI. PEDAGOGS jurnali, 27(1), 73-77.



A STUDY ON DETECTION OF CHEMICAL ADULTERATION IN PACKED MILK

Danish Sabghatullah

¹Department of Para Clinic, Veterinary Sciences Faculty, Shaikh Zayed University, Khost, Afghanistan

Sadiq Rozikhan

²Department of Animal production, Veterinary Sciences Faculty, Nangarhar University, Afghanistan.

Hasanzai Nasirweda

³Department of Para Clinic, Agriculture Faculty, Bamian University, Afghanistan

Jauhar Safiullah

⁴Department of Food technology, Agriculture Faculty, Kabul University, Afghanistan

ABSTRACT

Background: Milk is a valuable source of essential nutrients that fulfill the dietary requirements of the human body. However, the addition of adulterants in significant quantities is prevalent to prevent spoilage, which poses a serious health risk. The objective of this study was to analyze packed milk samples in Nangarhar, Afghanistan to assess the presence of adulterants.

Keywords: Milk, Urea, Starch, Sugar, and Adulteration.

INTRODUCTION

Milk is a highly nutritious food containing essential nutrients such as casein and lactose that are important for the body. However, milk can be adulterated with various substances like starch, urea, and cane sugar, which significantly decrease its value. Consumption of adulterated milk poses health risks and can lead to illnesses (Afzal et al., 2011). Adulteration refers to the addition of substances that render a product unsuitable for consumption. Adulterants are added to increase quantity (FAO/WHO, 2003). The addition of adulterants to milk is prevalent in developing and underdeveloped countries due to the lack of proper strategies and timely monitoring during milk processing (Xin & Stone, 2008).

For instance, urea is used to enhance the stability and whiteness of milk, but it can cause acidity, indigestion, ulcers, and even cancer in consumers. Consuming adulterated milk also negatively affects the heart, liver, and kidneys (Kandpal et al., 2012). Starch is added to milk to increase the solid-not-fat (SNF) content. Excessive consumption of starch-adulterated milk can lead to diarrhea and may prove fatal for diabetic patients (Sukumaran & Singuluri, 2014). Moreover, excessive starch intake can contribute to obesity (IMNA, 2005). Sugar is mixed into milk to enhance its solids content, excluding lipids (Reddy et al., 2017). Additionally, sugar is used to increase the carbohydrate content and thickness of milk (Sharma et al., 2012).

In Afghanistan, where agriculture and livestock play a significant role, people consume milk and meat products from various animals such as cattle, buffalo, sheep, goats, and camels. While these products alone do not meet their immediate needs, packed milk is imported from neighboring countries. Unfortunately, the milk entering the country from these neighboring sources is not subjected to any examination. Consequently, the presence of adulterants in milk has become a major issue for the dairy sector in Afghanistan, resulting in economic losses for the processing industry and potential health risks for consumers. Hence, this research aims to evaluate the adulteration levels in the well-known packed milk samples mentioned above within the Nangarhar province.

MATERIALS AND METHODS

GENERAL CONSIDERATIONS: Sixty-three samples from three kinds of packed milk (MILK PACK, TARANG, and EVERY DAY), each of 250 ml packed milk were collected which are purchasing in Jalalabad city. From each kind of them we randomly took twenty-one samples which were brought for analysis into the Dairy Test Center, Livestock Management Department, Veterinary Faculty, and Nangarhar University in Afghanistan. Each sample was observed for the detection of various adulteration. Various milk adulterants like starch, urea, and cane sugar were detected by using the following procedures.

Identifying Urea in Milk

Method: Dimethylaminobenzaldehyde & Trichloroacetic Acid are used.

Reagent: Dimethylaminobenzaldehyde (DMAB), Ethyl alcohol, Concentrated HCL, and Trichloroacetic acid (TCA)

Procedure: About 5 ml of Para Dimethylaminobenzaldehyde (16%) is added to a 5 ml sample of milk and is mixed well. If the color of the solution turns clear yellow, then it indicates that the sample of milk is

adulterated with urea. Otherwise, pale yellow is the natural color of the milk (Arvind et al., 2012).

Identifying Starch in Milk

Method: Iodine (Without a heated milk sample) is used.

Reagent: Potassium iodide and Iodine crystal

Procedure: About 3 ml of milk as a sample is taken in a test tube. After thoroughly boiling cool it down to room temperature. Then need to add 2 to 3 drops of Iodine (1%) solution. If the color of the solution appears blue, it indicates the presence of starch in milk (Singh et al. 2012; Kumar et al. 1998).

Identifying Cane Sugar in Milk

Method: Seliwanoff's Reagent is used.

Reagent: Resorcinol and Concentrated Hydrochloric Acid (HCL)

Procedure: About 5 ml of milk is taken as a sample in a test tube. Then 5 ml conc. HCL and 0.1 g resorcinol are added. After that test tube is placed in a water bath for 5 min. If it appears red color, it indicates the presence of added sugar (Kamthania et al. 2014).

RESULTS

The Milk samples from various milk shops in Jalalabad city were collected and identified the existence of adulterant additives. The result indicates that packed milk which is imported from neighboring countries, particularly from Pakistan has low quality. Generally, 44.44% of Milk samples were positive for Adulterants (urea, Starch, and Cane sugar) in packed milk (MILK PACK, TARANG, and EVERY DAY). 33.3% of Milk samples were positive for Adulterants (urea, Starch, and Cane sugar) in TARANG. 66.6% of Milk samples were positive for Adulterants (urea, Starch, and Cane sugar) in EVERY DAY. 33.3% of Milk samples were positive for Adulterants (urea, Starch, and Cane sugar) in MILK PACK. The complete result is further displayed in Table 1.

Table 1: shows the exact result of Adulterants (urea, Starch, and Cane sugar) in packed milk

Numbers	Milk	N. samples	Adulterants (urea, Starch, and Cane sugar)	Percentages of the positive samples
1	TARANG	21	+	33.3%
2	EVERY DAY	21	+	66.6%

3	MILK PACK	21	+	33.3%
4	Total	63	+	44.44%

Identifying chemical adulterants into 3 kinds of packed milk samples revealed that cane sugar was present in EVERY DAY and TARANG milk samples respectively 100% and 100% while urea was present in MILK PACK and EVERY DAY milk samples respectively 100% and 100%. In this research, we have not seen a positive sample for starch (Table 2).

Table 2: Identifying various chemical admixtures in packed milk

Numbers	Milk	N. samples	Urea	Percentages of the positive samples	Starch	Percentages of the positive samples	Cane sugar	Percentages of the positive samples
1	TARANG	21	-	0%	-	0%	+	100%
2	EVERY DAY	21	+	100%	-	0%	+	100%
3	MILK PACK	21	+	100%	-	0%	+	0%

Table 3 demonstrates the percentage of adulterants in the packed milk samples that were collected from Jalalabad city. Urea and cane sugar were found in packed milk samples at 66% and 66%, respectively. There was no recognized sample for starch adulteration.

Table 3: Identified Adulteration in packed milk, collected from Jalalabad city

Number	Adulteration	Percentages of the positive samples
1	Urea	66.66%
2	Starch	0%
3	Cane sugar	66.66%

DISCUSSION

In the present study, a total of 63 samples of packaged milk were examined for the presence of urea. The findings indicated that 66.66% of the samples tested positive for urea, which contrasts with the results reported by Sukumaran & Singuluri (2014), Rai et al. (2020), Makadiya & Pandey (2015), and Swetha et al. (2014). These studies reported positivity rates of 60%, 71%, 100%, and 1.08% respectively. Roy et al. (2017) also conducted a study on packed milk samples and found the presence of urea. Similarly, Yang et al. (2020) and Sinha (2012) obtained similar results in their respective studies.

However, in this current study involving MILK PACK, TARANG, and EVERY DAY milk, positive samples for urea were observed. Awan et al. (2014) completed a research study and identified the presence of cane sugar in their examined packed milk samples. This finding was also supported by Yang et al. (2020), whereas Makadiya & Pandey (2015) reported a moderate percentage (50%) of cane sugar adulteration in packed milk. Our study results also showed the presence of cane sugar adulteration (66.66%). However, the presence of cane sugar in packed milk was not identified by Swetha et al. (2014).

Furthermore, our current research demonstrated that all the identified packed milk samples were free from starch adulteration, aligning with the findings of Swetha et al. (2014), Awan et al. (2014), and Makadiya & Pandey (2015). However, the presence of starch in packed milk samples was recognized by Yang et al. (2020).

In this context, Barham et al. (2014) conducted a study where they identified various substances in milk samples, including water, detergent, cane sugar, caustic soda, rice flour, sodium chloride, skimmed milk powder, hydrogen peroxide, starch, formalin, urea, vegetable oil, boric acid, ammonium sulfate, glucose, sorbitol, and arrowroot. The percentages of these adulterants were as follows: water (73%), detergent (32%), cane sugar (22%), caustic soda (20%), rice flour (17%), sodium chloride (15%), skimmed milk powder (15%), hydrogen peroxide (13%), starch (12%), formalin (11%), urea (10%), vegetable oil (10%), boric acid (8%), ammonium sulfate (6%), glucose (5%), sorbitol (4%), and arrowroot (1%) (Barham et al., 2014).

However, contrary to the findings of Barham et al. (2014), our study observed a higher percentage of positive samples for both urea and cane sugar, with 66.66% positive for each. Additionally, our study did not identify the presence of starch. Another study conducted by Weqar et al. (2021) in Jalalabad, Afghanistan, found additional adulterants in EVERY DAY, TARANG, and MILK PACK packed milk samples. Our study results align with theirs, showing the presence of adulterants such as urea and cane sugar in EVERY DAY, TARANG, and MILK PACK-packed milk samples.

CONCLUSION

Some milk-producing companies add chemical elements to packed milk in order to prevent spoilage and increase the volume, despite the harmful effects on the human body. Typically, water is used to increase the volume of milk, thereby reducing its quality. To counteract this, various chemicals such as urea, sugars, starch, and formalin are added to artificially increase the density of the milk. This research analyzed the findings of



packed milk samples in Jalalabad, Afghanistan. The scientific study revealed that approximately 44.44% of the tested packed milk samples were found to be adulterated with one or more of the investigated adulterants. Adulteration was more prevalent in EVERY DAY packed milk samples compared to TARANG and MILK PACK. Urea and cane sugar adulteration were observed to be higher than starch adulteration in all three types of packed milk samples. Conducting a qualitative study could help determine the concentration of these adulterants and differentiate the milk quality among the different brands. The presence of numerous adulterants decreases the value and quality of milk, which can have severe negative effects on human health. Implementing a regular monitoring system is crucial for ensuring milk quality control. Therefore, the government must take effective measures to combat this malpractice.

REFERENCES

1. Afzal, A., Mahmood, M. S., Hussain, I., & Akhtar, M. (2011). Adulteration and microbiological quality of milk (a review). *Pakistan Journal of Nutrition*, 10(12), 1195-1202.
2. Arvind Singh GC, Aggarwal A, Kumar P. (2012): Adulteration Detection in Milk. *Res News for U (RNFU)*. 2012; 5:52–5.
3. Awan A, Misbah N, Iqbal A, Muhammad Ali M, Iqbal R, et al. (2014) A study on chemical composition and detection of chemical adulteration in tetra pack milk samples commercially available in Multan. *Pak J Pharm Sci* 27: 183-186.
4. Barham, G.S., Khaskheli, M., Soomro, A.H. & Nizamani, Z.A. (2014): Extent of extraneous water and detection of various adulterants in market milk at Mirpurkhas, Pakistan. *Journal of Agriculture and Veterinary Science*. 7(3), 83-89.
5. FAO/WHO, 2003. Assuring food safety and quality: guidelines for strengthening national food control systems. Rome: Food and Agriculture Organization. 28 p. (FAO food and nutrition paper no. 76).
6. Institute of Medicine of the National Academies, (IMNA) (2005). Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids (Macronutrients), the National Academies Press.
7. Kandpal, S. D., Srivastava, A. K., & Negi, K. S. (2012). Estimation of quality of raw milk (open & branded) by milk adulteration testing kit. *Indian journal of community health*, 24(3), 188-192.
8. Kumar, R., Singh, D. K., & Chawla, N. K. (1998). Adulteration/contamination of milk demystified. *Indian Dairyman*, 50, 25-34.

9. Kamthania, M., Saxena, J., Saxena, K., & Sharma, D. K. (2014). Milk Adulteration: Methods of Detection & Remedial Measures. *International Journal of Engineering and Technical Research*, 1, 15-20.
10. Makadiya, J., & Pandey, A. (2015). Quality assessment and detection of adulteration in buffalo milk collected from different areas of Gandhinagar by physicochemical method. *Int J Pharm Tech Res*, 8(4), 602-607.
11. Rai, P., Swain, S., & Talreja, P. (2020). Community acceptance of available milk and assessment of its quality in peri-urban area of Southwest Delhi. *Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine*, 45(Suppl 1), S31.
12. Reddy, D. M., Venkatesh, K., & Reddy, C. V. S. (2017). Adulteration of milk and its detection: a review. *International Journal of Chemical Studies*, 5(4), 613-617.
13. Roy, B., Singh, J., Sunsunwal, S., Dayal, G., Yadav, B., Bhardwaj, C., & Teotia, A. (2017). Detection of harmful adulterants in milk supplied to Delhi, India. *Current Science*, 2316-2320.
14. Sharma, R., Rajput, Y. S., & Barui, A. K. (2012). *Detection of Adulterants in Milk: Laboratory Manual*. India: NDRI.
15. Sinha, K. (2012). 70% of milk in Delhi, country is adulterated consultancy Report <http://timesofindia.indiatimes.com/topic/Food-Safety-Standards-Authority-of-India>.
16. Singh, A., Chandra, G., Aggarwal, A., & Kumar, P. (2012). Adulteration detection in milk. *Res News U*, 5, 52-5.
17. Sukumaran, M. K., & Singuluri, H. (2014). Milk Adulteration in Hyderabad, India—A comparative study on the levels of different adulterants present in milk. *Indian Journal of Dairy Science*, 68(2).
18. Swetha, C. S., Sukumar, B., & Sudhanthirakodi, S. (2014). The Study on Detection of Adulteration in Milk Samples Supplied by Local Vendors in Tirupathi Region, India. *Shanlax International Journal of Veterinary Science*, 2(2), 1-11.
19. Weqar, S. M., Udaliyev, D. I., Ismaelzai, A. W., & Rahmani, M. (2021). Study on Detection of Adulteration Components in Packed Milk. *Health, Food & Biotechnology*, 3(1), 30-34.
20. Xin, H., & Stone, R. (2008). Chinese probe unmasks high-tech adulteration with melamine. *Science*, 322(5906), 1310-1311.
21. Yang, Y., Hettinga, K. A., Erasmus, S. W., Pustjens, A. M., & van Ruth, S. M. (2020). Opportunities for fraudsters: When would profitable milk adulterations go unnoticed by common, standardized FTIR measurements? *Food Research International*, 136, 109543.



ДАВЛАТЧИЛИК ТАРИХИДА ДАВЛАТ ХИЗМАТИ ТАМОЙИЛЛАРИНИНГ МИЛЛИЙ-МАЪНАВИЙ ИЛДИЗЛАРИ

Бехзоджон Куролович Маликов

Тошкент давлат транспорт университети “Халқаро оммавий ҳуқуқ” кафедраси
катта ўқитувчиси

АННОТАЦИЯ

Мазкур мақолада халқимизнинг сиёсий бошқарув ва уни ташкил этиш, давлат бошқаруви, давлат хизмати тизимларининг шаклланиш тарихи, шунингдек “Авесто”да қўлланилган давлат хизмати лавозимларини ифодаловчи атамалар ижтимоий мансаблар ва бошқарув тартиби ҳақидаги маълумотлар илмий жиҳатдан таҳлил қилинган.

Калит сўзлар: давлат хизмати, давлат хизматчиси, авесто, таълимот, модел, тарих, дахю, нмана, варзана, вис, президент, қонун, хокимият

ABSTRACT

This article contains the political governance of our nation and its organization, the history of the formation of public administration, the civil service system, as well as the terms used in the Avesta to designate civil service positions, social positions and information about the order of government. subject to scientific analysis.

Keywords: civil servant, Avesta, teaching, model, history, Daksu, Nmana, Varzana, Vis, president, law, power

КИРИШ

Сиёсий бошқарув ва уни ташкил этиш, давлат бошқаруви, давлат хизмати тизимларининг шаклланиши нуқтаи назаридан қараганда мамлакатимиз тарихи жуда узоқ даврларга бориб тақалади. Зеро давлат арбоби И.А.Каримов таъкидлаганидек, азал-азалдан “Ғарб индивидуализмидан” фарқли равишда “Ўрта Осиё шароитида жамоа бўлиб яшаш туйғуси ғоят муҳим аҳамият касб этади... халқимизнинг турмуш ва тафаккур тарзига назар ташлайдиган бўлсак, бошқаларга ҳеч ўхшамайдиган, минг йиллар давомида шаклланган, нафақат ўзаро муомала, балки ҳаётимизнинг узвий бир қисми сифатида намоён бўладиган бир қатор ўзига хос хусусиятларни кўрамиз... Шарқ халқлари ва юртимиз аҳлига мансуб шундай белги-аломатлар ҳақида гапирганда, уларнинг тарихий-ижтимоий



заминига алоҳида эътибор қаратиш лозим”. Ўзбекистон Республикаси ҳудудларида давлат ва жамият бошқаруви эрампдан аввалги учинчи минг йиллик ўрталарида шаклланиши кузатилишини ҳисобга олсак, халқимиз давлат хизмати масаласида жуда катта тарихга эгаллигини кўрамиз.

Қадимги Марказий Осиё давлатлари нафақат ҳудудий жиҳатлардан кўшни, балки давлат хизмати ҳамда бошқарув тизимининг мазмуни ва шакли жиҳатларидан бир-бирларига ўхшашлик характери касб этганлар. Шунингдек, олий (сарой) ва маҳаллий ҳокимият бошқаруви, раҳбарлик масалалари, уларни танлаш ва тайинлашда ҳам бу давлатларни Марказий Осиё цивилизациясига хос бўлган умумийлик бирлаштириб туради. Бу соҳада тадқиқот олиб борган тарихчи олим профессор А.Сағдуллаевнинг таъкидлашича “Авесто”да қўлланилган давлат хизмати лавозимларини ифодаловчи атамалар ижтимоий мансаблар ва бошқарув тартиби ҳақидаги маълумотлар Ўзбекистон ва Ўрта Осиё тарихига тегишли энг қадимги ёзма манба «Авесто»да (милоддан аввалги IX-VIII ва милоддан аввалги VII-VI асрлар) ўз аксини топган. «Авесто» жамияти тўрт асосий қисмга бўлинади. Уй, оила жамоаси - «нмана», уруғ жамоаси - «вис», қабила - «занту», қабилалар иттифоқи - «дахью» деб аталган. Шунингдек, «дахью» вилоят маъносини ҳам англатган.

Оила, уруғ ва қабила бошлиғи маъноларини ифодалаш учун «пати» сўзи ишлатилган: «нманопати» (уй эгаси), «виспати» (қишлоқ оқсоқоли), «дахьюпати» (вилоят ҳокими). Мамлакатни идора қилган шахс «кави» ёки «састар» деб аталган. «Састар» сўзи қабилаларнинг ҳарбий йўлбошчисини ҳам билдирган. Оқсоқоллар кенгаши - «ханжамана», халқ йиғилиши (мажлиси) - «въяха» деб юритилган.

Энг қадимги даврларда бошқарувчи лавозимини бажарувчи шахсларнинг (оқсоқоллар, ҳарбий йўлбошчилар, қоҳинлар) фаолияти асосан ижтимоий фойдали фаолият бўлган, чунки жамиятда бундай кишиларнинг чиқишига уларнинг ахлоқий хислатлари ва обрў-эътибори сабаб бўлган, холос. Бажарувчи шахслар рағбатлантирилиб турилган ва бу, ўз навбатида, ўзига тўқ оилаларнинг пайдо бўлишига олиб келган ва аста-секинлик билан жамоадаги юксак ҳурматга асосланган ҳокимият мерос тариқасида отадан ўғилга ўта бошлаган.

АДАБИЁТЛАР ТАҲЛИЛИ ВА МЕТОДОЛОГИЯ

Шарқ халқлари дунёқарашида муаммоларни тугатиш тамойили аслида давлат хизмати ва бошқарувнинг асосий моҳиятини ташкил этади. Ҳаётдаги иқтисодий, ижтимоий



муаммоларни қандай ҳал қилиш масаласи, ечимни қандай тарзда моҳирона амалга ошириш тамойили шарқ халқларининг асрлар давомида мазкур муаммога нисбатан муносабатлари, амалий ҳаракатларининг шаклланишига асос бўлган. А.Сагдуллаев илк давлатларнинг ташкил топишида “жамият ривожининг ички қонуниятлари (ижтимоий-иқтисодий муносабатларнинг юқори даражаси, хунармандчилик, товар айрбошлаш ва савдонинг тез ривожланиши, суғорма деҳқончилик ва бошқалар) билан бирга, ташқи омиллар – кучайиб бораётган сиёсий қарама-қаршиликлар ва ҳарбий тўқнашувлар”нинг ҳам катта ўрни борлигини таъкидлайди. Мазкур фикр гарчи давлатларнинг ташкил топиши нуктаи назаридан айтилган бўлсада уни давлат хизматининг шаклланишига нисбатан ҳам татбиқ этиш мумкин. Яъни илк давлатчилик тизимида давлат ҳудудини ички ва ташқи талашувлардан ҳимоялаш, хўжалик ва ишлаб чиқариш муносабатларининг тартибли ривожланишини таъминлаш, сув ва ер тақсимотини ташкил этиш, меъёрлаштириш ва назорат қилиш, жамиятдаги турли тоифалар муносабатларини тартибга солиш, “воҳалар, макон ва манзилгоҳлар аҳолисини” ташқи босқинчи кучлардан ҳимоялаш, шунингдек, тоифалар орасидаги бўлинишларни олдини олиш каби муаммолар шу соҳаларни назорат қиладиган давлат хизмати ва бошқарув тизимини талаб қилар эди. Профессор А.Сагдуллаев тўғри таъкидлагани каби: “Бу вазифаларни ҳал қилиш мақсадида, у ёки бу кўринишдаги ишларни ташкил этиш учун жамият жамоадаги ҳурматга эга бўлган кишиларни - йўлбошчиларни майдонга чиқарди. Шу тариқа, ижтимоий-иқтисодий муносабатлар тараққиёти жамиятда алоҳида ҳурмат-эътиборга лойиқ бўлган кишиларнинг ажралиб чиқишига олиб келди”. Ана шундай кишилар томонидан яратилган ҳамда тартиб тусига киритилган бошқарув ва раҳбарлик давлат хизмати маданиятининг шаклланишига асос бўлди.

МУҲОКАМА ВА НАТИЖАЛАР

Профессор А.Сагдуллаев бошқарувнинг пайдо бўлиш асосларини куйидаги омиллар билан боғлайди: “ишлаб чиқариш ва ижтимоий меҳнат тақсимоти; ташқи ҳарбий босқинлардан ҳимояланиш зарурияти; жамоадаги урф-одатларни бажариш; жамиятнинг ижтимоий-амалий вазифалар жиҳатдан бўлиниши”. Бошқарув тамойилларини эса “ташкил этиш, тартибга солиш, назорат, жамоатнинг ички ва ташқи муносабатларини бошқариб туриш” каби устивор функциялар асосида белгилайди. А.Сагдуллаев мазкур қарашлардан келиб чиқиб бошқарув амалиётини иқтисодий, ижтимоий ва ҳарбий-сиёсий тармоқларга



ажратади. Мазкур таснифлаш “Авесто”да илгари сурилган бошқарув билан боғлиқ ғояларга анча мувофиқ келади. Шу жиҳатдан олиб қараганда давлат хизмати ва бошқарув билан боғлиқ назариялар ҳам амалий, ҳам назарий жиҳатдан “Авесто” даврида шакллана бошлаган эди. Шундан келиб чиқиб айтиш мумкинки, “Авесто” да ифодаланган ва илоҳий деб саналган тартиб-қоидалар, ижтимоий муносабатлар гарчи тўғридан-тўғри бошқарув назариясига қаратилган бўлмасда, давлат хизмати тизими асосларининг шаклланиши ва унинг воситасида эса бошқарувнинг амалий ривожланишига сабаб бўлган эди.

“Авесто”дан яна шуни кузатиш мумкинки, давлат ва маҳаллий бошқарувни ташкил этиш тамойилларни шакллантиришда дин пешволарининг ҳам ўрни юқори бўлган. Ўша даврларда Авесто давлат ва жамиятни ташкил этиш қонунларини ўзида мужассамлаштирган муқаддас китоб бўлганлиги учун ҳам бу қонунлар ижросини назорат қилувчи дин пешволарининг мақомлари юқори бўлган. “Авесто”нинг “Вандидод”лар бўлимида мужассамлашган давлат ва жамиятни бошқариш тартиботи, жиноятни жазолаш, яхшиликка мукофот бериш, бўйсунуш ва бўйсундириш каби қоидаларни давлат ҳокимияти ёки жамоа бошқарувида фаолият олиб боровчиларнинг ёддан билиши талаб этилган.

ХУЛОСА

Умуман, “Авестода” давлат хизмати ва бошқарув лавозимларига қўйилган бош талаблар қуйидагича намоён бўлади: жамиятнинг тўртта тоифаси (ҳарбийлар, хунармандлар, деҳқон-чорвадорлар, диндорлар)дан бирига мансублик ва улар орасида обрў-эътибор қозонганлик; шахс характерида “Авесто”даги илоҳий тўрт унсурнинг мавжудлиги ва шахснинг уларни жиловлай олиши. “Авесто”да мана шу тўртта тоифа жамиятнинг асосини ташкил этган. Улардан ҳеч бўлмаганда бирига мансуб бўлмаслик ҳар қандай шахсни бошқарувда иштирок этишига чек қўйган. Юксак мансаблар эса биз юқорида тилга олган тўрт унсурнинг шахс томонидан қандай жиловланганлигига қараб тақдим этилган. “Авесто” талабига кўра юксак раҳбарлик маҳорати мазкур унсурлардан фақат биттасига кучли даражада эга бўлган шахсга эмас уларнинг барчасидан мўътадил ҳолда фойдалана оладиган одамларгагина тегишли бўлган. Масалан, раҳбар шахснинг табиатида фақат олов унсури кучли бўлмаслиги керак, олов кучли ғазабни ифодалаб, бундай табиатли раҳбар катта хатоларга йўл қўяди, деб қаралган. Шу каби сув юмшоқлик ва кўнгилчанлик, тупроқ хоксорлик, камтарлик, ҳаво худбинлик ва кибр, енгилтаклик, айна вақтда



гурур, орийт маъноларини ифодалаб, бу унсурлардан бири хислатларининг шахсда ёрқин намоён бўлиши бошқарув ишида муаммоларни келтириб чиқаради, деган тушунчага асосланилган. Шунингдек, ҳар бир унсур жамият тўрт тоифасидан бири билан боғланган ва шунинг учун ҳам бошқарувдаги асосий қарорлар мазкур тўрт унсур намояндалари бўлган тўрт тоифа вакиллари тўпланган кенгашларда қабул қилинган.

Қадимги даврларни тадқиқ этган олимларимиз фикрларини умумлаштирганимизда ҳам шу нарса маълум бўладики, Марказий Осиёда давлатчилик шаклланиши, бошқарувнинг юзага келишининг илк босқичларида давлатни идора этиш ва жамият тартибини сақлаш, давлат бошлиғи ва бошқа мансабдорларни танлаш, тайинлаш масалалари жамоа, оқсоқоллар кенгаши, диний ва ҳарбий, чорвадор-деҳқон ва ҳунармандчилик табақаларини бошқарувчи раҳбарлар қарорларига биноан ҳал этилган.

REFERENCES

1. Беҳзоджон Қуролович Маликов ЎЗБЕКИСТОНДА ДАВЛАТ ХИЗМАТИНИ ТАРТИБГА СОЛИШДАГИ МУАММОЛАР // Academic research in educational sciences. 2021. №2. URL: <https://cyberleninka.ru/article/n/zbekistonda-davlat-hizmatini-tartibga-solishdagi-muammolar> (дата обращения: 20.12.2022).
2. Маликов, Б. Қ. (2021). ШАРҚ МУТАФАККИРЛАРИНИНГ ДАВЛАТ ХИЗМАТЛАРИГА ДОИР СИЁСИЙ ҚАРАШЛАРИ. *Scientific progress*, 1(4), 207-212.
3. Маликов, Б. Қ., & Икромов, Д. Р. Ў. (2022). ШАРҚ ТАЪЛИМОТИДА ҚОНУН УСТУВОРЛИГИ ҲОЯЛАРИ. *Academic research in educational sciences*, 3(TSTU Conference 2), 483-487.
4. Маликов, Б. Қ. (2021). ЁШЛАРНИ САЛБИЙ МАФКУРАВИЙ ТАХДИДЛАРДАН ХДМОЯ КИЛИШ-ДАЁТИЙ ЗАРУРИЯТ YANGI O'ZBEKISTONDA ILM-FAN VA TA'LIM ILMIY-METODIK JURNALI. *ISSUE*, 1(1), 202-206.
5. Маликов, Б. Қ., & Абдураимов, О. Қ. Ў. (2022). ХУҚУҚИЙ БАРКАМОЛЛИК ВА МАЪНАВИЯТ. *Academic research in educational sciences*, 3(TSTU Conference 2), 449-453.
6. Маликов, Б. Қ., & Дехқонбоев, Ш. Б. Ў. (2022). ХУҚУҚИЙ МАДАНИЯТ ХУҚУҚИЙ ДЕМОКРАТИК ДАВЛАТ БАРПО ЭТИШНИНГ МУҲИМ ОМИЛИ. *Academic research in educational sciences*, 3(TSTU Conference 2), 462-466.



7. Маликов, Б. Қ., & Эшқурбонов, А. И. Ў. (2022). АДОЛАТЛИ ЖАМИЯТДА ОДИЛ СУД СИФАТИ. *Academic research in educational sciences*, 3(TSTU Conference 2), 467-472.
8. Маликов, Б. Қ., & Хамроқулов, Б. К. Ў. (2022). ЎЗБЕКИСТОН КОНСТИТУЦИЯСИДА ИНСОН ВА ТАБИАТ ҚАДРИ. *Academic research in educational sciences*, 3(TSTU Conference 2), 473-478.
9. Маликов, Б. Қ., & Хамроқулов, С. К. Ў. (2022). ИСЛОМ КАРИМОВ АСАРЛАРИДА КОНСТИТУЦИЯ ВА ҚОНУН УСТУВОРЛИГИ ҒОЯЛАРИ. *Academic research in educational sciences*, 3(TSTU Conference 2), 479-482.
10. Маликов, Б. Қ., & Болиева, Н. Қ. Қ. (2022). ХУҚУҚИЙ НИГИЛИЗМНИНГ ИЖТИМОИЙ ХАВФИ. *Academic research in educational sciences*, 3(TSTU Conference 2), 458-461.
11. Маликов, Б. Қ., & Бўриев, З. Б. Ў. (2022). ЖАМИЯТ ТАРАҚҚИЁТИДА ХУҚУҚИЙ ОНГНИНГ АҲАМИЯТИ. *Academic research in educational sciences*, 3(TSTU Conference 2), 454-457.
12. Qurolovich, M. B. (2023). ALISHER NAVOIYNING VATAN VA DAVLAT XIZMATCHISI SIFATIDAGI SIYOSIY QARASHLARI. *PEDAGOGS jurnali*, 27(1), 78-81.
13. Qurolovich, M. B. (2023). YOSHLARNING SIYOSIY FAOLLIGINI RIVOJLANTIRISHNING O'ZIGA XOS HUSUSIYATLARI. *PEDAGOGS jurnali*, 27(1), 73-77.



ОПРЕДЕЛЕНИЕ ОБЩЕЙ ВЛАГИ И СЕРЫ В КАМЕННОМ УГЛЕ МЕСТОРОЖДЕНИЯ КУЗБАСС

Сарвари, Сайед Реза

Институт высшего образования Нимроза, педагогический факультет, Кафедра химии

Лами, Аманулла

Институт высшего образования Нимроза, педагогический факультет, Кафедра химии

АННОТАЦИЯ

Для достижения поставленной цели были сформулированы следующие задачи:

- рассмотреть виды твердого топлива, его основные характеристики и марки угля, добываемого на территории Российской Федерации;
- рассмотреть и проанализировать экологическое воздействие, обусловленное процессами выработки и использования энергии твердого топлива, влияющее на качество атмосферного воздуха;
- провести исследование каменноугольного образца на содержание в нем влаги и серы.

Ключевые слова: Уголь, метод Ишка, окружающая среда,

ВВЕДЕНИЕ

Сера и влаги присутствует во всех типах твердого топлива и входит в состав различных органических и неорганических соединений. Общее содержание серы в органических и минеральных массах твердого топлива называется серой и обозначается символом S.

Сера - нежелательная и даже вредная часть твердого топлива. Во время горения сера выделяется в виде оксидов, загрязняя и отравляя окружающую среду, что приводит к коррозии металлических поверхностей, снижению теплоты сгорания топлива и превращению его в кокс во время коксования, что ухудшает свойства и качество расплавленного металла.

Топливо-энергетический сектор является основой экономики и формирования бюджета любой развитой страны мира, в том числе и России. Одновременно с этим ТЭК является крупнейшим потребителем минеральных природных ресурсов



и главным загрязнителем окружающей среды. Угольная промышленность – одна из ведущих отраслей в ТЭК России [4]. Однако, именно при сжигании твердого топлива, по сравнению с жидким и газообразным, образуется большое количество вредных выбросов и загрязнение геосферных оболочек нашей планеты.

В твердых горючих ископаемых сера находится в виде минеральных составляющих, среди которых основными являются дисульфиды железа FeS₂ (пирит и марказит) и сульфаты (в основном кальция и железа), а также в виде серосодержащих органических соединений. Другие разновидности (формы) серы в углях встречаются крайне редко и в незначительных количествах. Содержание общей серы и ее отдельных разновидностей колеблется в широком диапазоне и существенно влияет на эффективность процессов переработки топлив, качество угольной продукции и безопасность окружающей среды.

Суммарное содержание серы в угле (сера общая) представляет собой сумму трех форм серы:

- сульфатная сера — часть общей серы, входящая в состав неорганической массы угля в виде сульфатов;
- пиритная сера — часть общей серы, входящая в состав неорганической массы угля в виде пирита и марказита;
- органическая сера — часть общей серы, входящая в состав органических соединений.

Одним из основных показателей качества твердого топлива является содержание в нем серы. Присутствие серы значительно снижает теплоту его сгорания и оказывают сильное негативное влияние на окружающую среду, поэтому сера — крайне нежелательный элемент для топлива [1].

Целью настоящей работы заключается в определение общей влаги и серы в длиннопламенном каменном угле месторождения Кемеровской области Кузбасс.

МАТЕРИАЛЫ И МЕТОДЫ

Методика исследования угольных проб включает в себя, пробоподготовку, лабораторно-аналитические исследования, методы обработки и интерпретацию результатов.

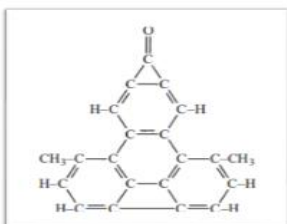
В соответствии с программой работ была выполнена пробоподготовка, определение общей и сульфатной серы и влажности образцов угля [2, 3].

Оценка проводилась по методикам, представленным в соответствующих ГОСТах.

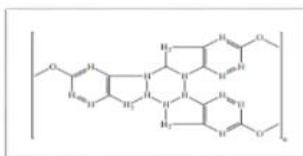
Молекулярная органическая структура угля.

О молекулярной структуре органических веществ углей было высказано много различных мнений и даже предложены формулы или модели элементарных структурных единиц, не получившие общего признания [5, 11].

Гипотетическая формула молекулярной структуры каменного угля по Ф. Мюку

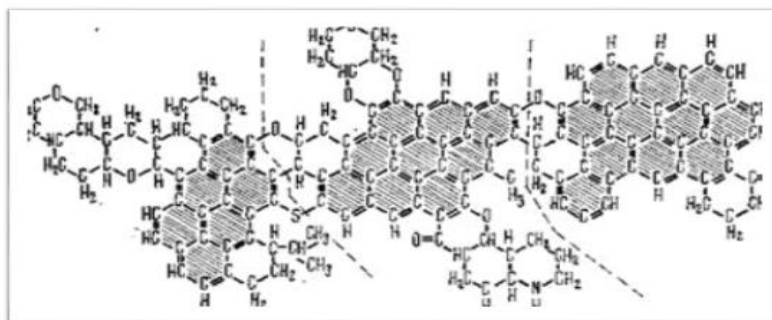


Модель элементарной структурной единицы каменного угля по Г. Сторчу



C135H98O9NSH/C=0,72

Модель макромолекулы витрена (малометаморфизованного каменного угля) по В. Фуксу и Д. В. Ван-Кревелену



Содержание *общей влаги в топливе* определяли по потере массы при высушивании на воздухе, поскольку угли высоких стадий метаморфизма, как в нашем случае, не окисляются при высушивании на воздухе при нагревании до 110 °С. Высушенные до воздушно-сухого состояния пробы образцов сначала измельчались, а затем высушивались в сушильном шкафу при 110 °С на воздухе. Массовую долю общей влаги рассчитывали по потере массы пробы по данной формуле.

$$w_t = \frac{m_2 - m_3}{m_2 - m_1}$$

где

m_1 - масса пустого бюкса, г;

m_2 - масса бюкса с пробой до сушки, г;

m_3 - масса бюкса с пробой после сушки, г.

Массовую долю общей влаги аналитической пробы принимали так среднее значение результатов 10 экспериментов, в которых суммарная масса пробы угля составила приблизительно 100 г.

Результаты определения общей влаги аналитической пробы представлены в таблице 1:

Бюкс 1		Бюкс 2		Бюкс 3		Бюкс 4		Бюкс 5	
m ₁ (г)	54, 9583	m ₁ (г)	54, 8995	m ₁ (г)	55, 0520	m ₁ (г)	54, 9455	m ₁ (г)	54, 9652
m ₂ (г)	64,9815	m ₂ (г)	65,0029	m ₂ (г)	65,0941	m ₂ (г)	65,0420	m ₂ (г)	65,0073
m ₃ (г)	63,9772	m ₃ (г)	63,9198	m ₃ (г)	64,0758	m ₃ (г)	64,0011	m ₃ (г)	63,9509
W _t ^a (%)	10,02	W _t ^a (%)	10,72	W _t ^a (%)	10,14	W _t ^a (%)	10,31	W _t ^a (%)	10,52
Бюкс 6		Бюкс 7		Бюкс 8		Бюкс 9		Бюкс 10	
m ₁ (г)	54, 9325	m ₁ (г)	55, 0950	m ₁ (г)	54, 9725	m ₁ (г)	55, 0913	m ₁ (г)	55, 0180
m ₂ (г)	64,9757	m ₂ (г)	65,0971	m ₂ (г)	65,0046	m ₂ (г)	65,1571	m ₂ (г)	65,0962
m ₃ (г)	63,8659	m ₃ (г)	64,1469	m ₃ (г)	63,9984	m ₃ (г)	64,1388	m ₃ (г)	64,0723
W _t ^a (%)	11,05	W _t ^a (%)	9,95	W _t ^a (%)	10,03	W _t ^a (%)	10,82	W _t ^a (%)	10,16

$$W_t^a = (10,2 + 10,72 + 10,14 + 10,31 + 10,52 + 11,05 + 9,95 + 10,03 + 10,82 + 10,16) / 10 = 10,39 \%$$

Определение серы. Общей серой называется ее суммарное содержание в органической и минеральной массах топлива. Ее определение проводилось по методу Эшка, широко распространенному в мире и признанному арбитражным методом.

Сущность этого метода состоит в спекании навески угля со смесью Эшка (смесь оксида магния и безводного карбоната натрия), в ходе чего происходит сгорание органической массы топлива и превращение всех форм серы в сульфаты натрия и магния, последующим растворением сульфатов в соляной кислоте, осаждении их хлоридом бария и дальнейшем весовом определении. Массовую долю общей серы в навеске аналитической пробы угля рассчитывают, исходя из полученной массы осадка сульфата бария.

Сущность метода определения сульфатной серы аналогична указанному только что и сводится к прямому гравиметрическому методу. Присутствие в солянокислом растворе соединений железа мешает весовому количественному определению сульфат-

ионов, поэтому перед определением проводят осаждение непиридного железа аммиаком. Пиридное железо в этих условиях в раствор не переходит.

В данной работе проводилось определение содержания общей и сульфатной серы в пробе образца. Содержание летучей серы (органической +пиридной) рассчитывалось как разность между общей и сульфатной серой:

$$S_{\text{летуч}} = S_{\text{общ}} - S_{SO_4}$$

Массовую долю общей серы $S_{\text{общ}}^a$ в пробе, выраженную в процентах, вычисляют по формуле:

$$S_t^a = \frac{13.74 (m_2 - m_3)}{m_1}$$

m_1 - масса навески топлива, взятой для анализа, г.

m_2 - масса сульфата бария, полученная при анализе топлива, г;

m_3 - масса сульфата бария, полученная в холостом опыте, г;

$$S_{\text{общ}}^a = \frac{13.74 (0,2982 - 0,0108)}{1,053} = 3.75\%$$

Массовую долю сульфатной серы $S_{SO_4}^a$ в пробе, выраженную в процентах, вычисляют по формуле:

$$S_{SO_4}^a = \frac{13.74 (m_2 - m_3)}{m_1}$$

m_1 - масса навески топлива, взятой для анализа, г.

m_2 - масса сульфата бария, полученная при анализе топлива, г;

m_3 - масса сульфата бария, полученная в холостом опыте, г;

$$S_{SO_4}^a = \frac{13.74 (0,240 - 0,0108)}{1,077} = 2,95 \%$$

Массовая доля летучей серы, которая является суммой содержания органической и пиридной (колчеданной) серы, рассчитывали по формуле:

$$S_{\text{летуч}}^a = S_{\text{общ}}^a - S_{SO_4}^a = 3,75 - 2,95 = 0,8 \%$$

ЗАКЛЮЧЕНИЕ:

- 1) главными требованиями к использованию твердого топлива являются:
- ✓ достаточность запасов природных топливных ресурсов,
 - ✓ минимизация вредного воздействия на экологию в ходе добычи, переработки и использования,
 - ✓ экономическая целесообразность добычи и использования.

2) Правильный выбор способа сжигания для каждого вида угля, усовершенствование установок различной мощности для его сжигания, обогащение угля и другие мероприятия повышают эффективность его использования.

3) В целом, по двум из указанным пунктам использование твердого топлива в качестве тепло- и энергоресурса в России оправдано, однако экологическая составляющая данной комплексной проблемы настойчиво говорит в пользу поиска иных источников тепла и энергии.

РЕЗУЛЬТАТ И ОБСУЖДЕНИЕ

Выбор путей использования и способов сжигания углей зависит, среди прочего, от данных показателей. Согласно нормам показателей качества, характеризующих безопасность угольной продукции, содержание общей серы в каменном угле не должно превышать 3 %. Качество угля, предназначенного для отправки потребителям, подвергается предварительному контролю со стороны отдела технического контроля предприятий угольной промышленности на каждом угольном предприятии. Однако, полученные нами данные говорят о превышении содержания общей серы в исследуемом образце больше, чем на 0,5 %. Расхождения между результатами двух экспериментальных определений содержания общей серы не превышали 0,1%, что соответствует установленной норме и позволяет говорить о «чисто» проведенном эксперименте. Содержание влаги в 10, 39 % – достаточно высокий показатель, негативным образом сказывающийся на теплосодержательных характеристиках угля.

REFERENCES

1. ГОСТ 8606-2015 (ISO 334:2013) Межгосударственный стандарт. Топливо твердое минеральное. Определение общей серы. Метод Эшка (с Поправкой). Дата введения 01.04.2017. [Электронный ресурс]: <http://docs.cntd.ru/document/1200133268> (дата обращения: 01.01.2021)
2. ГОСТ 30404-2013 (ISO 157:1996) Межгосударственный

- стандарт. Топливо твердое минеральное. Определение форм серы. Дата введения: 01.01.2015. [Электронный ресурс]: <http://docs.cntd.ru/document/1200107845> (дата обращения 26.01.2021).
3. ОСТ Р 52911-2013 Национальный стандарт Российской Федерации. Топливо твердое минеральное. Определение общей влаги (с Поправкой). Дата введения 01.01.2015 [Электронный ресурс]:
4. <http://docs.cntd.ru/document/1200107159> (дата обращения 26.01.2021) Энергетическая стратегия Российской Федерации на период до 2035 года. Утверждена Правительство Российской Федерации от 09 июня 2020. № 1523-р. [Электронный ресурс]:
5. <https://minenergo.gov.ru/node/1026> (дата обращения: 01.01.2021) Liu G., Peng Z., Yang P, Wang G. Sulfur in coal and its environmental impact from Yanzhou mining district//Chinese Journal of Geochemistry. 2001. 20 (273).
6. Кушнарев, Д. Ф. Количественная спектроскопия ЯМР многокомпонентных систем природного происхождения / Д. Ф. Кушнарев, А. Г. Пройдаков, А. Л. Бисикало. – Иркутск: ИГУ, 2013. – 105 с.
7. Каратаева, Ф. Х. Спектроскопия ЯМР в органической химии. Часть I. Общая теория ЯМР. Химические сдвиги ^1H и ^{13}C : Уч. пособие / Ф. Х. Каратаева, В. В. Ключков. – Казань: Казанский федеральный университет, 2013. – 129 с.
8. Пименов, Г. Г. Краткий курс по ядерному магнитному резонансу: Уч. пособие / Г. Г. Пименов, Б. И. Гизатуллин. – Казань: КГУ, 2008. – 55 с.
9. Smith, K. L. Geochemistry and macromolecular structure of coal / K. L. Smith, L. D. Smoot, T. H. Fletcher, R. J. Pugmire // The Structure and Reaction Processes of Coal. Ch. 3. – New York: Springer Science +Business Media, 1994. – P. 37–76.
10. Gavalas, G. E. Pyrolysis. – Amsterdam-Oxford-New York: Elsevier scientific publishing company, 1982. – 168 p.
11. Given, P. H. An essay on the organic geochemistry of coal, in Coal Science, Vol. 3 (M. L. Gorbaty, J. W. Larsen and I. Wender, eds.). New York: Academic Press, 1984. – 63–252 p.

THE AXIOM OF CHOICE EQUIVALENTS AND ITS APPLICATIONS

Sayed Nasim Siawash

Department of Algebra, Mathematics faculty Kabul University

ABSTRACT

In this article, we examine the Axiom of Choice and other equivalent principles. We will discuss the fact that many mathematical conclusions, which were assumed to be clear for years, can be expressed based on the Axiom of choice. Choosing ten numbers (they don't have to be unequal) from ten boxes is simple and basic. This choice may not be obvious when the number of choices is infinite. All the above concepts revolve around the principle called the Axiom of Choice. In this article, we present the principles equivalent to the Axiom of Choice with a detailed proof, and we also prove some important theorems related to other parts of mathematics with the help of the Axiom of Choice and its equivalents.

Keywords: Axiom of Choice, Tukey's Lemma, Principle, Zorn's Lemma, well-Ordered Theorem.

INTRODUCTION

The Axiom of Choice is one of the basic and important principles that a large number of mathematical results can be expressed based on it. To express the problem precisely, suppose that non-empty sets $A_1, A_2, \dots, \text{and } A_n$ are assumed. We want to find the set such that $A_1 \cap A \neq \emptyset, A_2 \cap A \neq \emptyset, \dots, \text{and } A_n \cap A \neq \emptyset$. This can be done in different ways. Now we present a method. Since $A_1 \neq \emptyset$ we choose $a_1 \in A_1$ as optional. If $a_1 \in A_2$ then $a_2 = a_1$. If $a_1 \notin A_2$, then $a_2 \in A_2$ is selected as before. We repeat this method by induction and consider the set A as $\{a_1, a_2, \dots, a_n\}$. It is clear that A has the required conditions.

In the second method, we choose $a_i \in A_i$ arbitrarily for $i = 1, 2, \dots, n$. In the first method, a smaller set may be obtained. Now suppose that the non-empty sequence of sets $\{A_n\}_{n \in \mathbb{N}}$ are given and A is the set with the previous conditions. There is no problem here either, it is enough to select $a_1 \in A_1$ first. In the second step, we select $a_2 \in A_2$ and continue this work. It seems that set is obtained. The only problem is that the number of operations is infinite. Now suppose that the non-empty family of non-empty sets A_q is given for every $q \in \mathbb{Q}$. In this case, the previous method cannot be used, because it is not clear which element from which set must be selected first. But here too, the problem can be solved in another way (using the representation of rational



numbers in the form of Frey fractions). This method is not applicable for the family $\{A_r\}_{r \in \mathbb{R}}$, but it seems obvious to find the set A . The goal here is to provide a common logic language for situations like the last one.

In the early 1880s, Georg Cantor had implicitly used arguments in the proof of some theorems, which were essentially equivalent to the principle of choice, but he did not notice that he was using a new strong case principle. In 1904, Ernst Zermelo (1871-1953) after careful studies, explicitly stated the Axiom of choice and used it to prove the well-order theorem. Because no way has been found to make even the well-known set of real numbers well-ordered, despite the ruling of the well-ordered theorem, for at least six years after the appearance of this theorem, many critical articles were written about Zermelo's proof. Most of them rejected the Axiom of Choice. However, most critics had to admit that if they accepted the Axiom of Choice, they could not find fault with Zermelo's argument for the well-ordered thesis, therefore, criticizing the well-ordered thesis would lead to criticizing the Axiom of Choice. It seemed that there were only two ways:

A) Let the principle be that we accept only constructible results and do not accept purely existential results, then the methods and areas of mathematics are so limited that, outside of calculus, only very small areas can be examined.

B) To accept the constructible and purely existential results, including the principle of the subject of choice, and as a result, solve more problems and develop mathematics. To determine which method is wise to follow, the following two problematic questions must first be addressed:

- 1) Is the Axiom of Choice independent from the principles of the existing subject, or is it proved using other principles of the existing subject of mathematics?
- 2) Is the Axiom of Choice compatible with other classical principles of mathematics, or may adding the Axiom of choice to other principles of classical mathematics cause a contradiction?

Many mathematicians tried hard to find answers to these two questions. Several years later, in 1938, Kurt Gödel (1906 - 1978) answered the second question by proving that adding the Axiom of choice to other existing principles of mathematics does not create any contradiction. Gödel's discovery gave a lot of confidence to the mathematical community and especially to the users of the choice axiom. But the research to answer the first question continued. Finally, in 1963, Paul Cohen completely answered the question. He proved that the Axiom of choice is independent of other existing principles. In other words, the Axiom of Choice cannot be proved as a theorem using the principles of classical mathematics.



Today, the Axiom of Choice is accepted as a new principle, and this principle is used more in new real analysis, the theory of cardinal and transfinite ordinal numbers, modern algebra, and the field of topology.

The Axiom of Choice

In this part, we first define the product of the arbitrary family of sets, then we express its relationship with the Axiom of choice.

Definition. If I is a set and $\{A_i\}_{i \in I}$ is a family indexed by the elements of I , then the Cartesian product of this indexed family is shown as $\prod_{i \in I} A_i$, and We define as follows:

$$\prod_{i \in I} A_i = \{f \in (\cup_{i \in I} A_i)^I : \forall i \in I, f(i) \in A_i\}$$

If $I = \emptyset$ or one of A_i is empty, then this product is empty.

For example, suppose $I = \{1,2,3\}$, and the sets A_1, A_2, A_3 are given. We want to obtain $\prod_{i \in I} A_i$. According to the above definition, this product is equal to the set of all functions defined on the three-element set $\{1,2,3\}$, which is $f(1) \in A_1, f(2) \in A_2$ and $f(3) \in A_3$.

$$\prod_{i=1}^3 A_i = \{f \in (A_1 \cup A_2 \cup A_3)^{\{1,2,3\}} : f(1) \in A_1, f(2) \in A_2, f(3) \in A_3\}$$

Therefore, each element of this set is a function whose three values must be determined in the numbers 1, 2 and 3.

For simplicity, we denote $f(1)$ as $f_1, f(2)$ as f_2 and $f(3)$ as f_3 . Basically, we display the function as $f = (f_1, f_2, f_3)$. From here, the following equality is obtained.

$$\prod_{i=1}^3 A_i = \{(f_1, f_2, f_3) : f_1 \in A_1, f_2 \in A_2, f_3 \in A_3\} = A_1 \times A_2 \times A_3$$

From here we can conclude that the product of a family of sets is the generalization of the Cartesian product of a finite number of sets.

Therefore, any arbitrary element of the product $\prod_{i \in I} A_i$ is also shown as $(f_i)_{i \in I}$

Now we provide a detailed definition of the Axiom of Choice.

Definition (Axiom of Choice). If $I \neq \emptyset$ and for each $i \in I, A_i \neq \emptyset$, then $\prod_{i \in I} A_i \neq \emptyset$. it can be expressed as the product of the non-empty family of non-empty sets is non-empty.

In the special case, if $i \in I \neq \emptyset, A_i = A \neq \emptyset$, then $A^I \neq \emptyset$.

In other words, if A is a non-empty set consisting of non-empty sets, then there exists a set C such that each element of A contains at least one element.

Definition. The choice function for a non-empty set A is a function

$$f: P(A) \setminus \{\emptyset\} \rightarrow A$$

Such that, For every $B \in P(A) \setminus \{\emptyset\}$, $f(B) \in B$.

The Axiom of Choice states that if A is a non-empty set consisting of non-empty sets, then there exists a function

$$f: A \rightarrow \bigcup_{A_i \in A} A_i,$$

Such that for each $X \in A$, $f(X) \in X$.

In this section, for a better understanding, we recall the following definitions:

Definition. If (P, \leq) is a partially ordered set and $A \subseteq P$, then $u \in P$ is called an upper bound of A , whenever for each $x \in A$, we have: $x \leq u$, element m of $A(P)$ is called a maximal element $A(P)$, whenever the equality $x = m$ results from two conditions $(x \in p)x \in A$ and $m \leq x$. Similarly, the lower bound and minimum of a set are defined. In this article, the only order on the family of sets is the order \subseteq .

Now we will define the family of finite family.

Definition. The family \mathfrak{F} of sets is called a finite characteristic family, whenever $A \in \mathfrak{F}$ if and only if all finite subsets of A are in \mathfrak{F} .

Let (P, \leq) be a partially ordered set. A subset C of P is called a chain whenever any two elements of C are comparable. This means that for every two elements of C such as c_1 and c_2 , $c_1 \leq c_2$ or $c_2 \leq c_1$ must. If \mathfrak{R} is a family of sets, then it is sorted by order \subseteq . A subfamily C of \mathfrak{R} is called a chain in \mathfrak{R} , whenever for both elements C_1 and C_2 of C , $C_1 \subseteq C_2$ or $C_2 \subseteq C_1$.

For example, let \mathfrak{R} be the collection of all finite subsets of \mathbb{N} . This characteristic family is not finite, because all finite subsets of \mathbb{N} are in \mathfrak{R} , but \mathbb{N} is not in \mathfrak{R} (the set of natural numbers is infinite).

Lemma. Suppose \mathfrak{F} is a finite characteristic family of sets and C is a chain in it, then $\bigcup C \in \mathfrak{F}$.

Proof. It suffices to show that every finite subset of $\bigcup C$ is in \mathfrak{F} . Suppose $\{c_1, c_2, \dots, c_n\}$ is an arbitrary finite subset of $\bigcup C$. Therefore, the sets C_1, C_2, \dots and C_n exist in C such that $c_1 \subseteq C_1, c_2 \subseteq C_2, \dots$ and $c_n \subseteq C_n$. But C_1, C_2, \dots and C_n are comparable. So one of them like C_{i_0} includes the others. From here we can conclude that $\{c_1, c_2, \dots, c_n\} \subseteq C_{i_0}$. Since C_{i_0} is an element of the finite characteristic family of \mathfrak{F} , then every finite subset of it including $\{c_1, c_2, \dots, c_n\}$ is in \mathfrak{F} and the theorem is proved.

The Axiom of Choice and its equivalent principles

Perhaps more than the obvious Axiom of Choice, its non-obvious equivalents are used.

In this section, we state each of these principles and prove their equivalence.

Tukey's Lemma. Every finite characteristic family has a maximal element.

Because the members of the family are characteristic of finite sets, the order on it is \subseteq . The maximum element in this family; That is, a set like M from that family such that if another set from that family like A were true in the condition $M \subseteq A$, then $A = M$.

For example, suppose \mathfrak{R} is the family of all finite subsets of \mathbb{N} . We have already seen that this characteristic family is not finite. This family also does not have a maximal element, because if the finite set is its maximal element, by adding another element of natural numbers to it, we will reach a larger set, which is a contradiction.

Let (P, \leq) be a partially ordered set, say C is a maximal chain in it. Whenever C is a chain, the resulting set by adding another member of P is not a chain. This means that the new element is not comparable to at least one of the elements of C .

Hausdorff's Maximality Principle. Every partially ordered set has a maximal chain.

Zorn's Lemma. Every ordered set in which every chain has an upper bound has a maximal element.

Well-ordered theorem. every set can be well-ordered

In the sense that for every arbitrary set there is an arrangement with which that set is well-ordered.

In the previous sections, we stated five principles, although we may not have given them the name of the principle. For example, we called the name of one of them Tukey's Lemma, while we should have said Tukey's Principle. It has been proven that the Axiom of Choice is independent of other mathematical principles and its acceptance and rejection does not affect the science of mathematics.

Of course, accepting one of these principles and as a result accepting the other equivalent principles (according to the next theorem) makes mathematical proofs easier. At the elementary math level, we consider these principles to be known.

Theorem. The following principles are equivalent.

A: Axiom of Choice **B:** Tukey's Lemma **C:** Hausdorff Maximality Principle **D:** Zorn's Lemma **E:** Well-ordered theorem

Proof. It is enough to show that:

$$A \Rightarrow B \Rightarrow C \Rightarrow D \Rightarrow E \Rightarrow A$$

The longest part of the proof is the first stage of the proof, the proofs of the subsequent parts are simpler.

In this section, we first define the f -inductive subfamily for the function f from a family of sets to a subfamily of it, then we prove the first part (Tukey's Lemma is the result of the Axiom of Choice).

Definition. Suppose \mathcal{A} is a family of sets and \mathcal{B} is a subfamily of it and f is a function from \mathcal{A} to \mathcal{B} . A subfamily \mathcal{F} of \mathcal{A} is called f -induced, whenever the following three conditions apply:

a: $\emptyset \in \mathcal{F}$ b: $f(\mathcal{F}) \subseteq \mathcal{F}$ c: If β is a chain in \mathcal{F} , then $\cup \beta \in \mathcal{F}$

part b It shows the fact that if $A \in \mathcal{F}$, then $f(A) \in \mathcal{F}$.

For example, suppose \mathcal{A} is the family of all finite subsets of natural numbers, $f: \mathcal{A} \rightarrow \mathcal{A}$ is assumed by the rule $f(A) = A$. Family, \mathcal{A} is not f -induced. Because with chains

$\beta = \{\emptyset, \{1\}, \{1,2\}, \dots, \{1,2, \dots, n\}, \dots\}$ is in \mathcal{A} , but $\cup \beta = \mathbb{N}$ is not in \mathcal{A} .

Notice: $\mathcal{B} = \{\emptyset, \{1\}\}$, is f -induced.

Now we are going to prove the first part of the theorem (Tukey's Lemma results from the Axiom of Choice).

Suppose that Tukey's lemma is not true, then there exists a non-empty and finite characteristic family called \mathcal{F} that does not have a maximal element.

Therefore, for every $F \in \mathcal{F}$, the family \mathcal{A}_F is nonempty as defined below

$$\mathcal{A}_F = \{E \in \mathcal{F} : F \subsetneq E\}$$

Since $\emptyset \in \mathcal{F}$, then it is clear that $\{\mathcal{A}_F\}_{F \in \mathcal{F}}$ is a nonempty family of nonempty sets.

Therefore, the following non-empty choice function is available:

$$f: \mathcal{F} \rightarrow \cup_{F \in \mathcal{F}} \mathcal{A}_F : f(F) \in \mathcal{A}_F$$

According to the definition of f , for each $F \in \mathcal{F}$, we have: $F \subsetneq f(F)$. On the other hand, according to the finiteness characteristic of \mathcal{F} and the definition of f , \mathcal{F} is f -induced. Suppose \mathcal{u} is the class of all families of f -induced, it is clear that $\mathcal{F} \in \mathcal{u}$, therefore, \mathcal{F}_0 , the intersection of all families in \mathcal{u} , is non-empty.

$$\mathcal{F}_0 = \cap \mathcal{u} = \{A : \forall \mathcal{A} \in \mathcal{u} : A \in \mathcal{A}\}$$

\mathcal{F}_0 is the smallest family f -induced, as a result, for each f -induced \mathcal{A} , we have: $\mathcal{F}_0 \subseteq \mathcal{A}$, we define the collection of \mathcal{H} as follows:

$$\mathcal{H} = \{A \in \mathcal{F}_0 : B \in \mathcal{F}_0, B \subsetneq A \implies f(B) \subseteq A\}$$

We prove that if $A \in \mathcal{H}$ and $C \in \mathcal{F}_0$, then $C \subseteq A$ or $f(A) \subseteq C$. To prove, for each A member of \mathcal{H} , we define the family γ_A as follows:

$$\gamma_A = \{C \in \mathcal{F}_0 : C \subseteq A \text{ or } f(A) \subseteq C\}$$

γ_A is an f - induced family of subset \mathcal{F}_0 , therefore, $\gamma_A = \mathcal{F}_0$. Now we show that $\mathcal{H} \subseteq \mathcal{F}_0$, is f - induced and as a result $\mathcal{H} = \mathcal{F}_0$.

A: \emptyset does not have any special subset and according to the definition of \mathcal{H} and the law of antecedent termination, $\emptyset \in \mathcal{H}$.

B: Suppose $A \in \mathcal{H}$ we show that $f(A) \in \mathcal{H}$. For this, we must show that if $B \in \mathcal{F}_0$, and $B \not\subseteq f(A)$, then $f(B) \subseteq f(A)$. Suppose $B \in \mathcal{F}_0$ and $B \not\subseteq f(A)$. Since $B \in \mathcal{F}_0 = \gamma_A$, thus $B \subseteq A$ or $f(A) \subseteq B$.

But according to $B \not\subseteq f(A)$, the state $f(A) \subseteq B$ is impossible, and as a result, $B \subseteq A$. From here, we have two situations, $B \not\subseteq A$ or $B = A$. If $B \not\subseteq A$ then according to the definition of \mathcal{H} , $f(B) \subseteq A \subseteq f(A)$ and therefore $f(B) \subseteq f(A)$ and therefore, $f(A) \in \mathcal{H}$, if $B = A$, clear is that $f(B) \subseteq f(A)$ and therefore, $f(A) \in \mathcal{H}$. So if $A \in \mathcal{H}$, then $f(A) \in \mathcal{H}$.

C: It should be shown that if β is a chain in \mathcal{H} , then $\cup \beta \in \mathcal{H}$ and assume that $B \in \mathcal{F}_0$ and $B \not\subseteq \cup \beta$. Because $B \in \mathcal{F}_0 = \gamma_A$ for every, $A \in \beta$, then two situations happen:

$$1) B \subseteq A; \exists A \in \beta \text{ or } 2) f(A) \subseteq B; \forall A \in \beta$$

If the second situation happens, then we reach the following contradiction:

$$B \not\subseteq \cup \beta \subseteq \cup_{A \in \beta} f(A) \subseteq B$$

Therefore, the first state occurs. So for an $A \in \beta$, we have: $B \subseteq A$. If $B \not\subseteq A$, Since $A \in \mathcal{H}$, then $f(B) \subseteq A \subseteq \cup \beta$ and therefore $f(B) \subseteq \cup \beta$, from here the relation $\cup \beta \in \mathcal{H}$ results.

If $B = A$, then $B \in \mathcal{H}$ and $\cup \beta \in \mathcal{F}_0 = \gamma_B$. This is impossible, because $f(B) \subseteq \cup \beta$. From here it is concluded that $\cup \beta \in \mathcal{H}$ and \mathcal{H} is an f - induced. Therefore, $\mathcal{H} = \mathcal{F}_0$.

Now we complete the proof. If $A \in \mathcal{F}_0 = \mathcal{H}$ and $B \in \mathcal{F}_0 = \gamma_A$, then $B \subseteq A$ or $f(A) \subseteq B$. But with the help of the second relation and $A \subseteq f(A)$, the relation $A \subseteq B$ is obtained. So \mathcal{F}_0 is a chain. If $M = \cup \mathcal{F}_0$, Since \mathcal{F}_0 is of the f - induced family, then $M \in \mathcal{F}_0$. But $M \not\subseteq f(M) \in \mathcal{F}_0$. Since M is the union of all elements of \mathcal{F}_0 and since $f(M) \in \mathcal{F}_0$, therefore $f(M) \subseteq M$ and this is a contradiction.

In this part, we prove the following three conclusions:

Tukey's lemma \Rightarrow Hausdorff's maximality principle \Rightarrow Zorn's lemma
 \Rightarrow Well-ordered theorem \Rightarrow Axiom of Choice

Proof (Tukey's Lemma gives the Maximality principle).

Let (P, \leq) be a non-empty partially ordered set. If we consider γ as the family of all chains in P , then it is clear that γ is a finite characteristic family. From here it

Proof (Maximality principle gives Zorn's Lemma).

Let (P, \leq) be a non-empty partially ordered set, each chain of which has an upper bound. According to Hausdorff's maximality principle, there is a maximal chain C in P . Suppose m is an upper bound of C , we show that m is a maximal element of P . Suppose it is not so, then member x exists in P such that $x > m$. It is clear that $C' = C \cup \{x\} \neq C$ is a chain in P that contradicts the maximality of C .

Proof (The Well-ordered theorem results in the Axiom of Choice).

Suppose $\{A_i\}_{i \in I}$ is a non-empty family of non-empty sets. We well-order the set $D = \cup_{i \in I} A_i$. Now the function $f: I \rightarrow D = \cup_{i \in I} A_i$ with the rule $f(i) = \min A_i$ is in $\prod_{i \in I} A_i$.

To prove (the well-order principle is the result of Zorn's Lemma):

By placing an order on non-empty partially ordered family sets, we show that Zorn's Lemma results in the well-ordering theorem. Here, the ordered sets are shown as pairs consisting of the set and the order on it. For example, a good order on a one-element set $P = \{x\}$ must contain $x \leq x$, and as a result, our order will be $\leq = \{(x, x)\}$. So the latter ordered set can be represented as $(\{x\}, \{(x, x)\})$.

Suppose S is a set. We take \mathcal{Z} to be the family of all well-ordered subsets of S such as W with order \leq_W

According to the previous explanation, $(\{x\}, \{(x, x)\}) \in \mathcal{Z}$ for each $x \in S$, now we place the order \leq on \mathcal{Z} . Suppose that (W_1, \leq_1) and (W_2, \leq_2) are in \mathcal{Z} , we define $(W_1, \leq_1) \leq (W_2, \leq_2)$ which means that $W_1 = W_2$ and $\leq_1 = \leq_2$ or that element a exists in S that:

$$W_1 = \{x \in W_2 : x \leq a, x \neq a\}$$

And, $W_1 \subseteq W_2$, in this case we say (W_2, \leq_2) is a continuation of (W_1, \leq_1)

Proof (The Well-ordered theorem is a result of Zorn's Lemma)

Suppose S is an arbitrary non-empty set, suppose $C = \{(W_i, \leq_i)\}_{i \in I}$ is a chain in \mathcal{Z} according to the order \leq . We put $W = \cup_{i \in I} W_i$, $\leq = \cup_{i \in I} \leq_i$. The set (W, \leq) is well ordered. Therefore, according to Zorn's Lemma, \mathcal{Z} has a maximal element called (W_0, \leq_0) . $W_0 = S$ because otherwise, for $x \in S - W_0$, the well-ordered \leq_0 exists on $W_0 \cup \{x\}$ as follows

$$\leq_x = \leq_0 \cup \{(w, x) : w \in W_0\}$$



This content is contradictory to the maximality of (w_\circ, \leq_\circ) .

And this proof completes the case.

Applications

In this section, with the help of the Axiom of Choice and its equivalents, we prove some important theorems of other branches of mathematics.

Theorem. If $f: A \rightarrow B$ is surjective, it has a right inverse.

Proof. Since f is surjective, we consider the non-empty collection of non-empty sets $\{f^{-1}(\{b\})\}_{b \in B}$. Therefore, we consider the choice function

$$g: B \rightarrow \bigcup_{b \in B} f^{-1}(\{b\})$$

With the condition $g(b) \in f^{-1}(\{b\})$. But the definition of, each $a \in f^{-1}(\{b\})$ is true under the condition, $f(a) = b$. Among other things, for $a = g(b)$, the relation $f(g(b)) = b$ is obtained. From here it is clear that $g: B \rightarrow A$ is the right inverse of f .

Theorem. If A is a nonempty set, then the function $f: A \rightarrow B$ is surjective if and only if $f(A) = B$.

Proof. If f is surjective, then there exists a function $g: B \rightarrow A$ such that

$f \circ g = \text{id}_B$, then, for every $y \in B$, $f(g(y)) = y$. we put $x = g(y)$, therefore, $f(x) = y$ and $B \subseteq \text{Im} f$, the relationship $\text{Im} f \subseteq B$ is also clear, so $B = \text{Im} f$.

On the contrary, assume that $B = \text{Im} f$.

For every $y \in B$, the set

$$T_y = \{x \in A: f(x) = y\}$$

is non-empty.

According to the Axiom of Choice in the case of set A , this set will have a choice function $\varphi: \mathcal{P}(A) \setminus \{\emptyset\} \rightarrow A$. Now we define the function $g: B \rightarrow A$ as follows

$$\forall y \in B \quad (g(y) = \varphi(T_y))$$

To complete the proof, it is enough to check the relation that $f \circ g = \text{id}_B$

For each $y \in B$ we have:

$$(f \circ g)(y) = f(g(y)) = f(\varphi(T_y))$$

On the other hand, considering the definition of the choice function, if

$\varphi(T_y) = x$ then $x \in T_y$. So

$$(f \circ g)(y) = f(x) = y$$

As another application, we show that every vector space V on the scalar field \mathbb{F} has a basis.

We know that for the vector space V on the field \mathbb{F} , $B \subseteq V$ is called a basis for V , whenever the elements of B are linearly independent, and for each $\vec{v} \in V$, finite m -element subset (m depends on the vector v) of B say $B_v = \{\vec{v}_1, \vec{v}_2, \dots, \vec{v}_m\}$ and m scalars f_1, f_2, \dots and f_m from \mathbb{F} exist such that:

$$\vec{v} = f_1 \vec{v}_1 + f_2 \vec{v}_2 + \dots + f_m \vec{v}_m$$

Theorem. Every vector space V on the scalar field \mathbb{F} has a basis.

Proof. We consider the collection A consisting of all independent subsets of V , the family A is characteristically finite, because if the elements of the set are linearly independent, the elements of each of its subsets, including its finite subsets, are linearly independent and vice versa. According to the definition, if every finite subset of a set is linearly independent, then the elements of the set itself are also linearly independent. According to Tukey's lemma, A has a maximal element B . According to the definition of A , the elements of B are independent. Now we have to show that every element of V like \vec{v} is a linear combination of finite elements of B . If $\vec{v} \in B$, then the sentence is obvious, because $\vec{v} = 1 \vec{v}$. Suppose $\vec{v} \notin B$. Considering that B is a maximal linearly independent set, the elements of the set $\mathcal{H} = B \cup \{\vec{v}\}$ are dependent. Therefore, there are finitely many elements of \mathcal{H} that are dependent, one of them must be \vec{v} . So this dependent set is $\{\vec{v}_1, \vec{v}_2, \vec{v}_3, \dots, \vec{v}_m\}$, which $\{\vec{v}_1, \vec{v}_2, \vec{v}_3, \dots, \vec{v}_m\}$ is a subset of B . From here the scalars $f_0 \neq 0, f_1, f_2, \dots$ and f_m exist such that:

$$f_0 \vec{v} + f_1 \vec{v}_1 + f_2 \vec{v}_2 + \dots + f_m \vec{v}_m = 0$$

Given that $f_0 \neq 0$, it is clear that \vec{v} is a linear combination of elements of B , and therefore B is a basis for V .

Theorem. Suppose V is a vector space on the field \mathbb{F} and S is a linearly independent subset of V . Then there is a basis for V containing the set S .

Proof. We take the set A consisting of all linearly independent sets in V that contain S . It is clear that $S \in A \neq \emptyset$. We show that every chain in A has an upper bound. Let $\{H_i\}_{i \in I}$ be a chain in A , we show that $H = \bigcup_{i \in I} H_i$ is a linearly independent set. Suppose $\{\vec{v}_1, \vec{v}_2, \dots, \vec{v}_n\} \subseteq H$, from here n index i_1, i_2, \dots and i_n of I exists such that $\vec{v}_t \in H_{i_t}$, because H_{i_1}, H_{i_2}, \dots and H_{i_n} are elements of the chain $\{H_i\}_{i \in I}$. So compared, one of them is bigger than the others like H_{i_k} . From here, the following relationship is obtained:

$$\{\vec{v}_1, \vec{v}_2, \dots, \vec{v}_n\} \subseteq H_{i_k}$$

And since the elements of H_{i_k} are independent, then the elements $\{\vec{v}_1, \vec{v}_2, \dots, \vec{v}_n\}$ are independent, so H is a linear independent set.

According to Zorn's Lemma, A has a maximal element. This maximal element is a basis for V

CONCLUSION

From the topics examined here, it is clear that the Axiom of Choice is one of the basic and important principles in mathematics, on which many other mathematical results are expressed and proved.

It has been proven that the Axiom of Choice is independent of other mathematical principles and its acceptance and rejection do not affect the science of mathematics. This principle is equivalent to several other famous principles and accepting one of these principles and as a result, accepting the rest of its equivalent principles makes mathematical proofs easier.

REFERENCES

1. A.G.Hamilton. *Numbers, Sets, and Axioms*. Cambridge University Press, 1982.
2. Enderton, Herbert B. *Elements of Set Theory*. Academic Press, 1977.
3. Halmos, P. R. *Naive Set Theory*. New York: Springer, 1974.
4. Hayden, Seymour, and J. F. Kenninson. *Zermelo-Frankel Set Theory*. Columbus, Ohio: Charles E.Merrill Publishing company, 1966.
5. Hrbacek Karl, Jech Thomas. *Introduction to Set Theory*. New York: Marcel Dekker Inc, 1999.
6. Printer, Charles C. *Set Theory*. Addison-Wesley Publishing Company Inc, 1971.
7. Shatery, Hamid Reza. *The Foundation of Mathematics*. University of Isfahan, 2006.
8. Shwu-Yeng T. Lin, You Feng Lin. *Set Theory with Applications*. Mariner Publishing Company Inc, 1981.
9. Thomas, Jech. *An Outline of Set Theory*. New York: Springer, 1997.
10. Yiannis, Moschovakis. *Notes on Set Theory*. New York: Springer, 1994.



RADIKALLASHUV GLOBAL XAVFSIZLIKKA TAHDID SIFATIDA: ILDIZLARI VA KO'RINISHLARI

Sardor Komil o'g'li Alimov

“Oila va xotin-qizlar” ilmiy-tadqiqot instituti bo‘lim boshlig‘i,
falsafa fanlari bo‘yicha falsafa doktori (PhD)

sardoralimov2507@mail.ru

ANNOTATSIYA

Ushbu maqolada radikallashuv ijtimoiy muammo sifatida o‘rganilib, uning ildizlari va mavjud ko‘rinishlari, terrorizm va ekstremizm kabi global muammolar uchun asos bo‘layotganligi falsafiy jihatdan tahlil qilingan.

Kalit so‘zlar: radikallashuv, tahdid, terrorizm, ekstremizm, radikallashuv ko‘rinishlari, diniy radikallashuv, siyosiy radikallashuv, ijtimoiy radikallashuv, madaniy radikallashuv.

ABSTRACT

This article explores radicalism as a social problem, philosophically analyzes its roots and current manifestations, the basis for global problems such as terrorism and extremism.

Keywords: radicalism, threat, terrorism, extremism, forms of radicalism, religious radicalism, political radicalism, social radicalism, cultural radicalism.

KIRISH

Globalashuv davri barcha davlatlar, xalqlar hayotida ko‘plab ijobiy o‘zgarishlar olib kelgani bilan bir qatorda, turli global muammolarning vujudga kelishi bilan ham yodga qolmoqda. Shunday global ma‘naviy muammolardan biri ijtimoiy hayotda radikal g‘oyalar, yot mafkuralarning ko‘payishi hamda ularning domiga asosan voyaga yetmagan, oq-qorani tanimagan yoshlar kirib qolayotganligi hisoblanadi. Mazkur muammo, afsuski, mamlakatimizni ham chetlab o‘tmagan. Shu tufayli yoshlarni radikallashuv va zararli mafkuralardan asrashda har bir davlat xizmatchisi, jumladan, mahalladagi xotin-qizlar faolining roli muhim hisoblanadi. Mamlakatimizning mazkur yo‘nalishda pozitsiyasi aniq belgilangan. Prezidentimiz ta‘biri bilan aytganda, “Biz jamiyatimizda har qanday radikallashuvga, yoshlarimiz ongini buzg‘unchi yot g‘oyalar bilan zaharlashga, **dindan siyosiy maqsadlarda foydalanishga, ma‘rifat o‘rnini jaholat egallashiga yo‘l qo‘ymaymiz**” [1].



Yoshlar radikallashuvining oldini olish hamda mazkur jarayonning ijtimoiy salbiy oqibatlarini tahlil qilishdan oldin mazkur tushuncha ta'rif berib o'tish maqsadga muvofiq. "Radikallashuv" atamasi turli fan sohalari, ijtimoiy hayotning turli yo'nalishlarida turlicha qo'llanilib kelinadi. Ma'lum hodisaning radikal yoki radikal emasligini aniqlashda ushbu hodisa sodir bo'layotgan joy, holat, vaziyat (kontekst)ning o'rni judayam muhim [2]. Umuman olganda, **radikallashuv** (yoki radikalizm – fransuz tilidan olingan bo'lib, "ildiz", "o'zak" ma'nolarini bildiradi) **shaxs yoki guruhning mavjud siyosiy, ijtimoiy yoki diniy holatga nisbatan borgan sari radikal ya'ni keskin qarashlarni qabul qilish jarayoni hisoblanadi.** Aksariyat holatlarda radikallashuvning oqibati ekstremizm va terrorizm hisoblanadi [3]. Shuningdek, radikalizm – mavjud ijtimoiy yoki siyosiydan tashqari **madaniy vaziyatni ham** tubdan va keskin o'zgartirish istagini ham o'zida aks ettirishi mumkin [4]. Ta'riflardan ko'rinib turibdiki, radikalizmning ko'rinishlari, shakllari turfa xil bo'lib, aksariyat holatlarda mavjud ijtimoiy tartibga nisbatan shakllangan radikal munosabatni ifodalaydi.

NATIJALAR VA MUHOKAMA

Radikallashuv ijtimoiy kasallik sifatida, jamiyatning turli yot g'oya va mafkuralarga nisbatan immunitetini susaytiradi, terrorizm, mutaassiblik, ekstremizm va buzg'unchilikning boshqa shakllariga yo'l ochadi. Radikalizm — bu mutaassiblikning bir ko'rinishi. Radikalizm dunyoviylikni, demokratiyani, inson huquqlarini, plyuarizmni, toqatlilikni, tolerantlikni, gumanizmni, madaniyat xilm-xilligini rad etadi. Radikalizmda opponent bo'lmaydi. Bu maksimalizm – yo sen mening fikrimga qo'shilasan, agar qo'shilmasang dushmansan. Dushman va men, degan tushuncha bor. Radikalizm murosani inkor etadi. Radikalizm o'zining qarashlarini konstitutsion qonunchilikdan ustun qo'yadi [5].

Radikallashuv muammosi turli salbiy ijtimoiy oqibatlarga olib kelish barobarida uning ildizlari ham jamiyatdagi qomavjud muammolarga borib taqalishi mumkin. Radikallashuv va uning bevosita natijasi deb qaraluvchi terrorizm, ekstremizmning ildizlarini tahlil qilganda, 3 qismga bo'lib tahlil qilish mumkin:

1. **Mikrodarajadagi sabablar** – bevosita individual xususiyatlar bilan bog'liq omillar bo'lib, uning tarkibiga axloqiy tushkunlik, marginallashuv, begonalashish muammosi, diskriminatsiya (o'ziga yoki yaqinlariga nisbatan), stigmatizatsiya, tushkunlik va psixologik muammolarni kiritish mumkin.

2. **Mezodarajadagi sabablar** – ijtimoiy muhit bilan bog'liq faktorlar, xususan, oila, do'stlar, sinfdoshlar davrasi, hamkasblar,

turli ijtimoiy guruhlar, mahalla bilan bog‘liq ijtimoiy muammolar radikallashuv uchun “turtki” vazifasini bajarishi mumkin [6].

3. **Makrodarajadagi sabablar** – ko‘lami kattaroq bo‘lgan ijtimoiy makon – davlat yoki hukumat darajasidagi siyosiy qarorlarni qabul qilish, siyosiy partiyalar, milliy darajadagi ijtimoiy harakatlarning faoliyati ham radikallashuv uchun asos bo‘lishi mumkin [7]. Ayniqsa, bunday qarorlar, siyosiy munosabat va pozitsiyalar ozchilikka nisbatan yo‘nalgan, keskin kayfiyatda bo‘ladigan bo‘lsa, norozilik kayfiyatini uyg‘otish ehtimoli oshadi. Ba‘zi tadqiqotchilarning fikricha, ishsizlik, adolatsizlik, kambag‘allik, jamiyatdan qo‘rquv kabi illatlarning borligi radikallikni keltirib chiqaradi. Yoki jamiyatlarda yuqori standartlarga yetisholmaganlarga e‘tibor qaratmaslik oqibatida radikallashuv sodir bo‘ladi [8].

Tahlillar shuni ko‘rsatadiki, radikallashuv hodisasi odatda faqatgina bir omil tufayli sodir bo‘lmaydi, balki turli ichki va tashqi omillarning qorishmasi, birgalikdagi natijasi [9] sifatida yuzaga keladi. Shu tufayli mazkur muammoning ko‘lamini anglashda, uning mohiyatini tasavvur qilishda kompleks yondashuv, muammoga nisbatan tizimli munosabat, global fikrlash talab qilinadi.

Radikallashuvning global ijtimoiy muammo darajasiga yetishining asosiy sabablaridan biri uning turli ko‘rinish va shakllari mavjud ekanligi hamda har bir jamiyatda radikallashuv g‘oyalarning turlicha shakl va mazmunda namoyon bo‘lishi bilan izohlanadi.

Yuqorida ta‘kidlaganimizdek, radikallashuv jamiyatning turli jabhalarida turli shakllarda namoyon bo‘lishi mumkin. Quyidagilar radikallashuvning asosiy ko‘rinishlari hisoblanadi:

Diniy radikallashuv. Radikallashuvning eng keng tarqalgan, eng ko‘p uchraydigan ko‘rinishlaridan biri hisoblanadi. Diniy radikallashuv diniy e‘tiqod, qarashlar va g‘oyalarning haddan tashqari kechkin, radikal talqini bilan tavsiflanadi. Diniy radikallar muayyan diniy ta‘limotlarga qat‘iy rioya qilishni targ‘ib qilishlari, dunyoviy hayot, zamonaviy turmush tarzini inkor etishlari va hatto ba‘zan o‘z diniy qarashlari, mafkuralarinin targ‘ib qilish uchun turli darajada tazyiq va zo‘ravonlik qilishlari ham mumkin. Yuqorida tilga olganimizdek, diniy radikalizm bora-bora terrorizm va diniy ekstremizmga aylanib ketishi ehtimoli mavjud.

Siyosiy radikallashuv. Radikallashuvning mazkur shakli jamiyatning siyosiy hayotida keskin, radikal, ekstremal qarashlar va xatti-harakatlarni paydo bo‘lishi bilan namoyon bo‘ladi. Siyosiy jihatdan radikallashuv tarafdorlari ko‘pincha muhim va tez ijtimoiy yoki siyosiy o‘zgarishlarni qo‘llab-quvvatlashadi. Ular mavjud siyosiy tizimni, siyosiy institutlarni yoki asosiy

mafkuralarni keskinroq muqobillari foydasiga rad etishlari mumkin.

Ijtimoiy radikalizm. Ijtimoiy radikallashuv tarafdorlari jamiyatda mavjud me'yorlar va qadriyatlarning chuqur o'zgarishiga, mavjud normalarning to'liq yoki qisman keskinlashuviga intiladi. Ijtimoiy radikallar jamiyatdagi gender rollari, irqiy tenglik, iqtisodiy tizimlar va sinfiy farqlar kabi masalalar bo'yicha o'rnatilgan ijtimoiy me'yorlarga qarshi chiqishlari mumkin. Ijtimoiy radikallashuv tarafdorlari ko'pincha o'zlarini tenglik va adolat tarafdorlari sifatida ko'rsatishadi, lekin ularning yondashuvlari va mafkuralari, ijtimoiy adolatni o'rnatish shakli bilan bog'liq qarashlari bir-biridan farq qilishi mumkin.

Madaniy radikallashuv. Madaniy radikallashuv ijtimoiy-madaniy hayotda qaror topgan madaniy me'yorlar, me'zonlar va an'analarni o'zgartirishga qaratilgan. Mazkur qarash tarafdorlari ilg'or yoki noan'anaviy g'oyalarni ilgari surib, mavjud madaniy qadriyatlar va ijtimoiy me'yorlarga qarshi chiqishlari mumkin.

Texnologik radikallashuv. Radikallashuvning mazkur ko'rinishi texnologiya sohasidagi keskin o'zgarishlar va uning ijtimoiy ta'sirini keskin ravishda ortib borishini qo'llab-quvvatlashni nazarda tutadi. Texnologik radikallar sun'iy intellekt, biotexnologiya, nanotexnologiya yoki atrof-muhit texnologiyalari kabi sohalarda tez o'zgarishlarga yoki hatto inqiloblarga intilishlari mumkin. Texnologik radikallashuvning odatiy texnologik rivojlanish jarayonidan asosiy farqi mazkur jarayon texnologik rivojlanishning potensial xavflarini, salbiy oqibatlarini hisobga olmaydi.

Ekologik radikalizm ekologik muammolarni hal qilish uchun ekstremal, keskin harakatlarni amalga oshirishga qaratilgan. Atrof-muhit radikallari ekologik muammolarga e'tiborni qaratish uchun to'g'ridan to'g'ri harakatlar yoki ijtimoiy noroziliklarni qo'zg'ash bilan shug'ullanishi mumkin, ko'pincha atrof-muhitni muhofaza qilish bilan bog'liq siyosat va amaliyotlarni tubdan o'zgartirishni qo'llab-quvvatlaydi.

Iqtisodiy radikalizm. Iqtisodiy radikallashuv mavjud iqtisodiy tizimlarga qarshi chiqib, jiddiy o'zgarishlar yoki keskin choralarni yoqalaydi. Bunga turli salbiy iqtisodiy tizim va mafkuralarni (masalan, sotsializm) himoya qilish, bozor iqtisodiyotini rad etish yoki muqobil iqtisodiy tuzilmalarni ilgari surish kiradi.

Ta'lim radikalizmi. Bu ta'lim tizimlarining radikal istiqbollarni o'z ichiga oladi. Ta'lim radikallashuvi innovatsion va transformatsion o'zgarishlarni qo'llab-quvvatlab, an'anaviy o'qitish usullari, o'quv dasturlari mazmuni yoki ta'lim muassasalarining tuzilishiga qarshi chiqishi mumkin.

Shuni ta'kidlash kerakki, "radikalizm" atamasining o'zi zo'ravonlik yoki noqonuniylikni anglatmaydi. Ba'zi radikal

harakatlar ekstremal choralarni qo'llashi mumkin bo'lsa, boshqalari tinch va qonuniy yo'llar bilan o'zgarishlarni amalga oshirishi mumkin. Radikalizmning tabiati ishtirok etayotgan shaxslar yoki guruhlarining maqsadlari, mafkuralari va usullariga qarab juda xilma-xil bo'lishi mumkin.

Bugungi kunda radikallshuvning asosiy ko'rinishi sifatida diniy radikalizm namoyon bo'lmoqda. Diniy radikalizm katta buzg'unchilik kuchiga ega, chunki u jamiyat uchun muhim bo'lgan qadriyatlar va munosabatlarni shubha ostiga qo'yadi, ijtimoiy va diniy aqidaparastlik uchun asos bo'lib xizmat qiladi, bu esa o'z navbatida odamlarni noqonuniy xatti-harakatlar sodir etishiga, radikal g'oyalar ortidan turli salbiy oqibatlariga olib keladi [10]. Diniy mazmunga ega, shu bilan bir qatorda siyosiy radikalizmga yo'naltirilgan diniy tashkilotlar yoki dindorlikning muayyan belgilariga ega bo'lgan tashkilotlar konstitutsiyaviy tuzum asoslarini kuch bilan o'zgartirishni, milliy va diniy adovat va nizolarni qo'zg'atishni hamda boshqa ekstremistik faoliyatni o'z oldiga maqsad qilib qo'yishi ham mumkin.

Umuman olib qaraganda, diniy radikallshuvga olib keluvchi bir qancha omillar mavjud:

Siyosiy va ijtimoiy-iqtisodiy omillar: Iqtisodiy nomutanosiblik va siyosiy beqarorlik radikal mafkuralarning ildiz otishi uchun qulay zamin yaratishi mumkin. Qabul qilingan adolatsiz qarorlar yoki shikoyatlar odamlarni o'z e'tiqodlarini radikal talqin qilish orqali tasalli va maqsad izlashga olib kelishi mumkin.

Madaniy va o'ziga xoslik muammolari: Keskin madaniy o'zgarishlar va an'anaviy qadriyatlarning yemirilishi radikal diniy mafkuralarning reaksion tarzda qabul qilinishiga olib kelishi mumkin. Madaniy identiklik, o'ziga xoslik bilan bog'liq muammolar, ayniqsa turli jamiyatlarda, radikallashgan shaxslar yoki guruhlar o'rtasida eksklyuzivlik va ustunlik tuyg'usini kuchaytirishi mumkin.

Noto'g'ri diniy ta'lim va targ'ibot: Ko'pincha diniy manbalar va ta'limotlarning noto'g'ri talqin qilinishi, yetarli darajada diniy ta'lim berilmaganligi ham diniy radikallshuv shakllanishiga yordam beradi. Turli vositalar, jumladan, ijtimoiy tarmoqlar orqali tarqatilayotgan diniy targ'ibot materiallari jamiyatda sekin-astalik bilan ekstremistik qarashlarni shakllantirishda muhim rol o'ynashi mumkin.

Diniy radikallshuv deganda shaxs ongini tubdan buzg'unchi o'zgartirishni nazarda tutuvchi radikal ta'limotga asoslangan, zo'ravonlik xarakteridagi noqonuniy xatti-harakatlarni sodir etish zarurligi g'oyasi bilan birga diniy e'tiqod bilan "niqoblangan" ekstremistik qarashlarga ega bo'lish jarayonini tushunish mumkin.

Afsuski, bugungi globallashuv davriga kelib mavjud barcha asosiy diniy an'ana va ta'limotlar radikallshuvga duchor bo'lmoqda. Biroq, tarixiy shart-sharoitlar va boshqa, birinchi

navbatda, ijtimoiy-siyosiy omillar tufayli islomning radikallashuvi muammosi bugungi kunda eng dolzarb hisoblanadi. Islom dinini ekstremizm va terrorizm yoki boshqa noqonuniy harakatlar bilan ajratib ko'rsatish mutlaqo qabul qilinishi mumkin emas. Shu bilan birga, Islom dunyodagi eng yosh jahon dini va e'tiqod qiluvchilar soni bo'yicha eng katta dinlardan biri hisoblanadi.

Aynan islomning dunyoda mashhurligi, shuningdek, islom diniga e'tiqod qiluvchi sayyoramiz aholisining ko'plab mintaqaviy va global to'qnashuvlar va urushlarda ishtirok etishi islom dini bilan bog'liq radikallashuvga va diniy radikalizmning ekstremistik va terroristik harakatlarga sabab bo'lishida namoyon bo'lmoqda [11].

XULOSA

Xulosa qilib aytganda, radikallashuv ko'p qirrali hodisa bo'lib, chuqur sabablari va keng ko'lamlil oqibatlariga ega. Ushbu murakkab muammoni hal qilish ijtimoiy-iqtisodiy tengsizliklarni bartaraf etish, madaniy tushunishni rivojlantirish va bag'rikenglik hamda tanqidiy fikrlashni rag'batlantiradigan ta'limni rivojlantirishga qaratilgan sa'y-harakatlarni birlashtiradigan kompleks yondashuvni talab qiladi. Radikalizmning ildizlarini tushunib, jamiyatlar ekstremizmga to'sqinlik qiladigan va inklyuzivlikni targ'ib qiluvchi muhit yaratishga harakat qilishi mumkin.

REFERENCES

1. «Маърифат ўрнини радикаллашув ва жаҳолат эгаллашига йўл қўймаймиз» — президент. <https://www.gazeta.uz/uz/2022/12/20/extremism/>
2. Schmid A. P. Radicalisation, de-radicalisation, counter-radicalisation: A conceptual discussion and literature review //ICCT research paper. – 2013. – Т. 97. – №. 1. – С. 22.
3. Borum R. Radicalization into violent extremism I: A review of social science theories //Journal of strategic security. – 2011. – Т. 4. – №. 4. – С. 7-36.
4. Радикализм // Большой толковый словарь русского языка. Гл. ред. С. А. Кузнецов. Первое издание: СПб.: Норинт, 1998.
5. <https://www.xabar.uz/tahlil/jamiyatda-mustaqil-fikr-bogilsa>
6. Pollack J. MARC SAGEMAN, Understanding Terror Networks (Philadelphia, Penn.: University of Pennsylvania Press, 2004). Pp. 229. \$29.95 cloth //International Journal of Middle East Studies. – 2006. – Т. 38. – №. 3. – С. 494-496.
7. Stefan Malthaner, The Radical Milieu, (Bielefeld: Institut für interdisziplinäre Konflikt- und Gewaltforschung (IKG), November 2010), p. 1;



8. <https://www.xabar.uz/tahlil/jamiyatda-mustaqil-fikr-bogilsa>
9. Hegghammer T. The recruiter's dilemma: Signalling and rebel recruitment tactics //Journal of Peace Research. – 2013. – Т. 50. – №. 1. – С. 3-16.
10. Криминологический анализ угроз экстремистского характера в Крымском федеральном округе: монография / А. Н. Игнатов, А. А. Кашкаров, Д. В. Новиков. Симферополь: Крымский филиал Краснодарского университета МВД России, 2016. – 208 с.
11. Игнатов А.Н., Абисова К.С. Религиозная радикализация мест принудительного содержания как фактор экстремизма и терроризма //Ученые записки Крымского федерального университета имени ВИ Вернадского. Юридические науки. – 2019. – Т. 5. – №. 3. – С. 136-144.

DEPICTION OF VICTORIAN VALUES IN “THE FRENCH LIEUTENANT’S WOMAN” BY JOHN FOWLES

Manzura Jurayevna Jurayeva

Uzbekistan State World Languages University, student

Supervisor: Mukhlisa V. Tursunova, teacher

manzurajurayeva029@gmail.com

ABSTRACT

The article presents a short analysis of the novel, “The French Lieutenant’s Woman” by John Fowles which displays the system and the life style of the Victorian society and the role of the Victorian women. The research considers the different conditions of the people in upper and low classes. The novel describes the influence of Victorian period on people’s lives and their painful fates if they went against the social rules. This academic piece of work depicts some prevalent issues in Victorian era such as the influence of the social norms and the religion on the main female character – Sarah Woodruff and her life.

Keywords: Victorian period, religion, prayer, woman values, social rules, upper and low class, John Fowles.

INTRODUCTION

John Robert Fowles, an English novelist, was internationally renowned and critically positioned between modernism and postmodernism. His works were influenced by Jean-Paul Sartre and Albert Camus, among others. Fowles was born in Leigh-on-Sea in Essex, England, the only son and elder child of Robert John Fowles and Gladys May, née Richards. He attended Alleyn Court Preparatory School, where a maternal uncle and aunt were teachers. In 1939, he won a place at Bedford School, where he remained a pupil until 1944. He was an athletic standout and became a head boy: a member of the rugby football third team, the fives first team, and the captain of the cricket team, for which he was a bowler. In 1951, Fowles became an English master at the Anargyrios and Korgialenios School of Spetses on the Peloponnesian island of Spetses (also known as Spetsai). In 1965 Fowles left London, moving to Underhill, a farm on the fringes of Lyme Regis, Dorset. The isolated farm house became the model for “The Dairy” Fowles was writing: “The French Lieutenant’s Woman” (1969)

The mysterious novel was published in 1969 in the US. After publication, the novel was admitted as must-read literature



several times as it could raise numerous historical and romantic themes in Victorian age. Via reading this masterpiece one can feel nothing but power and impact of religion for the first time. This specific factor reiterates the hero's challenges that are oriented by the Christian Church and the belief to the Lord. The impact of the religion was so great that Christian the people had lifelong bonds with the Christian church and with their all faith. For example, Mrs. Poultney's faith about hell. Furthermore, main characters described as "heroes of their period" because of their worshiping, sorrowfulness and conviction and fear.

METHODOLOGY

The novel is built on the author's authority in Victorian literature, both being contradictory and following most of the conventions of the literature of that time. The exposition of this work starts and connected with the period when Queen Victoria reigned. And the name Victorian literature is the English literature during the reign of Queen Victoria (1837–1901). The nineteenth century is considered by some to be the Golden Age of English Literature, especially for a prodigious number of British novels. It was in the Victorian era that the novel became the leading literary genre in English prose. In this period literature was characterized by depictions of common ordinary people, their hard lives, and moral lessons based on their lives. As an example, we can read of the narrative by the character: "Madam, I should rather spend the rest of my life in the poorhouse than live another week under this roof". They were meant for more than just entertainment. Victorians were interested in the hero as well as folk art. Victorian novels often focused on these themes.

Another crucial factor of that age which was stated by the narrator was Chartism. The narrator mentioned this event when Charles and his uncle who had a complex political idea were talking about the construction of a new railway station. Chartism was a working-class movement which emerged in 1836 in London. It expanded rapidly across the country and was most active between 1838 and 1848. Chartists as well had a great impact on the perception of the humans as it was highlighting the importance of deterrent social political changes.

RESULTS

One of the main characters of the novel is Mrs. Poulteney, a noble lady, Victorian dowager and prayer who fears from the hell, however she holds a wrong confidence and actions. For example, in novel the narrator underlines that she is not "a stupid" [ref, page] when it comes to considering her through her acts the way she deserves. "As she lay

in her bedroom, she reflected on the terrible mathematical doubt that increasingly haunted her; whether the Lord calculated charity by what one had given or by what one could have afforded to give. Here she had better data than the vicar. She had given considerable sums to the church; but she knew they fell far short of the prescribed one tenth to be parted with by serious candidates for paradise". Mostly Mrs. Poulteney is described as a negative character but, personally, she is only a member of that time, she was brought up by noble people`s, she was taught all manners of being cool and living like a bigot. That`s why she had those wrong understanding and actions of the church. In contrast, Sarah Woodruff would be sincerely worshipping, was ready to more knowledge and kept her modesty. The author mentions: "But sprang from a profound difference between the two women. "Mrs. Poulteney had a faith in a God that never existed and Sarah knew a God that did" [] actually, Mrs. Poulteney was dishonest and disgraceful to her footmen and servants like every other rich and honorable lady of her time of Feudalistic style, including "Butler`s, footmen, gardeners, grooms, upstairs maids, downstairs maids, all, they took just so much of Mrs. Poulteney`s standards and ways and then they fled. This was very disgraceful and cowardly of them. But when you are expected to rise at six, to work from half past six to eleven, to work again from half past eleven to half past four, and then again from five to ten, and every day, thus a hundred-hour week, your reserves of grace and courage may not be very large"(Fowles, 1969, p.18) All these lines describe how hard was their ruling system of Feudalistic style on ordinary people and Mrs. Poulteney`s wrong assumptions about a religion, actually, in Christianity, it not good being rude to people. As in Exodus 34:6 (NAS): *Then the Lord passed by in front of him and proclaimed, "The Lord, the Lord God, compassionate and gracious, slow to anger, and abounding in loving-kindness and truth;*

In the 19th century in England yet existed a distinct division between several classes which shows their social status and its systematic failure. The novel`s main male hero is Charles, a 32- years old rich heir. His grandfather was a baronet and his father lived in luxury and from his early years he had his fiancée- Ernestina. Charles`s mother and little sister died when he was one-year-old. Important point about Charles is that he was an adherent of the theory of Charles Darwin. His theory was like: *"Species can change over time, that new species come from pre-existing species, and that all species share a common ancestor. In this model, each species has its own unique set of heritable, various from the common ancestor, which have accumulated gradually over very long time periods"*. In fact, he, Charles, was a copy of Darwin`s theory in

real life because he ignores some “family traditions” like fox hunting or riding, instead, he studies at Cambridge, tries some fields of studies such as paleontology, and he has unnatural fondness of walking. But likewise, “*all species share a common life*” he was mundane from his life.

While he feels boredom, Sarah, as a perfect victim of a castle society, tries to gain some money to study “*she had learned during the day and paid for learning during the evening*” []. It is one example of how people in laboring classes had no equal degree to be taught. Sarah’s knowledge and its equivalent was greater than any low-class representor as “*her handwriting was excellent, the spelling faultless and reading voice was firm, rather deep*” (even Mrs. Poulteney admitted her voice via reading from the Bible). One can see from Sarah’s image a typical woman of nineteenth century with favored feminine look that was the demure, obedient, and shy who thought that she never would be glad from her life. The opposite hero for Sarah was Charles’s fiancée – Ernestina, she had exactly the right face for her age; that is, small-chinned, oval, delicate as a violet. Her gray eyes and the paleness of her skin only enhanced the delicacy of the rest. Despite her aristocratic background her life was not so wished one. The possible reason was her childhood, Ernestina lived with a crushing and unrelenting canopy of parental worry: “Her slight cough would bring doctors, slightest caused her mama and papa secret hours of self-recrimination and most urgent case for her was engagement from her earliest years as it later led for worst consequences: disconnection from Charles”.

CONCLUSION

In the beginning the acts started from the act that Charles and Ernestina hanging out near the sea. Sarah’s Lieutenant sails and never comes back, when she feels miserable, she goes to the sea and her second unfortunate meeting was near the sea as well. Every single accident was connected with the sea. Personally, it seems that sea is used as a metaphor for the evil as all orientation is connected with the religion. The sea has a connotative meaning in that all men fear death of drowning, which symbolizes damnation in the theological sense. Consequently, the sea in the Bible is apparently evil as well as a symbol of evil. As it is obvious that, not only nowadays, but also in Victorian period the role of woman was much lower when it comes considering their ideas as a resolution for a few numbers of problems or understanding and giving them some opportunity to self-development. As the society was divided in several groups according to their level of living standards, only high-class women representors had chance to get taught subjects, languages or study in some prestigious places.

However, even being from a high class, women did not possess any additional voices to decide what they want to do with their own life like: Ernestina from her childhood was engaged with Charles whether she wanted it or not and she declares “why I should wait for him to continue my great destiny” bringing female voice of self-decision. Most woman thought like her about it then in that very manner.

REFERENCES

1. <https://www.britannica.com/event/Victorian-era>
2. John Fowles “The French Lieutenant’s woman ” , august 1970 , copyright 1969
3. <https://www.nationalarchives.gov.uk>.



EVOLUTION OF EDUCATION FROM WEB 1.0 TO 4.0

Fidamohammad Niromand

Faculty of Education, Parvan University, Afghanistan

Amir Khan Amiri

Faculty of Education, Dallas College, Texas-USA

ABSTRACT

The aim of this paper is to highlight evolution of education from web 1.0 to 4.0. In line with this purpose the researchers have done a thematic research methodology via personal experiences and university studies. As specialists in education, we have reviewed literature to gather evidence related to evolution of education. We have found that education has changed over time to meet learners needs. During the period of 1.0, teacher-oriented schooling overcame. Instructors were the main resource of knowledge; concerns of students were not respected. Industrial upheaval and establishment of universities in 18th century, effected the sector of education. This changed the concept of schooling which evolved education 2.0. It lasted until advanced educational technologies were designed in the beginning of twenty-one century. Students-led system of education was considered as pivot of learning and traditional education started to fade away. Students achieved the leading roles in their learning. Consequently, 3.0 of education was formed. Recently, Education 4.0 has been the norm following the digitalization of schools. Futuristic methods revolutionized education which led to education 4.0. It has become the preferred style of education which lines up with the evolving of continuing forth industrial revolution.

Keywords: Evolution, education.

INTRODUCTION

Education is not static but a dynamic process which changes overtime. Schooling has evolved significantly through different steps and circumstances. Humankind commenced accumulating and transferring information via word of mouth, passing down knowledge regarding creatures, seeds, and the planet to each successive generation. There has been a great deal of adjustments in the way that scholars learn over the past hundred years. Students are not getting the same form of schooling which their forefathers received. Our previous generation were more acquainted to the



old-fashioned classrooms, where a lecturer would educate a group of 20 or more students in an accustomed place such as a classroom. For today's scholars, schooling has undoubtedly advanced to a superior level. Education currently presents better chances and more elasticity because everything has shifted; from the way we design courses, to teaching techniques and to who we share our classrooms with. Most of the alterations over the last century have sought to make a new paradigm in the educational world—centers where everyone can learn.

Therefore, conducting research on how education has advanced, can help us better recognize the ways in which elements in educational system have enhanced or discarded. Moreover, such studies will help prepare us for where teaching and learnings are headed. In the process of educational evolution, educators need to find out the means required to maintain sustainable educational renovation and assist to develop a solid labor force. Current research will provide a vivid knowledge for educationists who need to work in the direction of educational transformation. It provides an evolutionary perspective and introduces skills such as ingenuity, cooperation, research, and technological advancement which advanced education from 1.0 to education 4.0. with its impact on sustainable development.

PAPER RATIONALE

The purpose of this research is to explain the evolution of education and its role in long-term sustainable development. Our educational experiences reveal that education is developing and upgrading itself via a constant adaptation to the social changes and to demands and the goals of learners. We need to understand the evolution of education to direct educational activities towards student's goals and expectations and equip them with the abilities to be competitive in the labor force. Understanding the evolution of education can inspire our educators and scholars to be flexible, cooperative, and self-sufficient so that they will be able to flourish and thrive in this progressively technological age.

Having knowledge regarding the evolution of education is significant from the following perspectives:

- Understanding the direction of educational evolution.
- Respecting the learner's needs, circumstances, and career goals.
- Identifying the educational obstacles and updating its programs.
- Directing educational activities towards sustainable development at a global level.



LITERATURE REVIEW

Prior to reading the relevant literature we need to clarify certain expressions used in the paper which are explained below:

Sustainable development: This is a central reference point to achieve human improvement goals. It is a core assumption we value to emphasize our essential vision of the future.

Education: This is an activity targeted at accomplishing variety of objectives, such as learning or building skills.

Evolution: This is an procedure by which various forms of living organisms are thought to have improved and differentiated from previous forms.

Educationnel evolution: It is a process in which educational goals, methodology, tools and other essential elements changed through different steps. It is a forthcoming-focused maintainable outline receptive to adjustment, creativity, and invention of all skills that our students will want to use to flourish and be efficacious in their professions. This is a voyage of greatness that is required now more than ever.

(Makrides, 2019) one of the important points that educationists should be prepared for is solving future skills challenges. Skills are the most significant investment for the future workforce. The rate of revolution may outpace the ability of existing methods and policies to respond effectively. Moreover, educational curriculums are progressively at risk of being obsolete. Almost fifty percent of subject information obtained during the first year of university will be outdated by the time Scholars graduate. Therefore, teachers should prepare students for jobs which do not still exist.

(Daggett, 2020) has a futuristic discussion regarding evolution of education and distinguishes between educational evolution and revolution. He prefers evolution over revolution. Based on Daggett's explanation, evolution comes gradually and lasts long while revolution comes once and gets dies soon. Daggett considers evolution in education as point where students are good at communication, problem solving, and creativity to be ready for today's workforce. But, in his elaboration he does not clarify differences in educational levels of web 1.0 to 4.0, which requires a new study.

(Devi, 2021) Sustainable development is a phrase used to guarantee how progress takes place in such a way that environmental assets are safeguarded and given to the prospective generations. It signifies a balance in development of environmental protection and that of the economy. Poverty, hunger, war, diseases, and natural disasters are

the most serious challenges on the way of sustainable development.

(Muthukumarana, 2022) Official schooling is thought to have initiated in Greece at about 4 BCE. Indeed, the word “school” arrives from the Greek word “schole”, which represents “leisure”. This gives the idea of how education was understood back then, as a pleasurable pursuit instead of a boring task. Technological advancement and its application to the classrooms has evolved in education. The Internet, computers, electric stylus and digital tablets have filled our teaching spaces and have almost entirely substituted pen and paper learning. Such equipment has utterly revolutionized teaching and learning in more involving and available approaches, opening the door for “leisurely education” as the Greeks meant it to be.

After reviewing the related literature, the researchers found out that most of the existing resources have different discussions on evolution of education. One of the common features of all the reviewed literature is that none of them had a clear and complete elaboration on evolution of education from web 1.0 to web 4.0. Such missing points in those resources motivated us to accomplish a fundamental study and present a clear understanding of the evolution of education and its impact on sustainable development.

RESEARCH METHODOLOGY

From method point of view, current study is an applied research with a qualitative paradigm and descriptive methodology. In this paper a thematic study approach is used and then enriched via individual practices from school and university findings. Also, the researchers evaluated literature to assemble comprehensive theories attached to the evolution of education from web 1.0 to 0.4. and its impact on sustainable development.

ANALYSIS AND DISCUSSION

From compulsory education for kids under 18 to the distance studying revolution, the last century has seen so many variations in the way teachers teach, and scholars learn. The goal of education has been evolving depending on the view of society, teachers, and the families. Society has had various influences on schooling as well. Originally, educational organizations were driven by religious concerns, ultimately it developed more about political regime interest and now it is in most cases about guaranteeing that individuals have a benefit of a global understanding. There was a period when instructors would educate the way they had studied, with no respect to the demands of the learner. Families primarily used schooling as childcare as they walked off



into the manufacturing work places. Later it was about capacity training, supporting competences and skills that would serve students later life. Lately, teaching has become the instrument applied to prepare students for the competitive realm of the labor force. Teachers used to always work on a basis of cruelty, as they required a set of principles and performance for students. In short, the results of studying the status of education from web 1.0 to 4.0 are illustrated below:

Education 1.0

➤ Teachers were authoritarian and believed they could deliver any content at their own space and way, and students will learn if they could.

➤ Education progressed into a level with little respect to the needs of the students. Instructors were despotic; the system was teacher-centered, students were passive participants and technology was forbidden in the classrooms.

➤ Parents cared while teachers imposed.

➤ Society was driven by religion.

Education 2.0

➤ Educators assumed they could adjust how and what they taught so that it gave students the best chance for success.

➤ Interaction and cooperation began to grow.

➤ Students had to memorize all the notes which teachers gave.

➤ Class activity was based on exam-based approaches.

➤ Hours of teaching were counted rather than hours of learning.

➤ Capability was important while teachers imprinted.

➤ Society was driven by government.

Education 3.0

➤ instructors believed they can provide the sources and content which students need.

➤ Students can learn whatever they want in a way which works for them.

➤ Educators would be available to help students.

➤ Education was competitive.

➤ Society aimed for advantage.

Education 4.0

The prospect of schooling is what the great educators have sought over the ages to motivate and inspire learners to learn and use their abilities.

➤ Innovation and creativity are accelerated

- Learning is whenever and wherever while skills are built at schools.
- Flipped classrooms are utilized and technology is applied.
- Teaching and learning are personalized.
- Learning is practical.
- Educationists inspire scholars.
- Classrooms are democratic more than ever before.
- Classrooms are chaotic and noisy which makes it difficult to manage.

Therefore, it requires professional skills to be a teacher or trainer.

CONCLUSION

Education has constantly been transmitted from one generation to another. After schooling steadily progressed into the specific places called “classroom” certain new norms and regulations were also made. The development of Ed tech provides the prospect to support a high-quality schooling and revolutionize traditional educational strictures into a modern one

In the process of educational evolution from web 1.0 to 4.0, factual learning changed to learning how to solve problems and work on projects in order to meet students professional and personal goals. The effect of these shifts is not confined to the old-fashioned classroom educator role. Presenters, writers, trainers, and mentors all should scrutinize their instructional techniques and review where enhancements can be made.

In web 1.0, teacher-oriented model of education was the norm. Instructors were the leading source of learning. After some advancements, the sector of education evolved into 2.0 which students received more authority and responsibilities for their learning. Such students-oriented system of education facilitated further success and stepped towards web 3.0 of education. In 3.0 teachers shift their roles from teaching to guiding and were not the center of all educational activities anymore. Accordingly, 4.0 of education was developed which is the most useful and closest target for professional and personal success of students. The outcome of 4.0 of education in the forms of innovation, technological advancements, problem solving, and enhanced communication is impacting sustainable development in different countries.

Finally, to achieve sustainable developments, all teaching methodologies should be more balanced, scalable, and replicable. Additionally, usage of technological advancements in education, help students to adjust themselves instantly to the workforce.

REFERENCES

1. Baci, C. (2014). The evolution of educational means. A historical perspective. *The 6 th International Conference Edu World 2014 "Education Facing Contemporary World Issues"*, (pp. 282-83). Cluj-Napoca, Romania: procedia .
2. DEVI, K. (2021). Challenges to sustainable development in context to India. *xIlkogretim Online - Elementary Education Online* (pp. 1889-90). Delhi : xIlkogretim.
3. Hirushi Muthukumarana, J. C. (2022). The Evolution of Education: Past, Present and the Future. *CAINZ*, 1-5.
4. Mondaca, D. (2020). Differences Between Education 1.0 to 4.0. *Educational Games*, 1-2.
5. Policy, C. o. (2020). History and Evolution of Public Education in the US. *The George Washington University*, 4-6.
6. Prof. Dr. Gregoris A. Makrides, B. S. (2019). The Evolution of Education from Education 1.0 to Education 4.0: Is it an evolution or a revolution? *European Association* , 50-53.
7. Rajasekaran, J. (2021). Evolution of education from web1.0 to 4.0. *Qubahan Academic journal*, 2-4.
8. Subhasree pal2, D. P. (2021). WEB 4.0 AND NEW REFORMATION IN EDUCATION. *World Bulletin of Social Sciences (WBSS)*, 66-5.
9. Willard R. Daggett, E. (2020). *The evolution of Education*. Rexford, NY 12148: International center for leadership in education Inc.
10. Willard R. Daggett, E. (2021). *Evolution of Education* . Los angeles: International center for leadership in education.

IDENTIFICATION OF DIAZINON PROTOMERS WITH ION MOBILITY SPECTROMETER

Mohammad Nabi Karimi

Department of physics, Faculty of education, Alberoni University, Afghanistan

Sayed Ali Aqa Sadat

Department of chemistry, Faculty of education, Alberoni University, Afghanistan

ABSTRACT

Background: Diazinon pesticide is a chemical compound used in agriculture and horticulture and it has been identified and measured by various methods such as mass spectrometer, magnetic spectrometer, chromatography, IR, etc. Due to the chemical structure of diazinon, it can accept protons from active ions and be charged in multiple areas.

Materials and methods: This research is a laboratory study using an ion mobility spectrometer. The obtained data were analyzed using Sigma Plot and ViIms software.

Findings: This research was conducted to investigate the protonation mechanism of diazinon. Due to its proton scavenging properties, diazinon can be detected and measured using an ion mobility spectrometer in positive polarity mode. In this study, a new approach to distinguish between diazinon protomers by observing intramolecular hydrogen bond formation after protonation was introduced. The effect of hydrogen bond formation on the structural and electronic properties of protomers was investigated using density functional theory (DFT).

Keywords: ion mobility, diazinon, protomer, spectroscopy, pesticides.

INTRODUCTION

Diazinon is one of the pesticides used in agriculture and horticulture [1-4]. This chemical compound is an oily and colorless liquid and is one of the organophosphorus pesticides[5, 6]The solubility of diazinon in water at 20°C is 60 mg/liter[3, 7]. This pesticide is sensitive to oxidation conditions and its decomposition is possible at temperatures above 20°C in acidic and alkaline environments[6, 8-10] Many organic molecules have multiple proton binding sites[3, 11] Protonation of a molecule with several sites may lead to the formation of protonic isomers (protomers)[6, 11, 12] Protomers can be identified and studied using different techniques, such as ion mobility spectroscopy, photochemical, and infrared techniques[11, 13] Protomers can be detected and separated by an ion mobility spectrometer, which has two criteria. Comparable relative abundance and different ionic mobility[12, 14] According



to the Boltzmann equation, the relative abundance of two protomers is an exponential function of the difference in protonation of the corresponding proton acceptor centers [15, 16]. Hence, [6] for a molecule with multiple steric centers, only one protomer corresponding to the steric center may be produced. However, some strategies have been proposed that lead to changes in the relative abundance of protomers and the formation of unstable protomers. In an electrospray ionization (ESI) source, by changing the solvent composition, the less basic center may become protonated. Protomers must have different mobilities (K) or collision cross sections (CCS) to be separated by IMS. Mobility and CCS depend on the structure of the protomer and its interaction with the drift gas flowing in the drift region of the IMS. Therefore, some parameters, such as dipole moment (μ_D) and polarizability (α), are determining factors affecting the detection of protomers in IMS [13, 17]. Because in these compounds, protonation from the N site leads to the concentration of charge on the NH_3 group and, as a result, the increase of μ_D , while the protonation of the oxygen atom of the $C=O$ group causes the charge to spread both on $C=O$ and in the benzene ring, which decreases μ_D . Therefore, the N protomer with a larger μ_D experiences more interaction with the drift gas molecules, and its IMS peak appears at a higher drift time [12, 16].

1: Experimental part

1-1. Optimum conditions of the IMS device for diazinon identification

To identify diazinon with the ion mobility spectrometer, compressed air was used as the input gas for the device and the corona ionization source in positive polarity. Reactive ions, which include H_3O^+ , NH_4^+ , and NO^+ , as seen in figure (2), the spectra of reactive ions in positive polarity and diazinon appear as two peaks close to each other at 10.57 and 10.37 milliseconds. These two peaks have been used as indicator peaks to identify and measure diazinon with an ion mobility spectrometer.

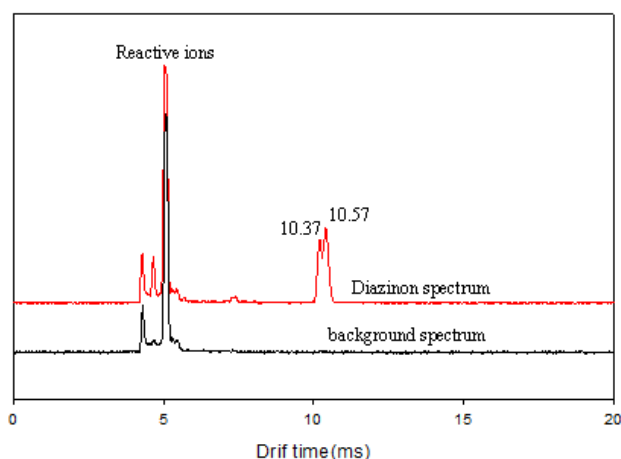


Figure 2: Ion mobility spectrum of diazinon and background spectrum in positive polarity at 200°C and in the presence of air drift gas

1-1. checking the temperature of the injection chamber and thrust tube

Two microliters of 100 ppm diazinon solution were injected into the IMS device at different temperatures in the injection zone (120–260 °C), and their spectra were recorded in Figure 3. The temperature of the injection zone above 120 °C can be used to measure diazinon with the IMS device. The temperature of 260 °C was used as the optimal temperature for diazinon measurement. The temperature of TB was investigated from 30°C to 200°C (Figure 4). An increase in temperature causes an increase in the intensity of the diazinon signal. Therefore, the temperature of 200 °C was chosen as the optimal temperature for measuring diazinon. The increase in ion mobility makes the ions reach the detector earlier, and the peaks appear in a shorter drift time.

Therefore, with the shortening of the time for the ions to reach the detector, the amount of their losses due to hitting each other or the wall is reduced, ultimately leading to an increase in the percentage of ions passing and an increase in the signal.

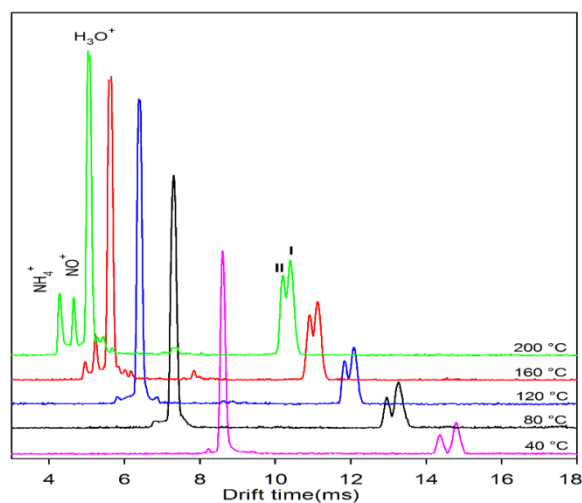
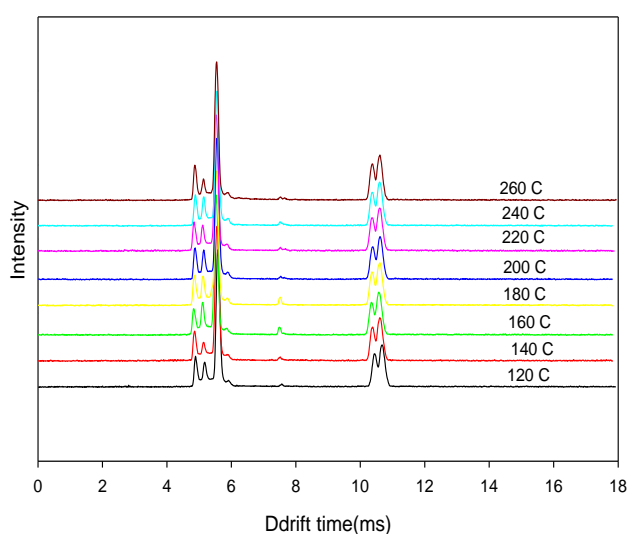


Figure 4: Ion mobility spectrometer

of

diazinon at different temperatures

Figure 3: Ion mobility spectrum of diazinon at different temperatures in the injection area

Table 1 shows the optimal conditions of the device for identifying and measuring diazinon.

Table 1: optimal parameters of the ion mobility spectrometer device to measure diazinon

IMS device parameters	optimal value
Corona voltage(V)	2300
Thrust area voltage(V)	8000
Thrust tube field(V/cm)	600
Flow rate of thrust area (ml/min)	600
Carrier gas speed (ml/min)	300
Injection chamber temperature (°C)	260
Thrust tube temperature (°C)	200
Pulse width (µs)	50
device polarity	+

1-2. Calibration chart for diazinon measurement

In the spectra recorded with the ion mobility spectrometer in optimal conditions, the area under the diazinon peak at each concentration was calculated using Vis IMS software.

The linear range of the calibration curve for diazinon measurement is 0.1–8 ppm. The linear equation ($y=0.0492x+0.0175$) was recorded as shown in figure 5.

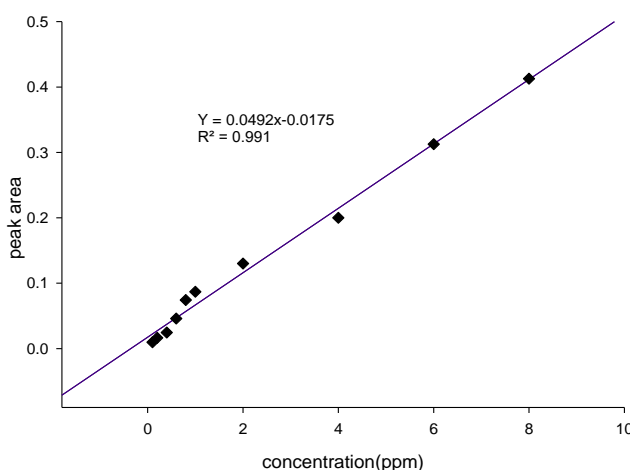


Figure 5: Linear range of the diazinon calibration curve

2: Discussion and results

2-1. Computational details

Optimization of isomers of the diazinon molecule in the gas phase was done using B3LYP and density functional theory (DFT)[18, 19]. Frequency calculations were performed at the same level of theory to obtain thermodynamic functions at 298K[20].

2-2. Investigation of diazinon protomers

At 40°C, two peaks I and II were observed for diazinon at drift times (td) of 14.58 and 14.80 ms. As the temperature increases, the peaks shift to lower drift times. Also, with increasing temperatures, the peak-to-peak distance decreases. Same as Figure 4. Mobility (K) and consequently td depend on temperature according to the Mason-Champ equation in the form of equation (1).

$$\frac{1}{t_d} = \frac{3}{16} \frac{EqT}{l_d P} \left(\frac{2\pi k}{\mu} \right)^{1/2} \frac{1 + \alpha}{\Omega T^{1/2}} \dots\dots(1)$$

q is the baryon, P is the thrust gas pressure, ld and E are the length and electric field of the thrust tube, μ and Ω are the reduced mass of the cross section of the ion/propellant gas collision, k is Boltzmann's constant, and α is a parameter smaller than 0.02. The ion/molecule cross section, Ω , shows a T-1/2 dependence for most systems [11, 10]. Therefore, $\Omega T^{1/2}$ is a parameter independent of temperature. Therefore, $td/1$ must be a linear function of T. It shows the graphs of td vs. T for peaks I and II of diazinon in Figure 6. $1/td$ -T plots are two curves with almost the same slope for peaks I and II.

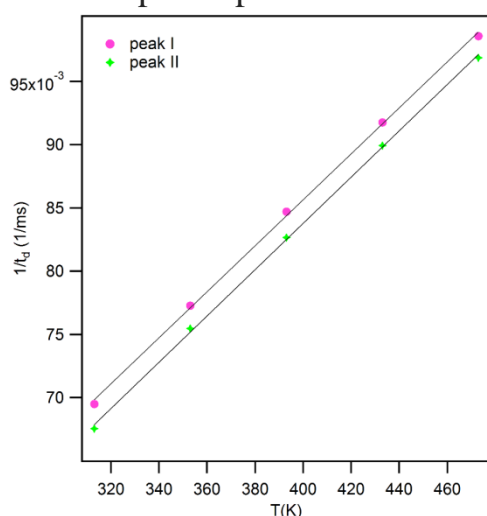
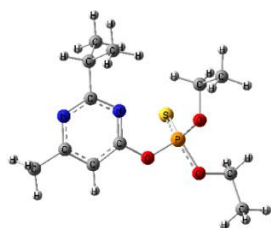


Figure 6: graph of $1/td$ versus T for peaks I and II of diazinon

The linearity and the same slope of these two curves indicate that these two protomers do not undergo breakage or waterproofing at the studied temperatures. As the temperature increases, peaks I and II may overlap to some extent, which could be due to the structural features described in the following sections.

The optimized structure of four isomers of diazinon (D) is shown in Figure 7. These structures are rotational isomers due to the rotation of the CH (CH₃)₂ and P

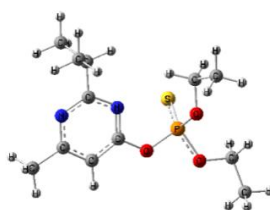
(OC₂H₅)₂ groups. Although the D-b structure is the most stable isomer, due to the small difference in their relative energies, all four structures have considerable abundance.



D-a

1.8

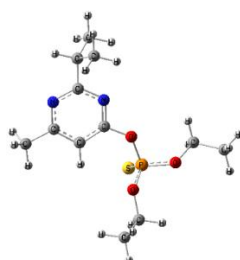
27.5%



D-b

0.0

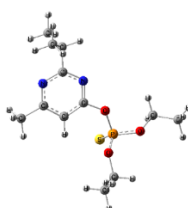
57.5%



D-c

4.7

8.6%



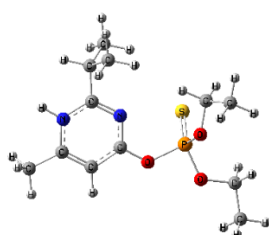
D-d

5.4

6.4%

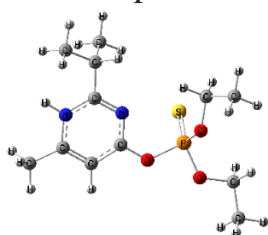
Figure 7: Optimized structures for different diazinon isomers in the gas phase. Relative energy is in kJ/mol.

Diazinon has several centers for proton capture, including the ring N atom, a P=S sulfur atom, and three oxygen atoms attached to the P atom. Protonation of nitrogen atoms leads to the formation of protomers I and II.



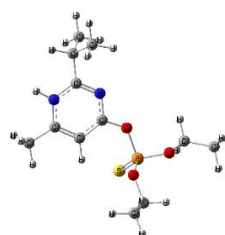
Protomer-Ia

5.5



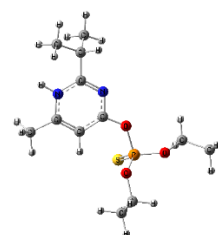
Protomer-Ib

3.9



Protomer-Ic

0.0



Protomer-Id

1.0

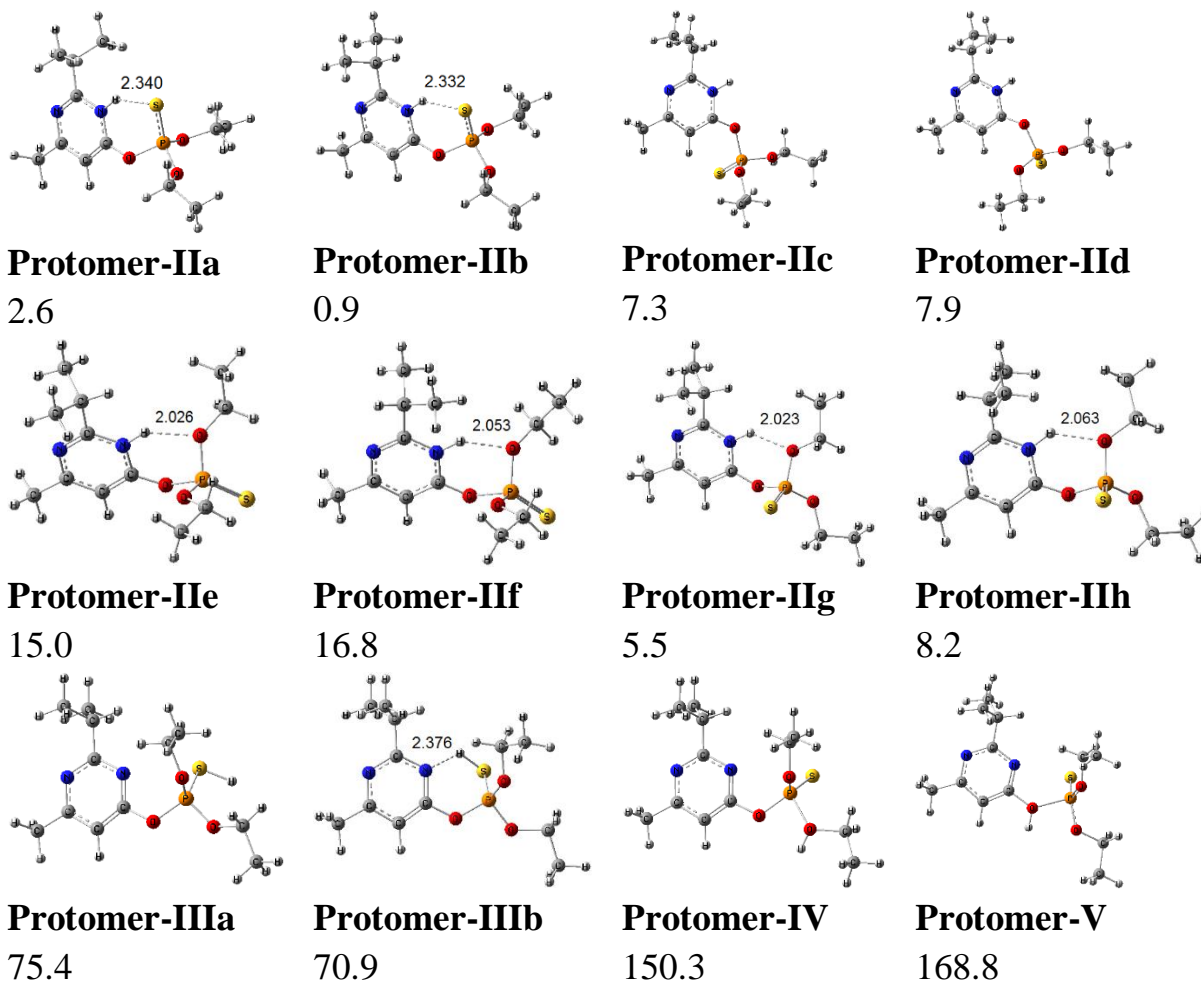


Figure 8 shows optimized structures for protonated diazinon isomers in the gas phase. Intramolecular hydrogen bond length and relative energies are in Å and kJ mol⁻¹, respectively.

Protomers III and IV-V are produced from the protonation of S and O centers, respectively. The calculated values of PA and GB for all diazinon centers are summarized in Table 2. The comparison of relative energies shows that the nitrogen atoms inside the ring are the most favorable protonation sites, so that protomers I and II are the most stable protonated structures of diazinon. These protomers are more stable than S-protomers (III) and O-protomers by 75 and 160 kJ bromole, respectively. Therefore, the IMS peak observed in Figure 9 can be attributed to protomers I and II.

Table 2: PA and GB values calculated for all diazinon sites at 298 K in the gas phase

protomer				PA (kJ mol ⁻¹)	GB (kJ mol ⁻¹)
D-b	+	H ⁺	→	965/9	936/1
Protomer-Ia					
D-b	+	H ⁺	→	967/5	936/5

Protomer-Ib			
D-b	+	H ⁺	→ 971/4 942/3
Protomer-Ic			
D-b	+	H ⁺	→ 970/4 939/9
Protomer-Id			
D-b	+	H ⁺	→ 968/8 938/9
Protomer-IIa			
D-b	+	H ⁺	→ 970/5 941/9
Protomer-IIb			
D-b	+	H ⁺	→ 964/1 934/6
Protomer-IIc			
D-b	+	H ⁺	→ 963/5 935/0
Protomer-IId			
D-b	+	H ⁺	→ 956/4 930/4
Protomer-IIe			
D-b	+	H ⁺	→ 954/6 923/5
Protomer-IIf			
D-b	+	H ⁺	→ 965/9 937/1
Protomer-IIg			
D-b	+	H ⁺	→ 963/2 933/8
Protomer-IIh			
D-b	+	H ⁺	→ 896/0 869/7
Protomer-IIIa			
D-b	+	H ⁺	→ 900/5 873/9
Protomer-IIIb			
D-b	+	H ⁺	→ 821/1 793/1
Protomer-IV			
D-b	+	H ⁺	→ 802/6 777/7
Protomer-V			

The comparable stability of N-protomers I and II (difference of ~0.9 kJ mol⁻¹) ensures that both protomers are formed with comparable abundance (44:56% at oC200). It should be noted that these N-protomers have different ionic mobility. In protomer II, the incoming proton can form an intramolecular hydrogen bond with adjacent S or O atoms. Figure 1 shows that hydrogen interaction with sulfur atoms (IIa–IIb) is stronger than hydrogen bonding with oxygen atoms (IIe–IIh). The formation of an intramolecular hydrogen bond spreads the positive charge of the incoming proton. Therefore, the

dipole moment is expected to be lower for protomer II than for protomer I. The calculated μ_D values for diazinon and all its protomers are summarized in Table 3.

Table 3 calculates the values of dipole moment and polarizability for different structures of diazinon and its protomers.

protomer	μ_D (D)	α (\AA^3)
D-a	2/216817	214/098667
D-b	2/205559	214/747000
D-c	2/847013	215/208333
D-d	2/772606	215/542000
Protomer-Ia	9/946022	211/082000
Protomer-Ib	9/906875	211/264333
Protomer-Ic	8/357034	212/115000
Protomer-Id	8/410073	212/258000
Protomer-IIa	2/510787	210/191000
Protomer-IIb	2/406036	211/137667
Protomer-IIc	3/560249	211/440333
Protomer-IId	3/923802	210/859667
Protomer-IIe	3/837685	209/904000
Protomer-IIf	4/115805	209/269333
Protomer-IIg	2/654212	211/274000
Protomer-IIh	2/778440	210/29400
Protomer-IIIa	5/624669	207/433667
Protomer-IIIb	4/565308	206/929667
Protomer-IV	8/536008	211/230333
Protomer-V	5/313814	210/953667

For neutral diazinon, μ_D values are around 2.2–2.8 D, while these values increase significantly for protomer I to D 4.8–9.9. Although II protomers are positively charged, their μ_D values are comparable to neutral diazinon. It should be noted that apart from forming a hydrogen bond, the location of the proton also affects the value of the dipole moment, as in protomer I, the proton is attached to one side of diazinon, while for protomer II, protonation occurs in the center of the molecule. The dipole moment vectors for the most stable neutral and protonated structures of diazinon are compared in figure 9.

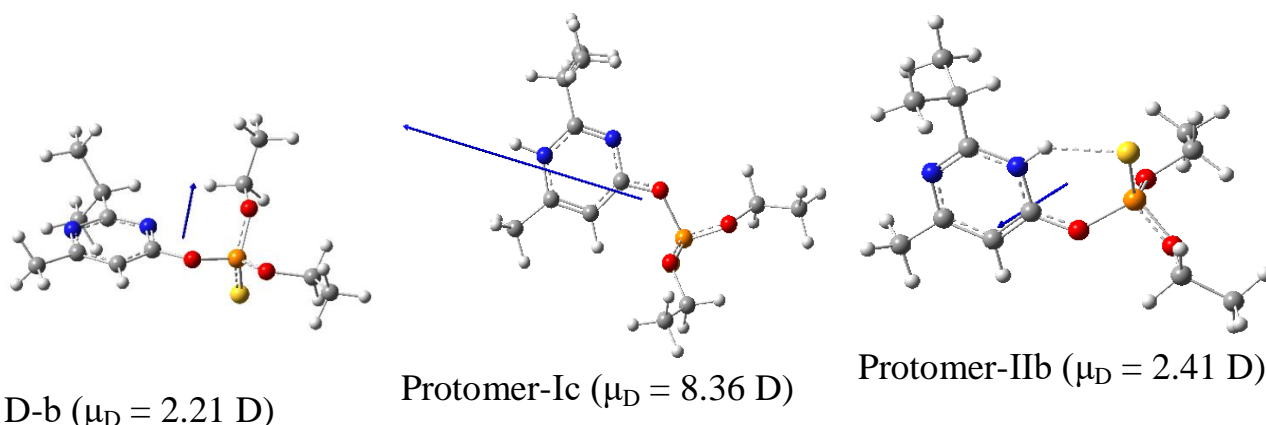


Figure 9 shows the dipole moment vectors for the most stable structures of protonated and neutral diazinon.

Larger μ_D values for protomer I lead to a stronger interaction with the drift gas molecules, resulting in the appearance of a peak at higher drift times. In addition, the greater stability of protomers I compared to protomers II makes the intensity of the peak corresponding to protomer I higher than that of protomer II. Peaks I and II in Figure 9 correspond to protomers I and II, respectively. Figure (9) also shows that the relative intensity of peaks I and II changes with temperature. The Boltzmann equation is used to interpret this temperature behavior.

$$\frac{\text{Intensity II}}{\text{Intensity I}} = \exp\left(\frac{-\Delta E}{RT}\right) \dots\dots (2)$$

According to equation (2), $\ln(\text{II/I})$ is a linear function $1/T$ with a slope of $-\Delta E/R$, where ΔE is the energy difference between protomers I and II and the gas constant R is equal to $\text{J mol}^{-1} \text{K}^{-1}$ 8.314. It is 8/ Figure 10 shows the graph of $\ln(\text{II/I})$ in terms of $1/T$. From the slope of this graph, the energy difference between protomers I and II was equal to 2.6 kJ mol^{-1} , which corresponds to the theoretically calculated value of 0.9 kJ mol^{-1} .

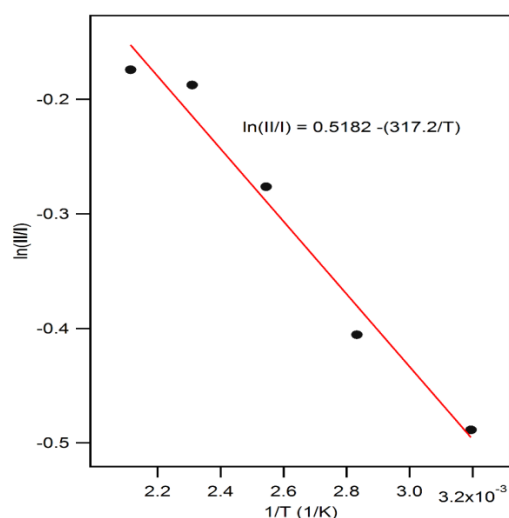


Figure 10 shows the graph of $\ln(\text{II/I})$ versus $1/T$ for the ionic mobility peaks of I and II for diazinon. (II/I) shows the relative intensity of II and I peaks.

Figure (11) shows the potential energy curves for Ic and IIb protomers obtained by scanning the N-C-O-P dihedral angle (group rotation ($2\text{P}=\text{S}(\text{OC}_2\text{H}_5)_2$)).

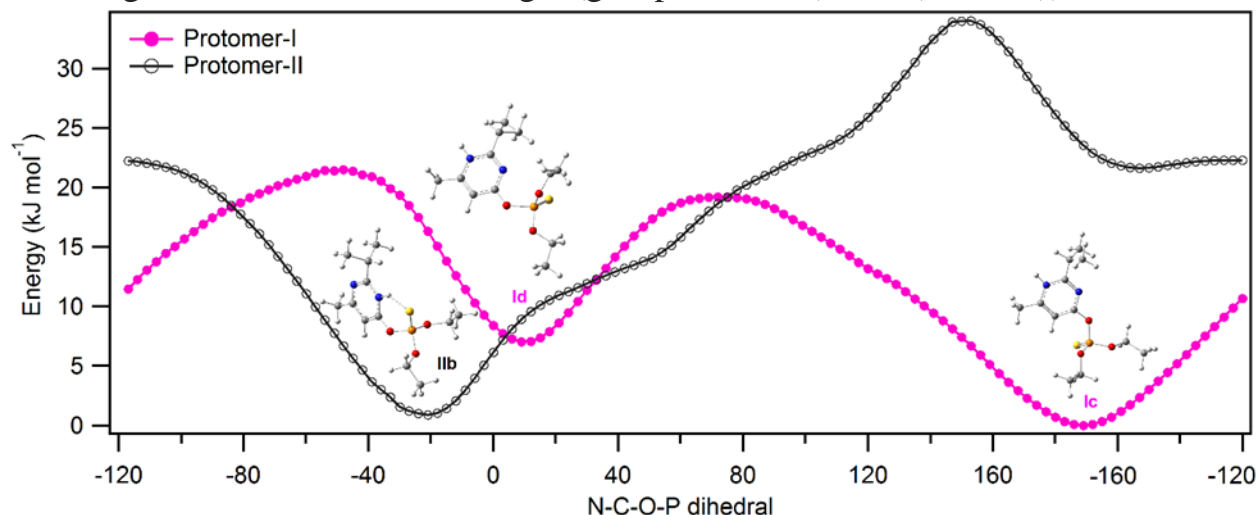


Figure 11: Energy levels obtained for Ic and IIb protomers by N-C-O-P dihedral scan (rotation of the $\text{P}=\text{S}(\text{OC}_2\text{H}_5)_2$ group)

CONCLUSION

As mentioned above, intramolecular hydrogen bond formation in protomer II results in low polarity, less interaction of the ion with the propellant gas, and the appearance of its peak at a lower Td. Intramolecular hydrogen bonding may also affect TD by changing the structure of protomers.

The formation of an intramolecular hydrogen bond in protomer IIb makes the N-C-O-P dihedral angle equal to -20° [18]. In the absence of an intramolecular hydrogen bond (for example, in protomer Ic), the $\text{P}=\text{S}(\text{OC}_2\text{H}_5)_2$ group can rotate to make the N-C-O-P dihedral angle equal to -170° . Intramolecular hydrogen bond formation in isomer IIb produces a rigid structure that cannot easily rotate around the N-C-O-P dihedral, or even if it can overcome the rotational energy and rotate, this rotation does not lead to a stable conformer. Because the potential energy curve does not show any other potential wells for protomer II, but in protomer Ic, because the intramolecular hydrogen bond is not formed, the $\text{P}=\text{S}(\text{OC}_2\text{H}_5)_2$ group can rotate and lead to another stable isomer (Id) with a dihedral angle of N-C-O-P equal to 15° . However, the potential barrier for $\text{Ic} \leftrightarrow \text{Id}$ conversion is about 19 kJ mol^{-1} , and at high temperatures, the molecule may overcome the energy barrier. In this case, the I peak in the ion mobility spectrum can be related to a mixture of Ic and Id protomers. In short, the formation of a hydrogen bond leads to a change in the structure and polarity of protomer II. The formation

of the NH...S bond in protomer II leads to a stable and strong structure where the P=S(OC₂H₅)₂ group is not able to rotate freely. But in protomer I, without hydrogen bonding, the P=S(OC₂H₅)₂ group can rotate, and interconversion between its two structures is possible. This difference in structure in protomers I and II leads to different ionic mobility and the observation of two separate peaks for two isomers of protonated diazinon.

REFERENCES

1. Solomon, E.I., et al., *Copper active sites in biology*. Chemical reviews, 2014. **114** (7): p. 3659-3853.
2. Ogutcu, A., et al., *The effects of organophosphate insecticide diazinon on malondialdehyde levels and myocardial cells in rat heart tissue and protective role of vitamin E*. Pesticide biochemistry and physiology, 2006. **86**(2): p. 93-98.
3. Sadat, S.A.A., V. Ilbeigi, Y. Valadbeigi, and M. Soleimani, *Determination of pesticides phosalone and diazinon in pistachio using ion mobility spectrometry*. International Journal for Ion Mobility Spectrometry, 2020. **23**: p. 127-131.
4. Pardue, J.R., E.A. Hansen, R.P. Barron, and J.-Y.T. Chen, *Diazinon residues on field-sprayed kale. Hydroxydiazinon---new alteration product of diazinon*. Journal of Agricultural and Food Chemistry, 1970. **18**(3): p. 405-408.
5. Petersson, G.A., et al., *Calibration and comparison of the Gaussian-2, complete basis set, and density functional methods for computational thermochemistry*. The Journal of chemical physics, 1998. **109**(24): p. 10570-10579.
6. Pehkonen, S.O. and Q. Zhang, *The degradation of organophosphorus pesticides in natural waters: a critical review*. Critical reviews in environmental science and technology, 2002. **32**(1): p. 17-72.
7. Marlton, S.J., et al., *Selecting and identifying gas-phase protonation isomers of nicotineH⁺ using combined laser, ion mobility and mass spectrometry techniques*. Faraday discussions, 2019. **217**: p. 453-475.
8. Lee, S.-R., B.-S. Yoo, and H.-K. Chun, *Bioconcentration of Diazinon and Fenitrothion in Carp (Cyprinus carpio)*. Korean Journal of Environmental Agriculture, 1984. **3**(1): p. 30-35.
9. Ahmed, F.E., *Analyses of pesticides and their metabolites in foods and drinks*. TrAC Trends in Analytical Chemistry, 2001. **20**(11): p. 649-661.
10. Ikehata, K. and M. Gamal El-Din, *Aqueous pesticide degradation by ozonation and ozone-based advanced oxidation processes: a review (part II)*. Ozone: science & engineering, 2005. **27**(3): p. 173-202.



11. Bisson, M. and A. Hontela, *Cytotoxic and endocrine-disrupting potential of atrazine, diazinon, endosulfan, and mancozeb in adrenocortical steroidogenic cells of rainbow trout exposed in vitro*. Toxicology and Applied Pharmacology, 2002. **180**(2): p. 110-117.
12. Bull, J.N., N.J. Coughlan, and E.J. Bieske, *Protomer-specific photochemistry investigated using ion mobility mass spectrometry*. The Journal of Physical Chemistry A, 2017. **121**(32): p. 6021-6027.
13. Warnke, S., et al., *Protomers of benzocaine: solvent and permittivity dependence*. Journal of the American Chemical Society, 2015. **137**(12): p. 4236-4242.
14. Fu, D., et al., *Understanding of protomers/deprotomers by combining mass spectrometry and computation*. Analytical and Bioanalytical Chemistry, 2023: p. 1-16.
15. Munro, R., *Biosynthetic isotopic labelling strategies for the production of membrane proteins for solid-state Nuclear Magnetic Resonance spectroscopy*. 2021, University of Guelph.
16. McCullagh, M., et al., *Investigations into the performance of travelling wave enabled conventional and cyclic ion mobility systems to characterise protomers of fluoroquinolone antibiotic residues*. Rapid Communications in Mass Spectrometry, 2019. **33**: p. 11-21.
17. Laphorn, C., et al., *Can ion mobility mass spectrometry and density functional theory help elucidate protonation sites in 'small' molecules?* Rapid Communications in Mass Spectrometry, 2013. **27**(21): p. 2399-2410.
18. Valadbeigi, Y., *Effects of intramolecular hydrogen bond and electron delocalization on the basicity of proton sponges and superbases with benzene, pyridine, pyrazine and pyrimidine scaffolds*. Computational and Theoretical Chemistry, 2020. **1188**: p. 112947.
19. Orio, M., D.A. Pantazis, and F. Neese, *Density functional theory*. Photosynthesis research, 2009. **102**: p. 443-453.
20. Paddison, S.J. and E. Tschuikow-Roux, *Structures, vibrational frequencies, thermodynamic properties, and bond dissociation energies of the bromomethanes and bromomethyl radicals: An ab initio study*. The Journal of Physical Chemistry A, 1998. **102**(30): p. 6191-6199.

REPRODUCING KERNEL HILBERT SPACE METHOD FOR SOLVING ABEL'S INTEGRAL EQUATIONS

Mehrullah Mehr

Department of Mathematics, Baghlan University, Afghanistan

Haji Ahmad Joya

Department of Mathematics, Baghlan University, Afghanistan

ABSTRACT

The Integration Equations are one of the significant & essential phenomena and abstractions for the sake of numerous types of problem-solving in mathematics and have had various applications in areas of different fields. In fact, have a high theoretical & applicability importance. Even so, in this Article, a detailed research is carried out into the “Abel Integral Equation” utilizing the Reproducing Kernel Hilbert Space Method (RKHS) which is one of the strong, concise & perfect methods particularly for simplification & solution of the Abel Integral Equation. The main purpose of this research is to seek the numerical solution for the Abel Integral Equation by RKHS Method.

Keywords: Abel Integral Equation, Generalized Abel Integral Equation, Reproducing Kernel Hilbert Space Method

INTRODUCTION

The Integration Equations have an ample applicability in all areas of the daily life and have had numerous plentiful applications in various fields of science such as the seismology, radio-astronomy, electron emission, plasma diagnostics, X-Ray radiography, fiber evaluation, scattering of the diseases infection, semiconductor design, heat transfer & crystal growth. If the unknown function of $u(x)$ in a differential equation comes under the symbol of Integral, then this type of Equation is called “The Integral Equation” [3-7]. Note that the Reproducing Kernel Hilbert Space Method (RKHS) has been applied for the sake of Solution of a specified class of integration equations for electro-magnetic non-linear problems as well [1]. In order to solve the “generalized Abel integral equation”, it is needed to make a blend of the Laplace transform and Jacobi collocation Methods and in the meantime the estimation of its error can also be calculated [12]. The solution of Abel integral equation together with the weakly

singular kernels has been considered based on the remaining functions of (RBF) and the results of the method have been compared with the methods of HPM & ADM [13]. It is to be noted that the second type of the Abel integral equation has been considered based on the Jacobi polynomials and Jacobi spectral collocation method [14]. Approximate method solution – analysis of integral equation by Taylor series [15]. Solution of generalized Abel integral equation by using of the HPM & MHPM methods [16]. The numerical solution of Abel integral equation has been proved upon the approximate amounts of the Legendre Wavelets [17] and by the method of Laplace transform [4], utilizing of the Taylor series, utilizing of the approximate method of “Pade” and its convergence [2]. The analytical solution of the Abel integral equation has been assessed in astronomical physics by the method of Laplace transforms and its numerical solution has been assessed by using of the Homotopy method [3]. The combined reproducing Kernel Method and Taylor series to solve the non-linear integral equation together with weakly kernels [8], stability Analysis, Error Analysis of the reproducing kernel Hilbert space method for the sake of solution of second type of singular Voltaire integral equation on graded mesh [9], First type of singular integral equation, Cauchy type integral equation by RKHS method and the estimation of its error have also been assessed [10]. The numerical solution of type-II Voltaire Integral Equation with the weakly singular kernel has been worked-out based on the Block-Pulse functions & error analysis [18]. The Fredholm integral equation and Volterra-Fredholm integral equations; These equations study & examine the errors and stability by using of the Reproducing Kernel Hilbert Space method (RKHS) and one of the goodness of this method is the rapidity of its convergence [11].

In 1823 A.D Abel studied the motion of a particle, sliding downward under the exertion of gravity load along an unknown smooth curve in a right-angled geometrical Plane. Assume that the particle is located motionless at point P along the unknown smooth curve having the height of x from the Origin and starts sliding downward under the exertion of gravity load until the origin ($Point O$) whose height is presumed to be zero. Now we calculate the motion equations of the particle under exertion of gravity load along the noted smooth curve at every assumed point in time T until the origin ($Point O$). Note that we assume the x Axis is termed to be the height and the y Axis is assumed to be the horizontal distance. Pretend the points $P(x, y)$ $Q(\xi, \eta)$ to be located on the smooth curve and s denotes the OQ . We probably find the

kinetic and potential energy at any moment for designated point of Q . Even so, the summation of both energies become equal to a constant and it is signified as the following physical expression:

$$\begin{aligned} K.E + P.E &= C \\ 1/2mv^2 + mg\xi &= C \\ \text{or } 1/2v^2 + g\xi &= C \end{aligned}$$

Hence, m is the mass of the particle, $v(t)$ is the velocity of particle in time t at Q , g is termed to be the gravity and ξ is the height of point Q . First, at $v(0) = OP$ the height of particle is x , even so, the constant C is equal to gx as indicated at the below:

$$\begin{aligned} 1/2v^2 + g\xi &= gx \\ v &= \pm\sqrt{2g(x-\xi)} \end{aligned}$$

Since; $\frac{ds}{dt} = v$ is the velocity along the distant s of the smooth curve, even so,

$$\frac{ds}{dt} = \pm\sqrt{2g(x-\xi)}$$

Consider the negative value of $\frac{ds}{dt}$ and after performance of mathematical calculations and integration of both sides of the equation from point P to point Q , the following results are gained:

$$\begin{aligned} \int_P^Q dt &= -\int_P^Q \frac{ds}{\sqrt{2g(x-\xi)}} \Rightarrow t = -\int_P^Q \frac{ds}{\sqrt{2g(x-\xi)}} \\ \int_P^O dt &= -\int_P^O \frac{ds}{\sqrt{2g(x-\xi)}} \\ T &= -\int_O^P \frac{ds}{\sqrt{2g(x-\xi)}} \end{aligned}$$

If the curve is already specified, then s can express the ξ . Therefore, ds can also express the $d\xi$.

Pretend:

$$ds = u(\xi)d(\xi)$$

Hence, the latest equation forms as following:

$$T = \int_0^x \frac{u\xi d\xi}{\sqrt{2g(x-\xi)}}$$

The equation of the curve in which T is the descending time is termed to be the function of x and is denoted in $f(x)$. Even so,

$u(x)$ is an unknown function and the following equation is achieved:

$$f(x) = \int_0^x \frac{u\xi d\xi}{\sqrt{2g(x-\xi)}} = \int_0^x K(x,\xi)u(\xi)d(\xi)$$

This is a Type-I Linear integral equation. In here, the kernel of the integral equation is at the below:

$$K(x,\xi) = \frac{1}{\sqrt{2g(x-\xi)}}.$$

It is to be noted that the Abel integral equation is common under the name of type-I Voltaire integral equation as well. Note that Abel introduced a more overall singular integral equation which named it “generalized Abel integral equation” [5-7].

$$f(x) = \int_0^x \frac{1}{(x-t)^\alpha} u(t) dt, \quad 0 < \alpha < 1.$$

THE STRUCTURE OF METHOD

To solve the problem, we use the following Reproducing kernel.

$$R_y(x) = \begin{cases} 1-a+x, & x \leq y, \\ 1-a+y, & x > y, \end{cases} \quad (1)$$

Therefore for additional information consult [4-6]. Now we analyze Abel integral equation in the below mentioned form,

$$u(x) = f(x) + Gu(x) \quad (2)$$

Then

$$Gu(x) = \int_0^x \frac{u(t)}{\sqrt{x-t}} dt, \quad (3)$$

Thus, the solution (2) in the Reproducing kernel space $W_2^1[a,b]$ with assuming the $\psi_i(x) = R_{x_i}(x)$, therefore $\{x_i\}_{i=1}^\infty$ in interval $[a,b]$ is dense. We can write it in this form:

$$\langle u(x), \psi_i(x) \rangle_{W_2^1} = u(x_i) \quad (4)$$

Theorem 2.1 Let $\{x_i\}_{i=1}^\infty$ be dense in the interval $[a,b]$. If the equation (2) has a unique solution, then the solution satisfies the form

$$u(x) = \sum_{i=1}^{\infty} \sum_{k=1}^i \beta_{ik} (f(x_k) + Gu(x_k)) \bar{\psi}_i(x) \tag{5}$$

Proof. Assume $u(x)$ be the solution of Eq. (2). $u(x)$ is expanded in Fourier series, it has

$$\begin{aligned} u(x) &= \sum_{i=1}^{\infty} \langle u(x), \bar{\psi}_i(x) \rangle_{W_2^1} \bar{\psi}_i(x) = \sum_{i=1}^{\infty} \sum_{k=1}^i \beta_{ik} \langle u(x), \psi_k(x) \rangle_{W_2^1} \bar{\psi}_i(x) \\ &= \sum_{i=1}^{\infty} \sum_{k=1}^i \beta_{ik} \langle f(x) + Gu(x), \psi_k(x) \rangle_{W_2^1} \bar{\psi}_i(x) \\ &= \sum_{i=1}^{\infty} \sum_{k=1}^i \beta_{ik} (f(x_k) + Gu(x_k)) \bar{\psi}_i(x) \quad \square \end{aligned}$$

The proof is complete.

IMPLEMENTATIONS OF THE METHOD

Here, a method of solving (5) of (2) is given in the reproducing kernel space [11].

Rewrite (5) as

$$u(x) = \sum_{i=1}^{\infty} A_i \bar{\psi}_i(x)$$

Where

$$A_i = \sum_{k=1}^i \beta_{ik} (f(x_k) + Gu(x_k)).$$

In fact, A_i is unknown. A_i Is approximated by known B_i . For a numerical computation, let initial function $u_1(x) = f(x)$ and the n-term approximation to $u(x)$ is defined by

$$u_{n+1}(x) = \sum_{i=1}^n B_i \bar{\psi}_i(x), \tag{6}$$

Where



$$\begin{aligned}
 B_1 &= \beta_{11} (Gu_1(x_1) + f(x_1)), \\
 u_2(x) &= B_1 \bar{\psi}_1(x), \\
 B_2 &= \sum_{k=1}^2 \beta_{2k} (Gu_2(x_k) + f(x_k)), \\
 u_3(x) &= B_1 \bar{\psi}_1(x) + B_2 \bar{\psi}_2(x), \\
 &\dots \\
 B_n &= \sum_{k=1}^n \beta_{nk} (Gu_n(x_k) + f(x_k)), \\
 u_{n+1}(x) &= \sum_{k=1}^n B_k \bar{\psi}_k(x).
 \end{aligned}
 \tag{7}$$

APPLICATIONS AND NUMERICAL RESULTS

For the solution of weakly singular Abel integral equation of the second kind. Linear, nonlinear equations and the nonlinear generalized Abel integral equation is analyzed by the method of reproducing kernel. That we find approximation solution, absolute error and relative error of Abel integral equation. Here the equation (2) is taken in the form of an operator and the examples are calculated by Mathematica 11.

Example 4.1: Consider nonlinear Abel integral Equation [7]. With the exact solution $u(x) = x$.

$$u(x) = x - \frac{16}{15} x^{\frac{5}{2}} + \int_0^x \frac{u^2(t)}{\sqrt{x-t}} dt \quad 0 \leq x \leq 1.$$

We choose $N = 20$ points and find the approximation solution By (6).

Table 1. Numerical results for example 4.1

Node	True solution $u(x)$	Approximate solution	Absolute error	Relative error
0.05	0.0526316	0.0526316	6.47085×10^{-12}	1.22946×10^{-10}
0.11	0.105263	0.105263	4.23296×10^{-11}	4.02132×10^{-10}
0.16	0.157895	0.157895	1.34516×10^{-10}	8.51932×10^{-10}
0.21	0.210526	0.210526	3.16006×10^{-10}	1.50103×10^{-9}
0.26	0.263158	0.2631578	6.30124×10^{-10}	2.39447×10^{-9}



0.32	0.315789	0.315789	1.13683×10^{-9}	3.59995×10^{-9}
0.37	0.368421	0.368421	1.923×10^{-9}	5.21957×10^{-9}
0.42	0.421053	0.421053	3.12889×10^{-9}	7.43111×10^{-9}
0.47	0.473684	0.473684	5.19044×10^{-9}	1.09576×10^{-8}
0.53	0.526316	0.526316	1.22316×10^{-8}	2.324×10^{-8}
0.58	0.578947	0.578947	5.86176×10^{-8}	1.01249×10^{-7}
0.63	0.631579	0.631578	6.58986×10^{-7}	1.04339×10^{-6}
0.68	0.684211	0.684205	5.74339×10^{-6}	8.39419×10^{-6}
0.74	0.736842	0.736799	4.30481×10^{-5}	5.84224×10^{-5}
0.79	0.789474	0.789199	2.75056×10^{-4}	3.48405×10^{-4}
0.84	0.842105	0.840604	1.50164×10^{-3}	1.78320×10^{-3}
0.89	0.894737	0.887799	6.93789×10^{-3}	7.75411×10^{-3}
0.95	0.947368	0.920768	2.66006×10^{-2}	2.80784×10^{-2}

Example 4.2: Consider nonlinear generalized Abel integral equation [19].

$$u(x) = x^2 - \frac{3}{16} \pi x^4 + \int_0^x \frac{u^2(t)}{\sqrt{x^2 - t^2}} dt \quad 0 \leq x \leq 1.$$

With the exact solution $u(x) = x^2$. We choose $N = 20$ points for approximation solution.

Table 2. Numerical results for example 4.2

Node	True solution $u(x)$	Approximate solution	Absolute error	Relative error
0.05	0.002770	0.002773	1.51325×10^{-6}	5.46282×10^{-4}
0.11	0.011080	0.011087	6.26058×10^{-6}	5.65018×10^{-4}
0.16	0.024931	0.024946	1.49034×10^{-5}	5.97791×10^{-4}
0.21	0.044321	0.044349	2.78974×10^{-5}	6.29436×10^{-4}
0.26	0.069252	0.069298	4.58696×10^{-5}	6.62357×10^{-4}
0.32	0.099723	0.099794	6.96952×10^{-5}	6.98888×10^{-4}
0.37	0.135734	0.135835	1.00590×10^{-4}	7.41085×10^{-4}



0.42	0.177285	0.177426	1.40245×10^{-4}	7.91070×10^{-4}
0.47	0.177285	0.224568	1.91021×10^{-4}	8.51341×10^{-4}
0.53	0.277008	0.277265	2.56257×10^{-4}	9.25087×10^{-4}
0.58	0.335180	0.335521	3.40749×10^{-4}	1.01661×10^{-3}
0.63	0.398892	0.399343	4.51501×10^{-4}	1.13189×10^{-3}
0.68	0.468144	0.468743	5.99020×10^{-4}	1.27956×10^{-3}
0.74	0.542936	0.543736	7.99397×10^{-4}	1.47236×10^{-3}
0.79	0.623269	0.624347	1.07810×10^{-3}	1.72976×10^{-3}
0.84	0.709141	0.710618	1.47664×10^{-3}	2.08230×10^{-3}
0.89	0.800554	0.802619	2.06518×10^{-3}	2.57969×10^{-3}
0.95	0.897507	0.900473	2.96604×10^{-3}	3.30476×10^{-3}

Example 4.3: Consider Abel integral equation of the second kind [20].

$$u(x) = x + \frac{4}{3}x^{3/2} - \int_0^x \frac{u(t)}{\sqrt{x-t}} dt, \quad 0 \leq x \leq 1.$$

Where the best value of the maximum absolute error obtained in [3] was 5×10^{-6} at $N = 25$ and also considered in [20] by the Babenko’s approach and fractional integrals expressed as,

$$\int_0^x \frac{u(t)}{\sqrt{x-t}} dt = \frac{\sqrt{\pi}}{\Gamma(1/2)} \int_0^x \frac{u(t)}{\sqrt{x-t}} dt$$

Subsequently, obtained the following series

$$\sum_{m=0}^{\infty} \frac{(\pi x)^{m/2}}{\Gamma(m/2 + 3/2 + 1)} = E_{1/2, 3/2+1}(\sqrt{\pi x}),$$

And the series convergence to the exact solution $u(x) = x$. Now we find the approximation solution and errors by the method of (RKHS). Here we choose $N = 21$ points for solving Abel integral equation.

Table 3. Numerical results for example 4.3

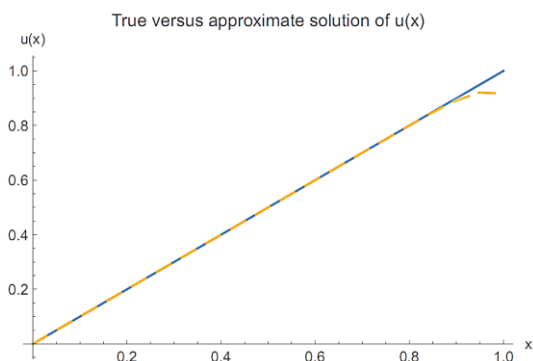
Node	True solution $u(x)$	Approximate solution	Absolute error	Relative error



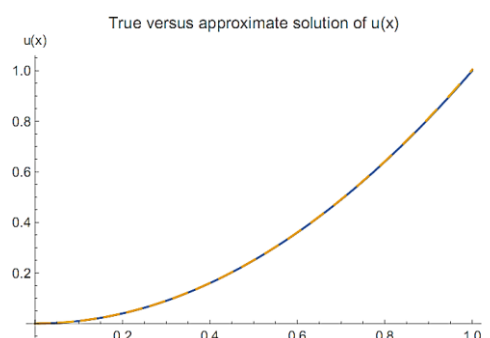
0.05	0.05	0.05	1.80528×10^{-11}	3.61055×10^{-10}
0.1	0.1	0.1	1.41603×10^{-10}	1.41603×10^{-9}
0.15	0.15	0.15	5.15052×10^{-10}	3.43367×10^{-9}
0.2	0.2	0.2	3.23208×10^{-10}	1.61604×10^{-9}
0.25	0.25	0.25	3.11418×10^{-9}	1.24567×10^{-8}
0.3	0.3	0.3	1.44857×10^{-8}	4.82856×10^{-8}
0.35	0.35	0.35	5.16753×10^{-8}	1.47644×10^{-7}
0.4	0.4	0.4	1.58849×10^{-7}	3.97125×10^{-7}
0.45	0.45	0.45	4.89252×10^{-7}	1.08724×10^{-6}
0.5	0.5	0.500001	1.3479×10^{-6}	2.69581×10^{-6}
0.55	0.55	0.550003	3.41419×10^{-6}	6.20762×10^{-6}
0.6	0.6	0.600008	8.20784×10^{-6}	1.36797×10^{-5}
0.65	0.65	0.650018	1.8493×10^{-5}	2.84507×10^{-5}
0.7	0.7	0.70004	3.97055×10^{-5}	5.67222×10^{-5}
0.75	0.75	0.750081	8.14655×10^{-5}	1.0862×10^{-4}
0.8	0.8	0.800161	1.60638×10^{-4}	2.00797×10^{-4}
0.85	0.85	0.850306	3.05732×10^{-4}	3.59685×10^{-4}
0.9	0.9	0.900563	5.63211×10^{-4}	6.2579×10^{-4}

Example 4.4: Let us consider the following weakly singular Abel integral equation, With the exact solution $u(x) = x^7$ [18].

$$u(x) = x^7 \left(1 - \frac{4096}{6435} \sqrt{x} \right) + \int_0^x \frac{u(t)}{\sqrt{x-t}} dt$$



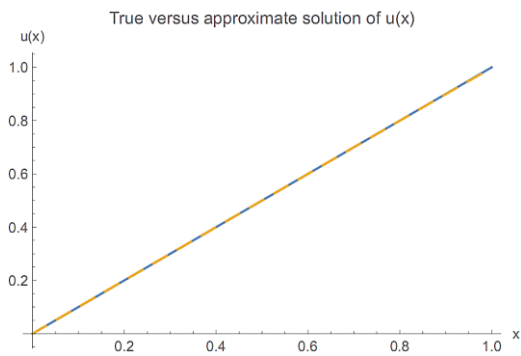
(a) Example 4.1.



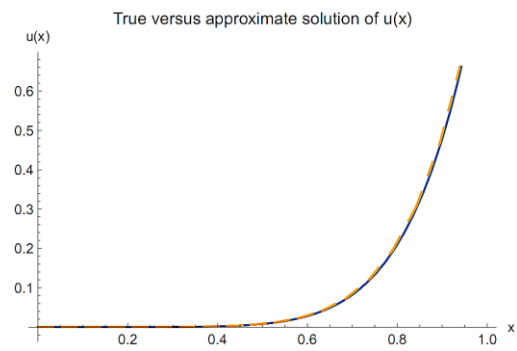
(b)

Example 4.2.

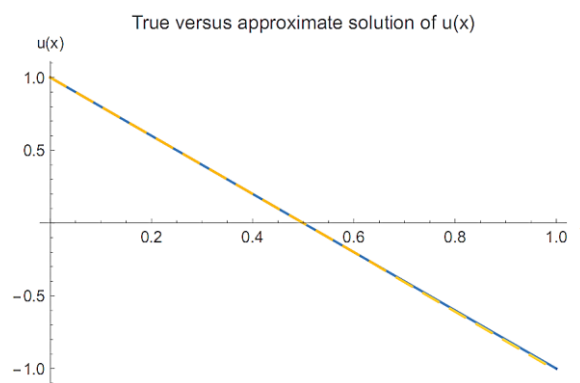




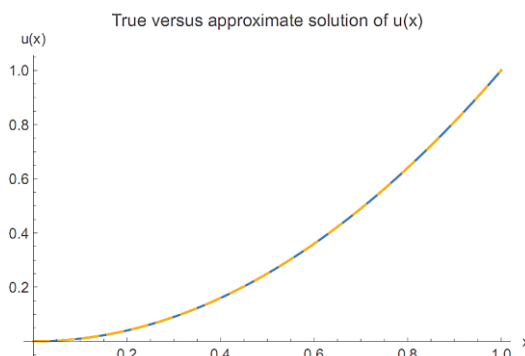
(c) Example 4.3.



(d) Example 4.4.



(e) Example 4.5.



(f) Example 4.7.

Figure 1. Exact solution versus numerical solution: continuous blue line for true solution and yellow dashed line for approximation solution.

Example 4.5: Consider the following generalized weakly singular Abel integral equation of second kind with the exact solution $u(x) = 1 - 2x$ [7].

$$u(x) = 1 - 2x - \frac{32}{21}x^{7/4} + \frac{4}{3}x^{3/4} - \int_0^x \frac{u(t)}{\sqrt[4]{x-t}} dt$$

Table 4. Absolute error for examples 4-7 with choose $N = 20$ points calculated

Node	Example 4	Example 5	Example 6	Example 7
0.05	2.57653×10^{-10}	6.56142×10^{-14}	1.29771×10^{-4}	7.77107×10^{-5}
0.11	2.10035×10^{-8}	1.01696×10^{-13}	1.71385×10^{-4}	1.18009×10^{-4}
0.16	2.46953×10^{-7}	1.19793×10^{-13}	1.98369×10^{-4}	1.47419×10^{-4}
0.21	1.38795×10^{-6}	1.22791×10^{-13}	2.1804×10^{-4}	1.70716×10^{-4}
0.26	5.27139×10^{-6}	1.14131×10^{-13}	2.33389×10^{-4}	1.89974×10^{-4}
0.32	1.56901×10^{-5}	9.24816×10^{-14}	2.45886×10^{-4}	2.06329×10^{-4}
0.37	3.95425×10^{-5}	6.2117×10^{-14}	2.56371×10^{-4}	2.20482×10^{-4}
0.42	8.83116×10^{-5}	2.21489×10^{-14}	2.65381×10^{-4}	2.32904×10^{-4}
0.47	1.79940×10^{-4}	2.84217×10^{-14}	2.73316×10^{-4}	2.4393×10^{-4}
0.53	3.41170×10^{-4}	9.59094×10^{-14}	2.8056×10^{-4}	2.53802×10^{-4}
0.58	6.10427×10^{-4}	4.60743×10^{-15}	2.87622×10^{-4}	2.6271×10^{-4}
0.63	1.04134×10^{-3}	4.10116×10^{-13}	2.95336×10^{-4}	2.70797×10^{-4}

Example 4.6: Consider the following weakly singular Abel integral equation of second kind with the exact solution $u(x) = x^2$ [12], [17].

$$u(x) = x^2 + \frac{16}{15} x^{5/2} - \int_0^x \frac{u(t)}{\sqrt{x-t}} dt$$

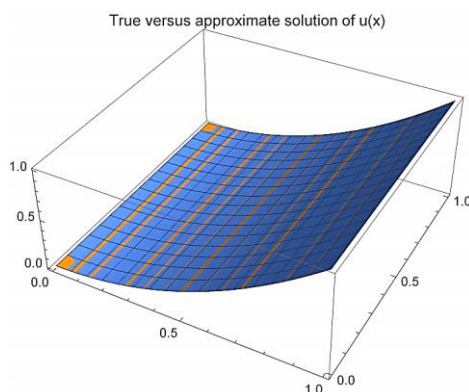


Fig. 6: The exact and numerical solutions curves for example 4.6

Example 4.7: Consider the following generalized Abel integral equation of second kind with the exact solution $u(x) = x^2$ [16].

$$u(x) = x^2 + \frac{27}{40} x^{8/3} - \int_0^x \frac{u(t)}{\sqrt[3]{x-t}} dt$$



CONCLUSION

In this Article all of the specified mathematical and calculus features such as the Abel integral equation, weakly-singular integral equation, generalized Abel integral equation, introduction of reproducing kernel Hilbert space method for the sake of numerical solution of Abel integral equation and the approximate value, with respect to the exact solution, absolute error and relative error, for the Abel integral equation utilizing the reproducing kernel Hilbert space (RKHS) method; have been studied and considered.

REFERENCES

- [1] S. F. Javan, S. Abbasbandy, M. A. F. Araghi, *Application of Reproducing Kernel Hilbert Space Method for Solving a Class of Nonlinear Integral Equations*, J. Math Problems in Engineering. (2017) 1-10.
- [2] C. Yang *An efficient numerical method for solving Abel integral*, J. Appl. Math and Compute. 227(2014) 656-661.
- [3] S. Kumar. A. Kumar. D. Kumar, J. Singh, A. Singh, *Analytical solution Integral Equations arising in astrophysics via Laplace transform*, J. Egyptian. Mathematical Society. (2015) 23, 102-107.
- [4] Bocher. M. (1974). *Integral Equations*. London: Cambridge University Press. 65-201.
- [5] R. P. Kanwal, *Linear Integral Equations Theory and Technique* New York: Academic Press. (1971) 8-172.
- [6] M. Rahman. *Integral Equations and their Applications*. Southampton: WIT Pres (2007) 2-60.
- [7] A. M. Wazwaz, *Linear and Nonlinear Integral Equations Methods and Applications*. New York: Springer. (2011) 12-41, 239-259.
- [8] A. Alvandi, M. Paripour, *The combined reproducing kernel method and Taylor series to solve nonlinear Abel's integral equations with weakly Singular Kernel*, Applied and interdisciplinary mathematics research article, Cogent Mathematics and Compute. (2016), 3:1250705.
- [9] H. Beyrami, T. Lotfi, K. Mahdiani, *Stability and error analysis of the Reproducing Kernel Hilbert space method for the solution of weakly Singular Volterra Integral Equation on graded mesh*, Applied Numerical Mathematics, Published by Elsevier B.V.120 (2017) 197–214.
- [10] A. Dezhbord, T. Lotfi, K. Mahdiani, *A new efficient method for a cases the singular integral equation of the first*, J. of Computational and Applied Mathematics, Islamic Azad



University, Hamedan 65138, Iran S0377-0427(15)00481-1.

[11] M. Cui, Y. Lin, *Nonlinear Numerical Analysis in Reproducing Kernel Space*, Nova Science Pub, Inc. Hauppauge, (2008) 77-90

[12] K. Sadri, A. Amini, C. Cheng, Javan, *A new operational method to solve Abel's and Generalized Abel's integral equations*, J. Appl. Math and Computation. 137 (2017) 1-10.

[13] J. Biazar, M. A. Asadi, *RBFs for Integral Equations with a Weakly Singular Kernel, Generalized Abel's integral equations*, American Journal of Applied Mathematics. Vol. 3, No. 6, (2015), pp. 250-255.

[14] M. A. Abdelkawy, Samer S. Eeldien and A. Z. M. Amin, *a Jacobi Spectral Collocation Scheme for Solving Abel's Integral Equations*, J. Progr. Fract. Differ. Appl. 1, No. 3, (2015) 187-200.

[15] M. Yaghobifar, N. M. A. Nik Long, Z. K. Eshkuvatov, *Analytical-Approximate Solution Of Abel Integral Equations*, J. International Mathematical Forum, Vol. 6, No. 5, (2011) 211 – 221.

[16] S. Kumar, Om P. Singh, S. Dixit, *an Analytic Algorithm for Generalized Abel Integral Equation*, J. Applied Mathematical Sciences, Vol. 5, no. 5, (2011) 223 – 232.

[17] S. A. Yousefi, *Numerical solution of Abel's integral equation by using Legendre wavelets Abel Integral Equation*, J. Applied Mathematical and Computation, 175 (2006) 574–580.

[18] A. Shahsavaran, E. Babolian, *Numerical implementation of an expansion method for Linear Volterra integral equations of the second kind with weakly singular kernels*, J. International Applied Mathematical and Computation, Vol. 3(1), (2011) 1 – 8.

[19] A. M. Wazwaz, *a Frist course in integral equations*, Second Edition, World Scientific, New Jersey, Copyright (2015).

[20] A. Li, K. Clarkson, *Babenko's Approach to Abel's Integral Equations*, J. Mathematics Department of Mathematics and Computer Science, Brandon University, Brandon, MB R7A 6A9, Canada, (2018) 1 – 15.

ABORTION AND ITS PROVISIONS FROM THE POINT OF VIEW OF ISLAMIC JURISPRUDENCE

Mohammad Karim Olughbik

Academic member of Islamic jurisprudence department, Jawzjan University,
Afghanistan

Mohammad Arif Nazari

Academic member of Islamic jurisprudence department, Jawzjan University,
Afghanistan

ABSTRACT

The issue of abortion is a phenomenon that has been considered a very important issue since the advent of Islam. For this reason, the Holy Qur'an implicitly and the Holy Prophet explicitly laid down rules and orders in this matter, so that they do not leave this important issue to their Ummah as a matter of ijihad and dispute. A hadith narrated by Abu Hurairah, two women from the Huzail tribe threw stones at each other and one of them aborted her fetus. The Messenger of Allah ordered the payment of a bondwoman or a slave for the perpetrator. (Al-Mirghinani, Al-Hidaya, vol. 2, p. 15). Although no information is given in this hadith about the duration of the fetus's survival in the mother's womb, it is clear from this hadith, even if it is not intentional. Causing an abortion is considered a crime. At the same time, according to this hadith, the punishment for causing an abortion "Ghora", which is half a tenth (1/20) of the full death penalty, has been determined as a guaranteed punishment and the order to pay it has been determined. (Orhan Çeker, "Çocuk Düşürme", Diyanet İslam Ansiklopedisi (DİA), İstanbul, 1993, c. VIII, s. 364).

Scholars and different religions based on the principles that have been adopted in their religion as a standard in their inferences, with complete sensitivity, they established laws on this matter and tried with all sincerity to show people the right and reasonable way to solve their problems. To get rid of worldly and hereafter responsibilities. The punishments for the crimes that are committed against the fetus are generally discussed in the sections of crimes, injuries and death under the headings of "death of the fetus" or "Ghora". (Orhan Çeker, 'Çocuk düşürme' DİA. C. VIII.s. 363.)

Keywords: crimes, punishment, abortion, fetus, religion, rulings.

INTRODUCTION

Abortion crimes are variously and implicitly mentioned in prophetic verses and hadiths and jurisprudence books in various forms, such as hitting a pregnant woman or hitting a pregnant woman's abdomen causes abortion, or as a result of the use of various drugs by the pregnant woman. Her pregnancy ends and so on has been discussed. In this article, we will examine the opinions of different religions that crimes cause abortion, and present their rulings in detail. Because the details of this issue from the point of view of Islamic criminal law are much higher than the volume of this article. Therefore, in this research article, keeping in mind our possibilities and understanding, we tried to fulfill our responsibility by offering a clearer way to serve the readers. For this reason, after presenting the position of the Holy Qur'an and the Sunnah of the Messenger of Allah, let us quote the views of different religions and scholars and convey appropriate and reasonable ways to the audience and readers. In addition, during this research, we tried to use reliable and important sources and answer the following questions:

Is abortion permissible? If it is permissible, how long can the fetus be aborted? In case of abortion, what type and amount of penalty is determined for it? What is the theory of different religions about this?

In this research, we will try to find satisfactory answers to the questions.

RESEARCH METHODOLOGY

In this research, the qualitative method and the library method were used, because in the qualitative method and the library method of searching for access to the facts, it reaches the correct results from books and authentic articles and scientific analysis. Later, the topics are summarized.

BACKGROUND RESEARCH

Due to the fact that the protection of life is stated in the Holy Qur'an and prophetic hadiths and carries instructive lessons and messages, Islamic scholars, including commentators, Muhaddithists and jurists, have been more careful in relation to the subject, each of these elders according to the principles And the method related to their profession has implicitly analyzed and analyzed this important obligation, which can be used as a source in this research. I wanted to investigate the mentioned issue independently and in a scientific-research way.

ABORTION FROM THE PERSPECTIVE OF QURAN AND SUNNAH

There is no explicit text about the rulings on abortion in the Holy Quran and Prophetic hadiths. It is permissible and impermissible. There are only verses in the Holy Qur'an that state the general and absolute sanctity of wrongful killing. For example: Translation: "Whoever kills a believer on purpose, his punishment is hell, while he will remain in it forever." (AL-Nisa: 93). In addition to this, there are also verses that specify the creation of man, its different stages, that the basis of creation is the soul. It states that by swelling the human soul, it gains its freedom. He has discussed which stages he will spend until the end of his life. (Yasin, Be Ta., vol. 13, p. 245). On the other hand, there are hadiths from the Messenger of Allah that explain the stages that a human goes through in the mother's womb and explain the duration of these stages and at which times the soul fills the human body. These hadiths have been accepted as authentic both in terms of the chain of transmission and in terms of the text. At the head of these hadiths is a hadith which was narrated unanimously by Abdullah bin Masoud: Translation: "The creation of each person in the mother's womb is united in forty days. After this amount of time, it turns into Alaqah (clotted blood), then after this amount of days, it turns into a lump of meat (chewing). Later, Allah sent an angel and ordered him to write down these four words: the deeds he does, his sustenance, his end, his good luck and his bad luck. Then a soul will be breathed into him." (Bukhari, vol. 4, p. 111). On the other hand, some hadiths have been narrated from the Messenger of Allah, in which financial punishments have been determined for the perpetrators of abortion, and it has been determined by them in the amount of "Ghora". (Muslim, "Qadr", 3). One such hadith is narrated by Abu Hurairah, from the tribe of Huzail, there is a fight between two women, one of whom threw a stone at the other and caused a miscarriage. The Messenger of Allah has sentenced that woman as the punishment of a slave or a bondwoman. While in this hadith they did not provide information about the amount of time the fetus spent in the mother's womb, but if this mistake is committed, it is considered a crime.

Scholars have made the above hadiths the basis for rulings on abortion. Because the duration of the stages of sperm formation is explained with these hadiths. The fetus in the mother's womb goes through this period and acquires the attribute of a being called a fetus, and the external actions and intervention directed at it are considered as a crime against it. Also, when the religious jurists specify the rulings on abortion after the stage of "creation" and issue rulings, the criteria for establishing them as a crime is that these narrations are correct. (Mohammad Saeed Ramdan Al-Bouti, The Problem of Procreation, Prevention, and Remedies, p. 72.)

With just this amount of brief information about the rulings on abortion, we can discuss the views of religions on this matter:

A- Hanafi religion

The correct opinion in the Hanafi religion is this; As long as some of its organs are not identified, abortion is considered permissible. According to him, the period of formation of the human body and organs of the fetus also begins after one hundred and twenty days. (Al-Kasani, Be Ta., vol. 7, p. 325).

According to the scholars of this religion, as long as the pregnancy is in the stages of muzhgha and alqa, its body parts have not yet been identified, it is permissible for a woman to use medicine for the purpose of abortion. According to Hanaf scholars, this period has been determined as one hundred and twenty days. Because according to them, after the mentioned period has passed, the fetus will take the form of a human being. (Zainuddin, Be Ta., vol. 1, p. 379).

Kasani also says: "As long as nothing has emerged from his creation, there is no responsibility towards him. Because he is not considered a fetus yet." (Kasani, Be Ta., vol. 7, p. 325).

Imam Sarakhsi says: If the sperm is not destroyed, eventually a person will be prepared to be a human being, and for this reason, he will use his financial rights and take the ruling of soul upon himself. In the same way that a Muharram breaks a hunting egg, even though the egg does not have the characteristics of hunting, by punishing it, he takes the characteristics of the hunting egg. In the same way, the sperm will become soulful in the near future, in cases such as inheritance and will, it has been given the status of a soulful person (Sarakhsi, Al-Mabsut, Vol. 10, pp. 28-30).

But generally, in the Hanafi school of thought, regarding the obligation of ghora in the stages of sperm, alqa, and mazgha, abortion is permissible and it is not obligatory for him to have an abortion.

B- Shafi'i religion

According to Shafi'i jurists, abortion is permissible as long as the symptoms of creation do not appear in the embryo. If some parts of the fetus become known, then abortion becomes haram. (Al-Mavardi, Al-Hawi al-Kabir, vol. 12, p. 385).

Mughni al-Muhtaj, which is considered one of the reliable sources of the Shafi'i religion, has given place to these ideas in this case: "If a woman, as a result of a crime, has an abortion with a piece of flesh on herself, ghorah is necessary, if one of her organs is revealed. Existence The hidden face of a person can also be revealed by placing it in warm water. The appearance of a finger, or an eye, or a strand of hair, and anything else that evokes

the creation of a human being will be enough..." It continues: "It will be revealed with a piece of cloth. If Alaqa miscarries, nothing will be necessary for sure. Also, the period will not be terminated with the abortion." (Shirbini, Be Ta., vol. 4, p. 104).

Considering the progress and evolution of the creation of the fetus and the approach of the swelling of the soul on it, the sanctity of its abortion will gain more strength. According to the narration of Abdullah bin Masoud, the manifestation and struggle of creation in the fetus also begins after forty days of pregnancy (Al-Bouti, The Problem of Procreation, Prevention and treatment, pp. 73-77).

Imam Ghazali, who is one of Shafi'i's leading scholars, has the following opinion on this matter: aborting a fetus at any stage is considered a crime. Imam Ghazali made a distinction between the different stages of the fetus (Ghazali, Beirut, vol. 2, p. 51).

According to Imam Ghazali, the sanctity of abortion is not the beginning of the creation of the fetus, but the beginning of the preparation of the sperm and its placement and the potential beginning of his formation as a human being. The preparation of the sperm and the acquisition of its capabilities also follow the mentioned steps, starting from the mixing of male and female water, that is, from the beginning of the union of sperms of different sexes, and this is the first step. By doing this, the sperm stage begins. Actually, this is the small fabric of the embryo that has melted and set off to gain life and formation. For this reason, abortion is a violation of the right and a clear intervention against the fetus that has entered the mentioned stage. From Imam Ghazali's point of view, cutting off the way of life of the fetus will be considered as enmity to man and enmity. (Same, 1403, vol. 2, p. 75).

This theory, that is, the theory of crime and being considered haram at the stage of sperm mixing, according to Shafi'i, is the only opinion of Imam Ghazali (Al-Bouti The Problem of Procreation, Prevention and treatment. p. 75).

Considering all the above theories, we can say that abortion in the Shafi'i religion is not forbidden in the initial stages such as spermatozoa, alaqa, but its sanctity starts from the stage of muzgha. Abortion is more forbidden in the stage of swelling of the soul. If the abortion takes place after the soul is inflated, it is considered a crime.

C- Hanbali religion

Scholars of the Hanbali religion agree that after one hundred and twenty days of pregnancy and swelling of the soul, as a result of which the movements of the fetus will begin Abortion is forbidden. (Al-Bouti The Problem of Procreation, Prevention and treatment. p. 78-79).

The majority of Hanbali scholars are of the opinion that abortion is permissible if the fetus is still in the embryo stage in the mother's womb. As already explained, this stage will cover the first forty days of pregnancy. If 40 days of pregnancy have passed, abortion is forbidden after this stage. A number of other Hanbali scholars are of the opinion that it is permissible to abort the fetus as long as there is no movement in the fetus, in other words, during the first four months of pregnancy. (Al-Bouti The Problem of Procreation, Prevention and treatment. p. 79).

Al-Mawardi, who is one of the scholars of the Hanbali religion, says in this case: "It is permissible to use medicine to abort a fetus that is in the fetal stage. Meanwhile, Ibn Al-Jawzi considers this work to be haram. According to Ibn Aqeel, before the swelling "The spirit of abortion is permissible. But there are other different views on this issue." (Al-Mawardi, Darul-Trath al-Arabi, vol. 1, p. 386).

However, according to other jurists such as Ibn Rajab, Ibn Al-Jawzi and Ibn Taymiyyah, if a fetus in the mother's womb has reached the alaqa stage, it is not permissible to abort it. Because in their eyes, the fetus is a child that has started its existence slowly and has started to solidify and harden. (Ibn al-Jawzi, Beirut, vol. 1, p. 157). Ibn Rajab says: "Our Companions (Hanbali scholars) have clearly stated that when the fetus reaches the stage of ovulation, it is not permissible for a woman to abort it, because it is a fetus that has entered the realm of sexual immorality. However, the sperm is still in one place. They have not taken the face of the fetus." (Ibn al-Jawzi, Beirut, vol. 1, p. 157).

In other important sources of the Hanbali religion, the sanctity of abortion is mentioned: "It is permissible for a man to use medicine such as camphor to prevent pregnancy, because this is his right. It is also permissible for a woman to use medicine for abortion. Because the existence of the sperm has not yet been fully formed and they have not become a child, but it is not permissible to abort the fetus because its existence has been formed. This theory is a theory that has been considered as a weak theory in the Hanbali religion by the majority of jurists. (Ghanim, Ahkamul-Janin fi Fiqh al-Islami, p. 161).

As a result, it can be seen that according to the majority of Hanbali jurisprudents, abortion is considered permissible before it is conceived in the fetus, i.e. in the stages of fertilization and fertilization. If obstetricians testify that a human face is hidden in the fetus, "Ghora" is required. Otherwise, if they do not testify, there is no need to complain. The valid theory in Hanbali religion is the permissibility of abortion before the stage of swelling of the soul. (Al-Bouti The Problem of Procreation, Prevention and treatment. p. 80).

As it is understood, the criterion of justification of abortion in the Hanbali religion depends on the formation of the fetus in the form of a human face and its initial symptoms. After the appearance of creation in the womb, this abortion has been considered illegal by Hanbali scholars.

D- Maliki religion

The jurists of the Maliki religion are stricter than the jurists of other religions. In this case, their ideas are parallel to the ideas of the Zahiriya religion and Imam Ghazali's opinion.

According to the majority of scholars of the Maliki religion, abortion before the completion of the first forty days of pregnancy is forbidden and illegal. For the sanctity of this work, only the transfer of the sperm in the mother's womb is enough. That is, according to Maliki jurists, from the beginning of pregnancy, abortion in the mother's womb is impermissible. (Ghanim, *Ahkamul-Janin fi Fiqh al-Islami*, p. 161-162).

If a pregnant woman intentionally miscarries a placenta, macula, or coagulated blood, "Ghora" is required on top of it. (Adavi, Beirut, vol. 2, p. 285).

As a result, it turns out that in Malikiya's religion, abortion is considered haram, even if it is in the initial stage and before the completion of the first forty days. Only in some of Maliki's works is the theory of the permissibility of abortion before completing the first forty days of transportation. Meanwhile, this theory is not considered valid among Maliki's religion (Ibn al-Jawzi, *al-Quwanin al-Fiqhiyyah*, p. 217).

The permissibility of abortion in the first 40 days of pregnancy is an accepted theory in the Shafi'i school of thought. At the same time, if these issues are researched, it will be clear that the reliable theory of Hanaf jurists is also the same in this regard. (Al-Bouti *The Problem of Procreation, Prevention and treatment*. p. 80).

E- Ibn Hazm's theory and Zaheri religion

Ibn Hazm al-Zaheri considered abortion before the soul to be born as haram. For this reason, in his eyes, a woman who causes an abortion by using medicine before the soul is inflated, should be punished for her. (Ibn Hazm, *al-Mahalli*, vol. 11, p. 31.)

In this case, Ibn Hazm comments as follows: "It is narrated that Ibrahim al-Nakh'i said about a woman who aborts her child by using medicine: By freeing the slave, she gives the father of the fetus a grievous punishment. This theory is infinite. It is correct." (Ibn Hazm, *al-Mahalli*, vol. 11, p. 31)

CONCLUSION

We have discussed the issue of abortion in detail so far, we can summarize the theory of religions as follows:

It turns out that according to the famous Hanafi jurists, abortion is permissible before some parts of the fetus appear in the mother's womb. Only they, considering the facilities and medical information of their time, had come to the conclusion that the emergence of organs will begin after one hundred and twenty days. However, Ibn Abedin and some other Hanafi scholars are of the opinion that after one hundred and twenty days, the soul fills the fetus and the development of its organs and creation begins before this period.

According to the Shafi'i religion, abortion is not forbidden in the early stages such as sperm and alaqa, but in later stages such as pregnancy, after this stage of human creation, abortion also becomes forbidden.

The jurists of Hanbali also permit the abortion of an embryo whose creation has not yet been revealed and determined. But if the aborted fetus is chewable and the experts testify that the fetus has taken the form of a human being. In that case, "Ghora" is necessary. According to them, abortion is not allowed.

But some jurists of Islam also believe that abortion is not allowed after the fetus has been placed in the mother's womb. It means that abortion is forbidden from the beginning of pregnancy. This theory is also the correct theory in Maliki's religion. According to the majority of Maliki jurists, abortion is forbidden from the beginning of pregnancy. Only some scholars of Malikiyya say that abortion is permissible before the first forty days of pregnancy have passed. Among the Shafi'i jurists, Imam Ghazali, from Hanbaleya Ibn Taymiyyah, Ibn Rajab, Ibn Al-Jawzi, and Ibn Hazm al-Zahiri are in this theory. Such narrations have also been narrated from the Hanafi. Keeping in mind all these traditions and theories regarding abortion, whether it is in the first stage of pregnancy or in the later stages, one should be careful because in any case there is a possibility of committing a crime in abortion.

If the fetus is accidentally or intentionally aborted as a result of material and spiritual activities, the person who caused this will be punished with a Ghora (which is the amount of five camels). This amount of financial penalty is applied in terms of financial guarantees. If the number of aborted fetuses is more than one, this penalty will be applied separately according to the number of fetuses. If the fetus is healthy during the abortion and dies after the abortion, the penalty is full death.

If the actions that cause abortion also cause the death of the mother, then the subject is obliged to pay the mother's death. If

the fetus is aborted, but not destroyed, then the criminal will be punished.

As we have seen, the religion of Islam attaches great importance to human life and by taking stubborn and preventive measures, it has tried to consider any kind of voluntary intervention for the fetus as a crime from the early stages of life and has asked its associates to respect human life. Otherwise, they will be forced to face punishments such as ghora and death.

Suggestions

In order for Muslims to be informed about the rulings on abortion and its consequences and to increase the level of public awareness in the society, the following are suggested:

1- Muslims should study the verses and hadiths of the Holy Prophet regarding the ruling on abortion and act.

2- For the Muslims of the world, information should be given about the Sharii rulings on abortion through pulpits and Friday sermons, magazines, newspapers, and audio and visual media.

3- Muslims should research and study the harms and dangers of abortion and learn the correct information about the background of this issue.

4- The government of Afghanistan should take all-round measures in such important social and moral issues and prosecute the violators.

5- Abortion rulings with their details are included in the Civil Code of Afghanistan, and the executive branch should take action to implement them properly.

REFERENCES

1. The Holy Quran.
2. Ibn al-Jawzi, Abul Faraj Jamaluddin Abdurrahman bin Ali, Ahkam al-Nisa, Beirut, 1985.
3. Ibn Jozi, Abul-Qasim Muhammad bin Ahmad, Al-Qawanin al-Fiqhiyyah, Al-Darul-Arabiya al-Kitab, Tunis, 1982.
4. Ibn Hazm, Abu Muhammad Ali bin Ahmad bin Saeed, Al-Mahalli Bil-Asar, 1-12, Darul-Fikr, Beirut.
5. Ibn Rajab al-Hanbali, Zaynuddin Abulfaraj Abdurrahman bin Ahmad, Jami-Aluloom AlHukm, 1-2, Beirut, 1999.
6. Ibn Abedin, Muhammad Amin Ibn Umar Ibn Abdul-Aziz al-Damashqi, Hashiyyah Ibn Abedin, Darul-ihyahul-Trath al-Arabi, Beirut.
7. Ibn Qudama, Mowaffaquddin Abdallah bin Ahmad, al-Mughni, 1-14, Beirut, 1972.



8. Ibn Najim, Zaynuddin ibn Ibrahim ibn Muhammad, Al-Bahr al-Raiq, sharh Kanz al-Daqaiq, 1-8, Darul-Marife, Beirut.
9. Bukhari, Muhammad bin Ismail Abu Abdullah, Sahih al-Bukhari, Darutawq al-Najat, Damishq, 1422.
10. Al-Bouti, Mohammad Saeed Ramadan, The Problem of Determining Generations, Prevention and treatment, Damishq, 1976.
11. Rahim, Ibrahim Muhammad Qasim bin Muhammad, Rulings on Abortion in Islamic Jurisprudence, Al-Hikma Publications Series, London, 2002.
12. Ramli, Abu Abbas Muhammad bin Ahmad, Nihayat al-Muhtaj ila Sharh al-Minhaj, 1-8, Beirut, 1404/1984.
13. Sarkhsi, Abu Bakr Shams al-Imam Muhammad bin Ahmad bin Sahl, Kitab al-Mabusut, Darul-Kitab al-ilmiya, 1-30, Beirut, 1995.
14. Shirini, Shamsuddin Muhammad bin Muhammad al-Khatib, Mughni al-Mutaj al-Marifa maani alfazul-minhaj, 1-4, Darul-Fikr.
15. Ghazali, Abu Hamid Muhammad bin Muhammad, Revival of Ulum al-Din, Beirut, 1983-1403.
16. Ghanim, Umar bin Muhammad bin Ibrahim, Ahkamul-Janin fil Fiqh al-Islami, Darul-Andalus al-Khadera, Jeddah, 2001.
17. Mawardi, Abu Al-Hasan Ali bin Muhammad bin Habib Al-Basri Al-Baghdadi, Al-Hawi Al-Kabeer, 1-18, Dar Al-Kutub Al-Ilmiyya, Beirut, 1414/1994.
18. Al-Marghinani, Abul-Hasan Ali bin Abi Bakr, Al-Hidayah Sharh Bidayatul-Mubtadi, 1-4, Darul-Arqam, Beirut.
19. Al-Mowsili, Abul-Fazl Mujiddiddin Abdullah bin Muhammad, Al-ikhtiyarul-Talil Al-Mukhtar, 1-5, Beirut, 1998.
20. Yasin, Muhammad Naeem, Jurisprudential Research on Contemporary Medical Issues, Darul-Nafais, Jordan, 1999.
21. Çeker, Orhan, “Çocuk Dürşürme”, Diyanet İslam Ansiklopedisi (DİA), c. VIII, İstanbul, 1993, ss.363-365.



SHÓRLANGAN TUPROQLAR SHAROITIDA GÓZA NAVLARINING BITTA KÓSAKDAGI PAXTA VAZNI BELGISINING TAHLILI

Laylo Bóranbek qizi Norimmatova

Qoraqalpog'iston qishloq xójaligi va agrotexnologiyalari instituti
3-bosqich talabasi

Bayrambay Aydosovich Jumashev

Qoraqalpog'iston qishloq xójaligi va agrotexnologiyalari instituti assistenti

Azamat Serikbay ógli Saparbaev

Qoraqalpog'iston qishloq xójaligi va agrotexnologiyalari instituti
3-bosqich talabasi

Oygul Islambek qizi Kamolova

Qoraqalpog'iston qishloq xójaligi va agrotexnologiyalari instituti
3-bosqich talabasi

ANNOTATSIYA

Maqolada Qoraqalpog'iston Respublikasi sharoitida har xil góza navlarining bitta kósakdagi paxta vaznining moslashuvchanligi 2022-2023 yillarda órganilgan va olingan natijalar asosida góza navlarining shórlangan tuproqlarga bólgan chidamliligi aks ettirilgan.

Kalit sózlar: góza, kósak, quróqchilik, shórlanish, nav, belgi, tashqi muhit.

ABSTRACT

In the article, in the conditions of the Republic of Karakalpakstan, the flexibility of cotton weight in one boll of various cotton varieties was studied in 2022-2023, and based on the obtained results, the resistance of cotton varieties to saline soils is reflected.

Keywords: cotton, boll, drought, salinity, variety, character, external environment.

KIRISH

Davlatimiz tomonidan gózaning serhosil, tezpishar, yuqori tola chiqimi va sifatiga ega, oqpalak kasalligi va turli qishloq xójalik zararkunandalariga, sovuqqa va quróqchilikka chidamli,



tabiiy barg tókish xususiyatlariga ega bólgan yangi navlarini yaratishga juda katta e`tibor berib kelinmoqda, chunki bu soha Respublikamizning asosiy iqtisodiy negizlaridan hisoblanadi. Ma`lumki, hozirgi davrda ishlab chiqarishda ekilayotgan góza navlari, asosan, genomichi duragaylari va navlararo chatishtirish orqali yaratilgan bólгани uchun, ularga xos qimmatli-xójalik belgilarini, selekcion uslublardan foydalangan holda, tubdan ózgartirish qiyin. Bundan tashqari, oxirgi paytlarda, góza kasalliklarining yangi irqlari va zararkunandalarning yangi populyაციyalarining paydo bólishi, ekologik muhitning buzilishi (tuproq shórlanishining oshishi, suv tanqisligi va boshqalar) selekciya va genetika fanlari oldiga dolzarb masala, ya`ni selekciya uchun yuqorida kórsatilgan omillarga chidamli yangi donorlarni qidirish va ular asosida yangi góza navlarini yaratish zaruriyatini qóyildi.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Góza ósimligida asosiy qimmatli xójalik belgilari bir dona kósakdagi paxta vazni, hosildorlik, tola chiqimi va uzunligi hisoblanadi. Tola esa, gózaning asosiy mahsuloti bólganligi sababli, har góza navining tola chiqimi ma`lum maydondan olinadigan tola miqdorini belgilaydi. Paxtadan yuqori hosil olishda bir dona kósakdagi paxta vazni muhim ahamiyatga ega [1, 3, 5]. Suv bilan kam ta`minlangan va shórlangan tuproq sharoitida góza ósimliklarining xójalik belgilari bóyicha javob reaksiyasi quyidagicha bólgan: hosil elementlarining tókilishi va ularning 30% gacha saqlanishi kuzatilgan, kósak o`g`irligi 0,8 g gacha, tola chiqimi 1-25% ga, tola uzunligi 0,5-4,0 mm ga kamaygan, vegetaciya davri ham qisqargan [4].

Tajribamizda manba sifatida tolasi IV-V tipga xos góza navlari – Sultan, S-6524, S-4727 va S-4728 navlari órganildi. Bu navlar 3 ta takrorlanishdan, har bir takrorlanishda 6 ta qatordan hammasi bólib 36 qator, 90x20x1 sxemasida ekildi. Ósimlik unib chiqqan kunidan boshlab fenologik kuzatuvlar olib borildi: 50% unuvchanlik; 50% gullash; 50% kósak ochilishi hisob-kitob qilindi.

NATIJALAR VA MUHOKAMA

Góza ósimligida eng asosiy qimmatli-xójalik kórsatkichlaridan biri – bir dona kósakdagi paxta vazni hisoblanadi. Bir dona kósakdagi paxta vazni – ósimlik mahsuldorligining asosiy tarkibiy qismlaridan biri bólib, hosildorlikni aniqlovchi muhim omillardan biri hisoblanadi. Shuning uchun ham genetik va selekcion ishlanishlarda bu belgining namoyon bólishi, irsiylanishi va ózgaruvchanligini órganishga alohida e`tibor beriladi.

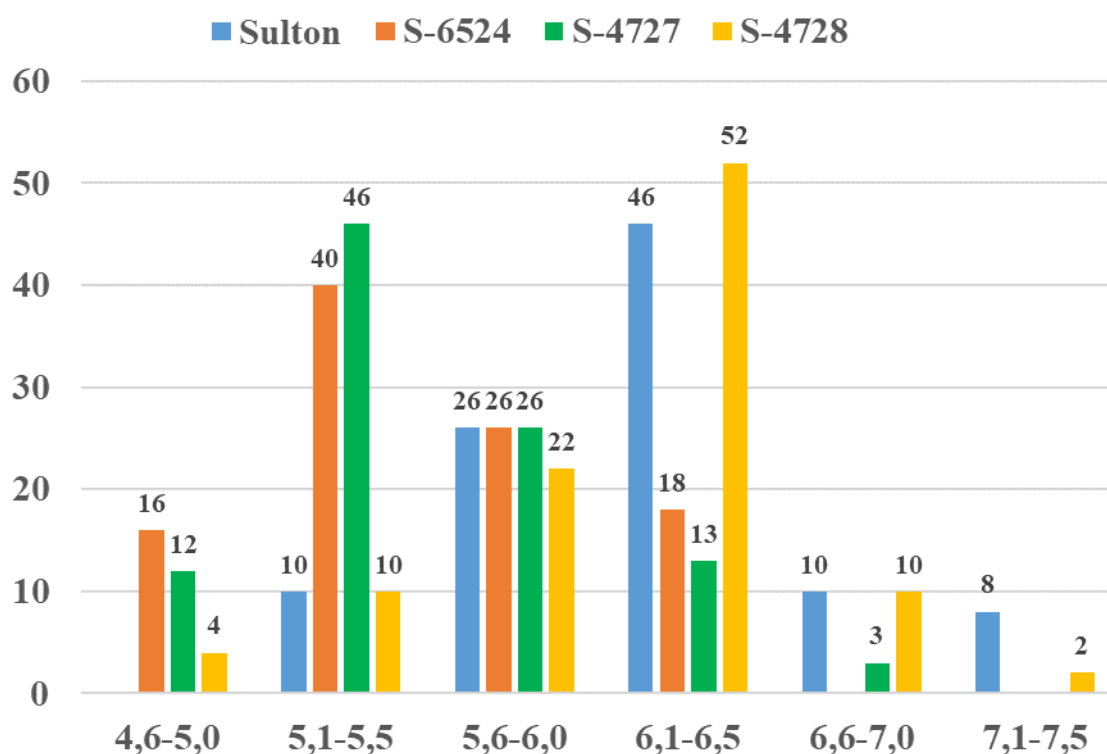
Bir dona kósakdagi paxta vazni belgisini órganish wta murakkab va ma'suliyatli jarayon bólib, bir tup ósimlikning ózida ochilgan kósakdagi paxta vaznining limit (kórsatkichlarning minimum va maksimum oraliği) darajasi juda yuqori bólib, tahlil ishlarini qiyinlashtiradi. Ammo, bu vazn ortishi faqat hosil salmoğining yuqori bólishiga xizmat qiladi.

2022-2023 yillarda hosilidan terib olingan yakka tanlov ósimliklari va oilalarning laboratoriya sharoitida bir ósimlikdagi paxta ógirliğı, chigitni toladan ajratish, tola chiqimi va uzunliğı, bir dona kósakdagi paxta vazni va 1000 dona chigit vazni andoza naviga taqqoslab órganildi.

Ózaning Davlat reestriga kiritilgan Sulton navida bitta kósakdagi paxta vazni belgisi bóyicha olingan natijalarda tahlil qilinganda, ósimliklarning quyidagi 5 ta sinfda taqsimlanganliğı kuzatilib, 5,1-5,5; 5,6-6,0; 6,1-6,5; 6,6-7,0; 7,1-7,5 gramm va sinflar bóyicha taqsimlanishi mos ravishda 10%; 26%; 46%; 10%; 8% ni tashkil etdi. Ushbu góza navida asosan ósimliklar 5,6-6,0 va 6,1-6,5 gramm oraliğida bólgan modal sinflarida joylashganliğı kuzatildi.

S-6524 góza navida bitta kósakdagi paxta vazni belgisi bóyicha esa, olingan natijalari tahlil qilinganda, ósimliklarning quyidagi 4 ta sinfda taqsimlanganliğı kuzatilib, 4,6-5,0; 5,1-5,5; 5,6-6,0; 6,1-6,5 gramm va sinflar bóyicha taqsimlanishi mos ravishda 16%; 40%; 26%; 18% ni tashkil etdi. Ushbu góza navida asosan ósimliklar 5,1-5,5 va 5,6-6,0 gramm oraliğida bólgan modal sinflarida joylashganliğı namoyon bóldi.

Ózaning S-4727 navida bitta kósakdagi paxta vazni belgisi bóyicha olingan natijalarda tahlil qilinganda, ósimliklarning quyidagi 5 ta sinfda taqsimlanganliğı kuzatilib, 4,5-5,0; 5,1-5,5; 5,6-6,0; 6,1-6,5; 6,6-7,0 gr va sinflar bóyicha taqsimlanishi mos ravishda 12%; 46%; 26%; 13%; 3% ni tashkil etdi. Ushbu góza navida asosan ósimliklar 5,1-5,5 va 5,6-6,0 gramm oraliğida bólgan modal sinflarida joylashganliğı kuzatildi.



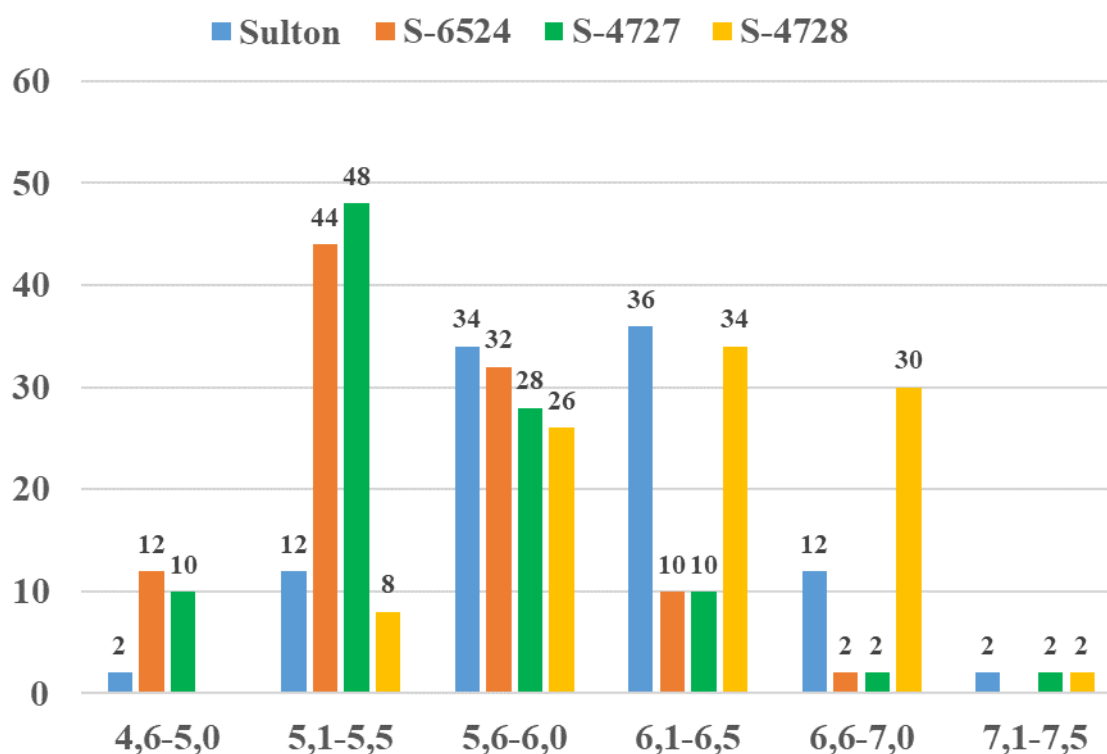
Rasm. 1. Bitta kósakdagi paxta vazni (2022 y.)

S-4728 góza navida bitta kósakdagi paxta vazni belgisi bóyicha esa, olingan natijalari tahlil qilinganda, ósimliklarning quyidagi 6 ta sinfda taqsimlanganligi kuzatilib, 4,5-5,0; 5,1-5,5; 5,6-6,0; 6,1-6,5; 6,6-7,0; 7,1-7,5 gr va sinflar bóyicha taqsimlanishi mos ravishda 4%; 10%; 22%; 52%; 10%; 2% ni tashkil etdi. Ushbu góza navida asosan ósimliklar 6,1-6,5 gramm oraligida bólgan modal sinfida joylashganligi kuzatildi (Rasm.1).

Tajribalarimizning ikkinchi yili ya`ni, 2023 yil hosilidan terib olingan yakka tanlov ósimliklarida bitta kósakdagi paxta vazni belgisi bóyicha gózaning Sultan navida olingan natijalarda tahlil qilinganda, ósimliklarning quyidagi 6 ta sinfda taqsimlanganligi kuzatilib, 4,6-5,0; 5,1-5,5; 5,6-6,0; 6,1-6,5; 6,6-7,0; 7,1-7,5 gramm va sinflar bóyicha taqsimlanishi mos ravishda 2%; 12%; 34%; 36%; 12%; 2% ni tashkil etdi. Ushbu góza navida asosan ósimliklar 5,6-6,0 va 6,1-6,5 gramm oraligida bólgan modal sinflarida joylashganligi kuzatildi.

S-6524 góza navida bitta kósakdagi paxta vazni belgisi bóyicha esa, olingan natijalari tahlil qilinganda, ósimliklarning quyidagi 5 ta sinfda taqsimlanganligi kuzatilib, 4,6-5,0; 5,1-5,5; 5,6-6,0; 6,1-6,5; 6,6-7,0 gramm va sinflar bóyicha taqsimlanishi mos ravishda 12%; 44%; 32%; 10%; 2% ni tashkil etdi. Ushbu góza navida asosan ósimliklar 5,1-5,5 va 5,6-6,0 gramm oraligida bólgan modal sinflarida joylashganligi kuzatildi.





Rasm. 2. Bitta kósakdagi paxta vazni (2023 y.)

Ózaning S-4727 navida bitta kósakdagi paxta vazni belgisi bóyicha olingan natijalarda tahlil qilinganda, ósimliklarning quyidagi 6 ta sinfda taqsimlanganligi kuzatilib, 4,6-5,0; 5,1-5,5; 5,6-6,0; 6,1-6,5; 6,6-7,0; 7,1-7,5 gramm va sinflar bóyicha taqsimlanishi mos ravishda 10%; 48%; 28%; 10%; 2%; 2% ni tashkil etdi. Ushbu góza navida asosan ósimliklar 5,1-5,5 va 5,6-6,0 gramm oraligida bólган modal sinflarida joylashganligi kuzatildi.

S-4728 góza navida bitta kósakdagi paxta vazni belgisi bóyicha esa, olingan natijalari tahlil qilinganda, ósimliklarning quyidagi 5 ta sinfda taqsimlanganligi kuzatilib, 5,1-5,5; 5,6-6,0; 6,1-6,5; 6,6-7,0; 7,1-7,5 gramm va sinflar bóyicha taqsimlanishi mos ravishda 8%; 26%; 34%; 30%; 2% ni tashkil etdi. Ushbu góza navida asosan ósimliklar 6,1-6,5; 6,6-7,0 va 7,1-7,5 gramm oraligida bólган modal sinflarida joylashganligi kuzatildi (Rasm.2.).

XULOSA

Olib borilgan tajribalarimizning bitta kósakdagi paxta vazni belgisi bóyicha olingan natijalarda tahlil qilinganda, Sultan góza navida asosan ósimliklar 5,6-6,0 va 6,1-6,5 gramm oraligida bólган modal sinflarida joylashganligi va 26%; 46% ni, S-6524 góza navida asosan ósimliklar 5,1-5,5 va 5,6-6,0 gramm oraligida bólган modal sinflarida joylashganligi va

16%; 40% ni, gózaning S-4727 navida, ósimliklarning asosan 5,1-5,5 va 5,6-6,0 gramm oraligida bólgan modal sinflarida 46% va 26% ni, gózaning istiqbolli S-4728 góza navida esa, olingan natijalari tahlil qilinganda, ósimliklarning 6,1-6,5 gramm oraligida bólgan modal sinfida 52% tashkil etganligi kuzatildi. Ushbu belgi bóyicha kichik nav sinashlarda gózaning Sultan va S-4728 navlari standart S-4727 naviga nisbatan ancha ustunligini namoyon etdi.

REFERENCES

1. Akkujin D. Izmenchivost` kolichestvennix priznakov // Xlopkovodstvo. –1979.–№ 5.– S.27–28.
2. Dospexov B.A. Metodika polevogo opita. M., Agropromizdat, 1985.
3. Chorshanbiev N.E., Nabiev S.M. Yangi ingichka tolali góza navlarining qimmatli xójalik belgilarini órganish // Góza va boshqa qishloq xójalik ósimliklarida tez pisharlikni hamda moslanuvchanlikni evolyucion va selekcion qirralari: Xalqaro ilmiy konferenciya materiallari. – Toshkent, 2015.– B. 86–88.
4. Qóchqorov O., Alixójaeva S., Kushaliev A., Munasov X. Shór tuproqda óstirilgan tizmalarning qimmatli xójalik kórsatkichlari. //Góza genetikasi, selekciyasi, urug`chiligi va bedachilik twplami. – Toshkent, 2010.– 64–66 B.
5. Toreev F.H., Urazov B.O., Shodmonova G.E., Allambergenov T., Mavlonova N.U.. Fiber quality indexes of newly developed cotton lines and the test results in the enlarged and small nurseries/ Cite as AIP Conference Proceedings 2432, 040023, 2022.

FORMATION, CHANGE AND STABILIZATION OF ATTITUDE IN RELIGIOUS EDUCATION

Mohammad Zaher Fahimi

Assistant Professors at Kabul Education University

Subhanullah Mohammadi

Assistant Professors at Kabul Education University

ABSTRACT

One of the main concerns of education in many country has always been the creation and shaping of religious beliefs and behaviors. For this reason, since the beginning of the establishment of the country's education system, religious education has always been a large part of the budget and efforts of those involved in this system. At the same time, reviewing the historical flow and observing the current state of the country shows that the more efforts in this field, the less positive results have been brought. Therefore, naturally, an important question can be asked in this connection, what is the reason for the failure of all these efforts and why our education and higher education system have not been very successful in this field?

The present article aims to answer these questions and has tried to answer the said question within the capacity of one article by reviewing the works and results of the research conducted on religious education.

What has been obtained from this study and review is that one of the factors of this failure is not paying attention to the foundations that determine human behavior and psychological characteristics. Human behavior and psychological characteristics are usually influenced by attitudes that are formed in the form of mental characteristics resulting from life experiences and are manifested in daily interactions. This formation often occurs outside of people's control, and they are influenced by factors that are often outside of human control. Therefore, after discussing the basic issues of human behavior and attitudes, it is recommended that for the success of religious education, attention should be paid to the effective foundations of the formation, change and stabilization of religious attitudes, and instead of blaming the teachers and students, the problems should be He searched in the education system itself.

Keywords: attitude, religious attitude, education, religious teachings



INTRODUCTION

One of the major issues that has always been raised in our educational system and in the Islamic world has been the formation and stabilization of religious attitudes in teachers and students. For the importance of this issue, it is enough to know that since the beginning of the establishment of the public education system in Afghanistan, almost a quarter of the costs and material and spiritual capacity of this system has been devoted to religious education and a major share of the country's budget has been directed to this field. However, contrary to expectations, what has been obtained from all these expenses has often been the opposite of the intentions and intentions of the people involved and public opinion, or at least it has not resulted in any significant benefits.

In this situation, people express different and sometimes conflicting views. Some blame the teachers, some blame the teachers and coaches, some blame the families, some blame the educational system, some blame the society and the media, and some blame other factors.

But the situation does not change and the conditions remain the same. Therefore, this question weighs on the minds of experts in social, cultural and educational affairs as always, why the huge expenses and extensive efforts in the field of religious education are not fruitful and the teachers and students, as they should, In terms of beliefs, they don't need strength?

It seems that there is no expert approach to the subject in our educational system, the officials of the system and even the public opinion have shown loyalty to the traditional approaches by simplifying the subject and referring the problems of religious education mainly to the teachers, students and their families. they give

The present article is based on the premise that the problems of religious education and training of teachers and students come from neglecting educational foundations, one of which is the concept and mechanism of attitude formation, change and stabilization. In this article, an attempt has been made to explain this concept and its mechanism as one of the most effective topics in the process of religious education.

The concept and factors of attitude formation

Attitude is one of the familiar concepts and words that all people are familiar with. But in psychological literature, this term is a combination of beliefs and emotions that prepare a person in advance to look at others, objects and groups in a positive or negative way. Attitudes summarize the evaluation of objects and as a result predict or guide future actions or behaviors (Hilgard and Atkinson, 2011).



According to Patricia Niles, one of the contemporary psychologists, this combination is formed under the influence of three factors: individual experiences, social environment and the interaction of human emotions with the environment (Niles 1982). From the point of view of the second factor, although it is more effective than the other two factors, the role of the other two factors is also significant and it is enough that they can be placed next to the second factor.

However, according to David Kerch and Richard Crutchfield, two American psychologists who have conducted relatively more complete research in this field and achieved more comprehensive results, the attitude is influenced by four factors. These four factors are: needs, concentration of experience, belonging to a group and personality type of people. (Kerch, 1948)

The needs the needs or how to provide them is a factor that can affect the attitude of a person towards all those things that are related to it. In every stage of his daily life, man has needs to survive and live, which he tries to provide with the means and facilities available to him. Naturally, in the course of this work, a series of obstacles and problems are usually placed on his way, and a series of background and helping issues are found for him. Objects and things that help to meet the needs of a person and satisfy his needs attract a positive attitude of a person towards him, and objects and things that block his way to reach his goal and prevent him attract a negative attitude. Therefore, the needs and how to meet them is a factor that can create an attitude in a person towards something, a subject or a person and people. These needs can be material needs such as the need for food, clothing, shelter and the like, and they can be spiritual and psychological needs such as the need for social approval, the need to be noticed by others, the need to be respected or even calm. To remember and the like.

Density of experience. The density of experience or cognitive experiences is all the information that a person acquires about a particular object, subject or person throughout life. This information and knowledge, their form and content, which is condensed and formed for a person during his lifetime, is another factor that can shape a person's attitude towards that thing (Niles, 1980). Therefore, people's informational and cognitive resources play an important and effective role in forming people's attitudes, because these sources, whatever information they give to people, will also affect people's attitudes towards that information. For this reason, mass and group media, which today play a decisive role in shaping the cognitive experiences of the society and their information and information is obtained through them, are of special importance and sensitivity.

In addition to the media, families, schools, colleges, books, clubs and all the environment with which a person is in contact has an important and determining role in the formation of a person's attitude. Because these centers and environments are the main sources of information and human information about other matters and issues. A person knows things and subjects and people through family members, especially parents, school principals, university professors, books, fellow students, classmates, and the like.

Group belonging the way the group is defined in sociology, the group is: A collection

Personality. In psychology, a difference is made between personality traits and attitude (Eysen, 1974, p. 23) and therefore they are different from each other, but the noteworthy point is that the personality traits of people are one of the factors that have a great impact on how attitudes are formed. . This is why there are differences between individuals and members of a group despite having a kind of general harmony in attitudes. These differences are due to the personality traits that exist among the people of this group, because each person has attitudes that are compatible with his specific personality traits and pattern. For example, "authoritarian personality, which is associated with characteristics such as intellectual stagnation, extreme prejudice, lack of forgiveness towards others' mistakes, racism, and the like, and is embodied in individuals and groups of neo-Nazis, also brings forth specific attitudes from which These are: hatred towards non-white races, opposition to the presence of foreigners or immigrants and refugees in one's country, support for dictatorial and violent systems, violence against opponents" (Kirimu, 2008) and the like.

A point that can be made in this context based on what Kerch and his colleagues have said and has been quoted in many sources are the factors that are effective in the process of formation and formation of people's attitudes based on their research. It seems that although these four elements act as direct factors forming attitude, but if we consider the indirect factors and at the same time the root of attitude, then it can be said that the process of attitude formation is generally subject to the educational process and It is learning. That is, hereditary and environmental factors and backgrounds that are effective in people's personality and learning can also be effective in forming people's attitudes. Because these are the factors that make a person's personality to be formed, and what groups he joins and how he is influenced by his group, how he fulfills his needs or how his needs are fulfilled, and also what knowledge he has towards phenomena and surrounding environment.



In any case, if we are to consider the direct factors of attitude formation and act based on the same, it should be said that a person's attitude towards religion will be positive if:

First. The physical and spiritual needs of people or in other words their material and spiritual needs should be recognized and followed by religion and its orders in order to satisfy those needs. It means that people find out what their needs are in life? What is the priority and importance of these needs? What things can satisfy them? And what role does religion play in this context?

Therefore, if religion is presented in such a way that people feel that it is an obstacle to fulfilling their material and spiritual needs, then they will have a negative attitude towards it. Of course, how these needs should be explained and how people should pay attention to them, and whether these needs are balanced in people or whether their balance has been disturbed due to various factors, especially advertisements and external stimuli (mostly (people are like that) is another thing, but our assumption is that people are in a balanced state in terms of feeling their needs and there are no extremes in this field. In this case, in the first step, people's needs should be known and introduced to them, and in the second step, religion should be introduced in such a way that people can find their needs fulfilled in it. If people's needs reach the stage where they try to satisfy them, then anything that prevents them from satisfying them will belong to a negative attitude. For this reason, it seems that one of the things that needs to be done in order to provide the basis for the formation of a positive attitude towards religion is to create conditions in which the spiritual and real needs of human beings are more diverse and people meet their own spiritual needs. feel and try to fix it.

Second. Favorable and positive information and information about religion should be presented in such a way that people will recognize religion as acceptable, acceptable and welcome as a result of this information. Therefore, the information and cognitive sources of people, i.e. family members, teachers, media and especially radio and television, have a serious role and importance. Knowledge and information that make religion seem illogical, unreasonable and unacceptable, whether it is presented in favor of religion or even in appearance against religion, can change people's attitude towards Religion, education and its rulings have a negative shape. Therefore, irrational and unreasonable defense of religion is very harmful for a positive attitude towards religion.

Third. Try to expand groups with religious and religious values, norms and norms among the existing groups.

Fourth. People should be brought in such a way that they do not have anti-religious personality. It means that people should come in such a way that they can easily adapt to religious teachings and teachings.

Of course, this question can be raised whether we have an anti-religious personality or not, which means that the personality of people is formed in such a way that they cannot come to terms with religion at all and are personally averse to religion and anti-religion? But what is certain in this context is that some of the factors that are undoubtedly important and effective factors in the formation of people's personality have been the concern of the elders of Islam. Therefore, specific orders and orders have been presented in Islam and adherence to them has been emphasized.

Change of attitude

What was mentioned as the effective factors in the formation of attitude was related to the way in which an individual's attitude towards something, subject or object for the first time.

Learning pattern or conditioning

This model was proposed by behavioral psychologists and it is based on the principles of learning explained by them. According to this model, all the attitudes of all people can be changed under one condition, that is, the reinforcing factor for changing the attitude is stronger than the reinforcing factor that maintains the existing attitude, therefore, in all cases, if the factor that strengthens the opposite attitude is stronger If it is a factor that strengthens the existing attitude of people, then the attitude of the changed people will be replaced by the opposite attitude, but if the strengthening factor of the opposite attitude is weak, then the existing attitude will remain strong. Based on this, if we want to change the anti-religious attitude of the people to a favorable religious attitude, we must first identify the factors that have strengthened this anti-religious attitude in the individual and then present a stronger factor to strengthen the religious attitude.

An example of theories or learning model for attitude change is the model of Howland and his colleagues. Howland's model, which is the most famous learning model in attitude change, has several stages that lead to attitude change from the initial stimulus and then to the stage of attention, perception and acceptance.

In Howland's model, a message that seeks to change attitudes depends on three things: those three things are: the characteristics of the messenger, the characteristics of the message itself, the context in which the message is presented, the medium that conveys the message, and personality

characteristics. Which is present in the message of the receiver or audience.

Messenger

Regarding the messenger, the most important factor that can be very effective in changing attitudes is his acceptability. It means how acceptable the message is to the audience. In this field, several factors are at work in order to make a messenger acceptable to the audience. These factors include:

a. The appearance of the messenger and whether he is attractive to the audience or not, what clothes he is wearing, what his name is, how he walks, how his hand and face movements are, and... All this. Factors are effective in favoring and accepting a messenger.

b. The expertise and competence that the messenger has to deliver the message. It means that whether the messenger has the necessary scientific competence to present the message or not to influence and is effective in the attitude change process. Maybe the issue of expertise is the most effective factor for the acceptability of the messenger.

J. The importance or not of the messenger for the audience is another factor that has been emphasized in changing the attitude.

d. After all, what is very important in changing the attitude is that they know whether the messenger is trying to deceive them or whether he is really honest in what he says. The reliability or lack of reliability of the messenger is very important in the attitude change process.

Message

There are many factors involved in determining what features the message itself should have in order to be more acceptable and to change the attitude easily. One of the factors that are effective in this field is whether the message is presented unilaterally or bilaterally. The studies that have been carried out have shown that the messages presented in a two-sided manner, that is, in which both the favorable side of the case is considered and mentioned and its arguments are given, and the favorable side of the case is mentioned and its arguments are stated. will be acceptable.

Apart from this, an effective message will create excitement in the audience. In the studies they have conducted, social psychologists have especially emphasized the impact of fear on changing attitudes. In a research conducted by two psychologists, Fischbach and Janis, it was found that the message can be more effective if it is accompanied by a little fear. The two mentioned psychologists combined the message related to oral and dental health with the fear factor and tested it on a number of high school teachers. In this experiment, the factor of fear was graded in three degrees: mild, moderate and severe

fear and the result of each was recorded separately. In the end, it was found that the message that was accompanied by mild fear had more effects and was more able to influence the attitude of the teachers. Some have said that fear excitement and attitude change have an inverse correlation and if fear increases, the problem of attitude change will also increase, but some other studies have shown that this is not the case and that fear and attitude change have a positive correlation.

The background and space of the message. It means that the message should be presented in such a way that the receiver of the message can easily understand it.

Apart from all these, who are the recipients of the message and what are their personality traits is important in changing the attitude. Among the features of the audience that are more effective than other features in this matter is their intelligence or lack of intelligence. Apart from this factor, self-esteem is another factor that is effective in this matter.

Cognitive patterns

In contrast to the conditioning model, in which more emphasis is placed on changing the attitude unconsciously, in the cognitive model, the focus is on the cognitive process and mental analyzes of humans.

Cognitive models, which are a collection of several models for changing everyone's attitude, are based on the premise that people's attitudes change during a process, and in this process, people own thoughts are very important. Of course, in how this process is done and through which stages, the supporters of this basis have also differed, and for this reason, despite having a basis, many and different views and opinions have been raised by them. Here are some of them

Individual characteristics

Apart from the characteristics of the attitude itself, the characteristics that can exist in a person, including the level of intelligence of a person, are also effective in the stability of the attitude. Of course, the results of the discussion are not very clear about the effect of intelligence and whether being intelligent makes attitudes more changeable or more resistant, but in any case, intelligence is one of the factors that can change the process. It is certain and fixed to influence the attitude. It has been said that being intelligent makes people's attitudes change easily, because intelligent people can quickly understand social issues that are always changing and changing, and require people to take a position in harmony with it and not have a state of intellectual stagnation. Therefore, intelligent people are prone to change their attitudes on their own, and if the factors of change are provided, they change much more easily.

On the other hand, this point is also noteworthy that people with low intelligence are more influenced and subordinated to others and are influenced by the propaganda and become the same color as the group (same) than intelligent people who usually base their thoughts and ideas on their own understanding and intellectual results. LT is. Therefore, hyper intelligence causes attitude stability and low intelligence causes attitude instability.

What seems to be the case is that attitude is also important. If the attitude is one of the things that are always changing, then it is possible that more intelligence will cause the attitude to fluctuate more (of course, this assumption is correct if we accept that intelligent people as quickly as possible social issues They understand that he becomes subject to them as quickly as he changes his opinion according to them and does not stand in the position of creation) but if it belongs to the attitude of things that are stable and durable by themselves, like many non-social issues, then there is no reason. To say that intelligent people change their attitude very quickly.

Another characteristic of a person that is effective in the stability of attitude is the courage of a person. Because as it was said, it has been scientifically proven that fear is one of the factors that can help change or at least facilitate its change.

Another feature that is effective in this field is the level of self-esteem or feeling of inferiority. Based on the studies that have been done, it has been found that the feeling of digging in people, especially in men, causes a wavering in the attitude and makes him more flexible to the opinions of others (ibid.).

Social factors

In relation to what is related to the person's presence in the society and his life in relation to others, two things are important in the wavering or attitude of a person. The stability of a person's attitude against change is determined. Attitudes that reflect group values and traditions are more stable, while attitudes that do not have such characteristics are more unstable (ibid.).

In addition to all the factors that have been mentioned as effective factors in attitude stability, there are other factors that have an effect on the wavering or resistance level of attitudes. Among these factors, we can mention extraordinary social conditions. Attitudes in normal conditions are more resistant to change than in extraordinary social conditions. For example, in a war situation in a society caught in a war, the attitudes towards propaganda are more flexible than in a normal situation, for this reason, the existence of a social psychological crisis can provide the basis for the influence of the propaganda of the enemies of a society (ibid.).

Also, another factor that can be effective in resisting attitude based on the research of social psychologists is pre-

awareness or pre-preparedness. Pre-awareness means that a person becomes aware of the existence of an opposing message before the message itself is communicated. In a research conducted, it has been found that if the audience of a message is justified to a certain extent before its presentation, then after presentation, the attitudes created will be more resistant to opposing arguments became.

Summary and conclusion

It seems that it is not reasonable to expect to achieve desirable educational results without taking into account the effective factors in the formation, change and stabilization of attitudes. What can be obtained from the review of the works and the results of the conducted research is that, firstly, in order to create any favorable religious or non-religious changes in people, he paid attention to the principles and rules governing people's attitudes. Because the behavior of people, whether educated, students, or even other people, appears under the influence of the attitudes formed in them, and sometimes the behavior and way of functioning of people is actually and truly outside of their control. Secondly, the factors influencing the formation, change and stabilization of attitudes are important. People's attitudes are usually formed, changed and stabilized beyond their control. Therefore, if we expect the formation of desirable attitudes and behavior in the course of education and training by simply providing a set of information and information, it seems that this expectation is unrealistic and unrealizable. Therefore, if our children, teenagers and young people do not behave in a religiously desirable way after spending money and spending heavy money over a relatively long period of time and have weak religious attitudes and attitudes, they should not be blamed. Take Instead of these blames, we should reconsider the process and manner of educational measures in which the factors affecting attitude and behavior are less taken into account and reconsider in cases of necessity.

Among the direct factors of attitude formation in general and religious attitude in particular, four factors of physical and mental needs, the attractiveness of religion for students, the formation and expansion of groups with values and norms should be mentioned.

REFERENCES

1. Berkowitz, Leonard (1372). Social psychology, translated by Dr. Mohammad Hossein Farjad and Abbas Mohammadi Asil, Asatir Publishing House, Tehran.
2. Farsar, Ahmed (1377). Sociology, principles, foundations, etc., Ohadi Publishing House, Tehran.



3. Arianpur (1357). Sociology field, Pocket books joint stock company, Tehran
4. Eisen, Isaac (1374). Attitudes, personality and behavior, translated by Dr. Jafar Najafi Zand, Dana Publishing House, Tehran.
5. Atkinson, Rita L., Atkinson, Richard S., Hilgard, Ernest R. (1371). The field of psychology, translated by Dr. Naghi Brahni and colleagues, Rushd Publications, Tehran.
6. Mehrara, Ali Akbar (1373). The field of social psychology, Mehrdad Publishing House, Tehran.
7. Aronson, Eliot (2018). Social Psychology, translated by Hossein Shekarkan, Rushd Publications, Tehran.
8. Karimi, Yusuf (1378). Social psychology (theories, concepts and applications), Arsbaran Publishing House, Tehran
9. Cohen, Arthur (1377). Attitude change and social influence, translated by Ali Reza Kaldi, University of Welfare and Empowerment Sciences, Tehran.
10. David J. Schneider (1976). Social Psychology, Addison Wesley Publishing Company.
11. Niles, Patricia (1980). Social Psychology and Modern Life, Knopf: distributed by Random House, 2nd Edition January.
12. Uldall BR. (2013). Social Psychology, In: Runehov ALC, Oviedo L., eds. *Encyclopedia of Sciences and Religions*. New York: Springer.

O‘ZBEKISTONDAGI YUMSHOQ BUG‘DOYNING RAYONLASHTIRILGAN VA IZOGEN LINIYALARNING SARIQ ZANG KASALIGIGA CHIDAMLILIGINI BAHOLASH

Durdona Shavkatjonovna Shokirova

O‘zR FA Genetika va o‘simliklar eksperimental biologiyasi instituti tayanch doktoranti

Xurshid Sadullayevich To‘raqulov

O‘zR FA Genetika va o‘simliklar eksperimental biologiyasi instituti katta ilmiy xodimi, biologiya fanlari nomzodi

Sodir Karimjonovich Meliyev

O‘zR FA Genetika va o‘simliklar eksperimental biologiyasi instituti katta ilmiy xodimi, biologiya fanlari falsafa doktori

ANNOTATSIYA

Ushbu maqolada O‘zbekistondagi rayonlashtirilgan va izogen linyalarga mansub yumshoq buo‘doyning 70 namunasi sariq zang kasaligiga chidamliligi bo‘yicha statistik taxlilar amalga oshirildi. Tahlil natijalariga ko‘ra tanlab olingan namunlarni 18,5 foizida kasallik belgilari umuman kuzatilmadi.

Kalit so‘zlar: sariq zang, yumshoq bug‘doy, Manner shkalasi va Markerlarga asoslangan selleksiya (MAS)

ABSTRACT

In this article, 70 soft wheats belonging to zoned and isogenic lines in Uzbekistan were used. Statistical analysis of these samples was carried out on their resistance to yellow rust disease. According to him, 18.5% of the selected samples did not have the disease at all.

Keywords: yellow rust, soft wheat, Manner Scale and Marker Based Assay (MAS)

KIRISH

Bug‘doy dunyo aholisining 1/3 qismidan ko‘prog‘i uchun asosiy oziq-ovqat ekini bo‘lib dunyodagi yetakchi va keng tarqalgan donli ekinlardan biridir. Dunyo aholisining ko‘payishi va ekin maydonlarining qisqarishi bilan bug‘doy yetishtirish va



hosildorlikni oshirish hal qiluvchi ahamiyatga ega bo'ldi. Shu sababli, tobora o'sib borayotgan aholining oziq-ovqatga bo'lgan talablarini qondirish uchun rivojlanayotgan mamlakatlarda ishlab chiqarilgan oziq-ovqat 2050 yilgacha 70% ga oshirilishi kerak (Semenov va boshq., 2014). Lekin bug'doy ishlab chiqarishda Turli xil biotik va abiotik omillar umumiy hosilga ko'p jihatdan to'sqinlik qiladi. Bug'doyda sariq zang yoki chiziqli zang (YR) keltirib chiqaradigan *Puccinia striiformis* (Pst) bug'doy ishlab chiqarishga sezilarli iqtisodiy zarar yetkazadi va epidemiya sharoitida umumiy hosilning 70% gacha yo'qolishiga olib keladi (Chen, 2005).

ADABIYOTLAR TAHLILI

Bug'doy chizig'i zangini barqaror boshqarishda faqat bug'doyning elita navlarida zangga chidamlilik genlarini aniqlash va joriy etish orqali erishish mumkin. Chiziqli zang zamburug'lari bug'doy barglari va to'qimalarida o'simlik ozuqalarini o'zlashtiradi, o'simlik fotosintezini cheklaydi, shu bilan bug'doy o'simliklarining normal o'sishi va rivojlanishiga ta'sir qiladi. Chiziqli zang bug'doyning sifati va hosildorligini pasayishiga olib kelishi mumkin (Wellings 2011). Chidamli navlarni yetishtirish bu kasallikning oldini olishning iqtisodiy va ekologik toza usuli hisoblanadi (Mu va boshq. 2019).

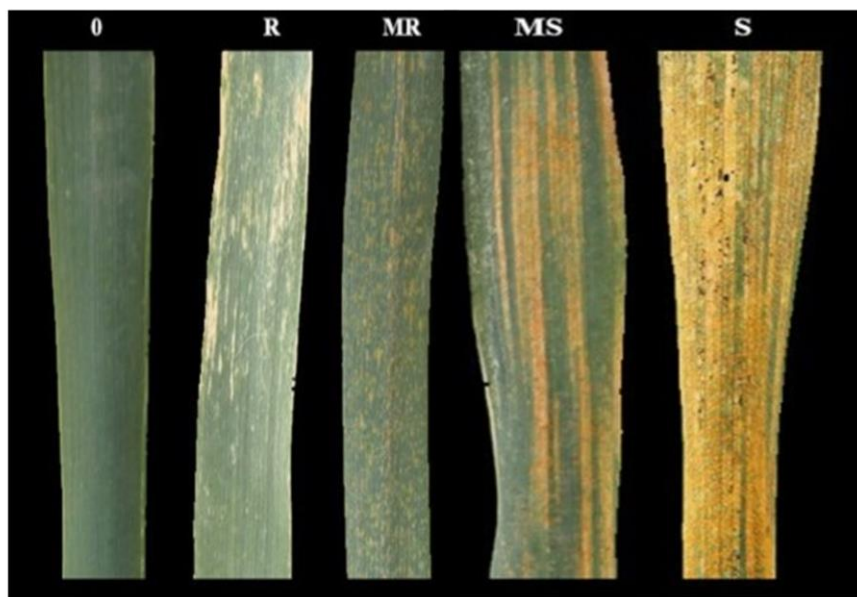
Sariq zangga chidamlilik genetikasi ko'p yillar davomida o'rganib kelinmoqda. Biffen (1905) birinchi bo'lib sariq zang chidamliligi Mendel qonunlari asosida bo'lishini e'tirof etdi. Sariq zangga chidamlilikni belgilovchi 70 ta gen rasmiy (YR va raqamlar bilan) va taxminiy (YR va xarflar bilan bilan) belgilar bilan qayd qilindi. Chidamlilikning xar xil allellari YR3 va YR4 lokuslari aniqlandi (Chen, 2004). Ushbu 70 genlarning ko'pi xar xil xromosomalar lokuslarida joylashganligi, xar xil rasalar va bug'doy genotiplariga ega ekanligi bilan ajralib turadi. Shu bilan birga bir qancha e'lon qilingan genlar hali nomlangani yo'q (Chen 2002).

O'zbekistonda bug'doyning genetik va genom tadqiqotlarida GWAS, MAS, poliploidiya va CRISPR/Cas9 texnologiyalarini qo'llash, qimmatli xo'jalik belgilarga aloqador genlarni yuqori aniqlikda identifikatsiya qilish, ikkita va undan ortiq genlarni bir genotipga jamlash orqali abiotik va biotik stresslarga chidamli navlar olishga erishish mumkin (O.S.Turayev 2023)

TADQIQOT OBYEKTI VA USLUBLARI

Tadqiqotlar O'zR FA Genetika va o'simliklar eksperimental biologiyasi institutining Do'rmon dala tajriba maydonida va laboratoriya sharoitida olib borildi. Bunda

Respublikamizdagi rayonlashgan va izogen linyalarning 70 ta namunalaridan foydalanildi. Bug‘doy namunalar dala sharoitida sariq zang bilan zararlanishi Manners(1950) shkalasi bo‘yicha baholandi (1-rasm)



1-rasm. Manner (1950) shkalasi bo‘yicha zararlanish darajasi

NATIJALARI TAHLILI VA MUHOKAMASI

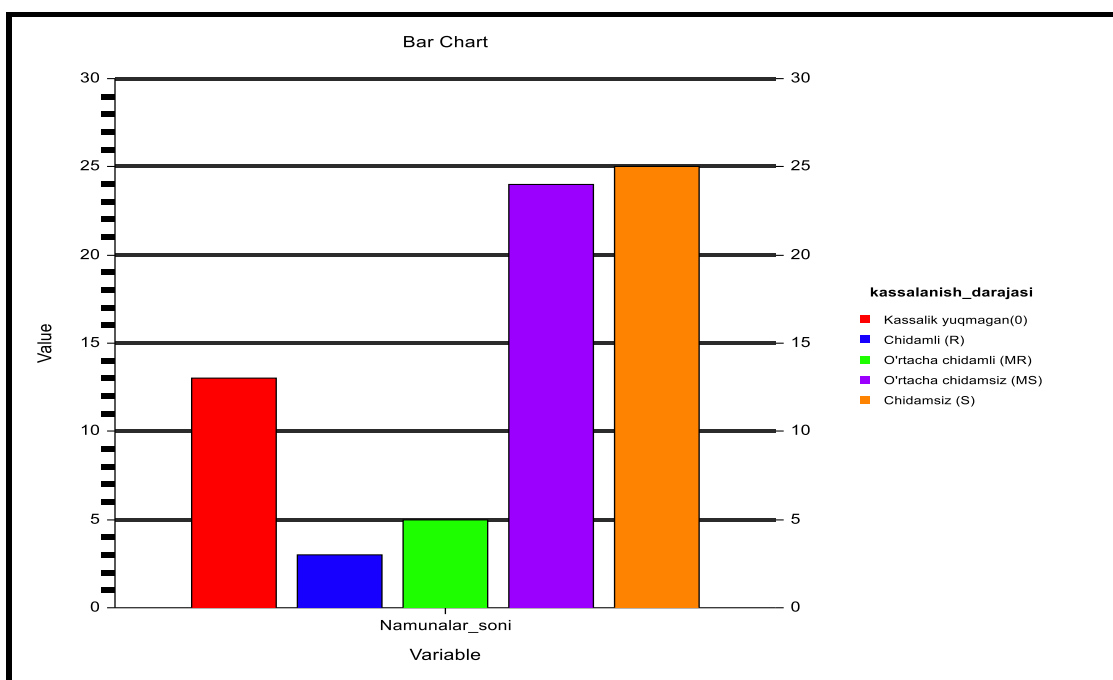
O‘zbekistondagi yumshoq bug ‘doyning rayonlashtirilgan va izogen liniyalarning sariq zang kasaligiga chidamliligini baholash bo‘yicha olib borilgan tadqiqotlarimiz davomida tanlab olingan 70 ta namunalarimizni Manner shkalasi bo‘yicha baholandi va tahlil qilindi (1-jadval). Unga ko‘ra olingan ma’lumotlar shuni ko‘rsatiki 70 ta namunadan sariq zang bo‘yicha chidamsiz namunalar ko‘p qismini tashkil qildi (2-rasm). Kasallik yuqmagan namunalar 13 ta, kasallikka chidamlilari 3 ta, o‘rtacha chidamli namunalar 5 ta, o‘rtacha chidamsiz namunalar 24 ta va kasallikka chidamsiz namunalar esa 25 tani tashkil qildi.

1-jadval

Respublikamizdagi rayonlashgan va izogen linyalar sariq zang bo‘yicha kasallanish darajasi

№	Bug ‘doy namunalari	Kasallanish darajasi	N	Bug ‘doy namunalari	Kasallanish darajasi
1	Ezoz-2	R	23	Yr 8/6 Avoset S	S
2	Pervitsa	S	24	Compair (S Yr 8)	S
3	Yr 1/6avocet S	0	25	Yr 9/6 Avoset S	MS

4	Yr 1/6 avS	MS	26	Fed 4/Kavkaz (Yr 9)	S
5	Yr 15	R	27	Clement (W; Yr9+Yr2+?)	S
6	216	S	28	Grut	S
7	Kalyansoma	S	29	Yr10/6 Avoset S	0
8	Grom	S	30	Bobur	MS
9	Xisorak	MS	31	Moro (W;Yr10)	0
10	Vassa	S	32	Yr15/6 Avoset S	0
11	Hybrid 46 (W;Yr4)	MR	33	Yr 17/6 Avoset S	MR
12	Yr 5/6Avocet S	0	34	Alekseyevich	MS
13	TRITICUM SPELTA	R	35	Do'stlik	S
14	Yr 6/6 Avocet S	S	36	Yuka	0
15	Heines Kolben	MS	37	Yr 32/6 Avoset S	MS
16	Heine's Peko	S	38	Crastens (W; Yr32)	MS
17	Fielder	MR	39	Yr SP/6 Avoset S	0
18	Yr 7/6 Avoset S	S	40	Andijon 4	S
19	Tanya	S	41	Spaldings prolific W; Yr SP	MS
20	Morocco	S	42	Asr	MS
21	Reichersberg 42 (W;Yr7+?)	MS	43	Yaksart	MS
22	Thatcher	MS	44	Starshina	0
45	Yelanchik	S	58	OPATA 85	0
46	Yr 18/3 Avoset S	MS	59	Avocet-YRA 3/3/	S
47	Zamin 1	0	60	Krasnadar	MR
48	Hamkor	S	61	Lal Bahadur/Pavon 1BL	MS
49	Vexa	MS	62	AVOCET YRA 3/PASTOR	MS
50	Evelena	MS	63	PASTOR	S
51	Bezostiya	S	64	Davr	S
52	Lemhi	MS	65	Temiryazovka	MS
53	TP 981	MS	66	Antanina	S
54	TP 1295	MS	67	Sabrbosh	MS
55	Yr27/6 Avoset S	MR	68	Yr10	0
56	Ciano 79	0	69	Andijon 2	MS
57	ATTILA CM 85836- 50Y	0	70	G'ozg'on	S



2-rasm. Tanlab olingan namunalarni sariq zang bo'yicha kasallanish dinamikasi

XULOSA

O'zbekistondagi rayonlashtirilgan va izogen linyalarga mansub 70 ta yumshoq bug'doy namunalari sariq zang kasaligiga chidamliligi bo'yicha Manner shkalasi bo'yicha baholanganda 18,6 % sariq zang kasaligi yuqmaganligi, 4,3 % qismi kasalikka chidamli bo'lishi, 36 % kasalikka chidamsiz bo'lishi aniqlandi. Sariq zang kasaligiga chidamli va ushbu kasalik ta'sir qilmagan bug'doy namunalari kelgusida markerlarga asoslangan selleksiya (MAS) uchun tanlab olindi.

REFERENCES

1. Semenov MA, Stratonovich P, Alghabari F, Gooding MJ (2014). Adaptation of wheat to climate change in Europe. *Journal of Cereal Science* 59 (3): 245
2. Wellings CR (2011) Global status of stripe rust: a review of historical and current threats. *Euphytica* 179(1):129–141. <https://doi.org/10.1007/s10681-011-0360-y>
3. Mu J, Huang S, Liu S, Zeng Q, Dai M, Wang Q, Wu J, Yu S, Kang Z, Han D (2019) Genetic architecture of wheat stripe rust resistance revealed by combining QTL mapping using SNP-based genetic maps and bulked segregant analysis. *Theor Appl Genet* 132(2):443–455. <https://doi.org/10.1007/s00122-018-3231-2>

4. Chen, X.M., and Line, R.F. (2004). Inheritance of stripe rust resistance in wheat cultivars used to differentiate races of *Puccinia striiformis* in North America. *Phytopathology*, 82: 633–637.
5. Chen, X. M. (2005). Epidemiology and control of stripe rust [*Puccinia striiformis* f. sp. tritici] on wheat. *Can. J. Plant Pathol.* 27, 314–337. doi: 10.1080/07060660509507230
6. Chen, X.M. 2002. Genetics of wheat resistance to stripe rust. In *Wheat rusts in China. Edited by Q. Li and S.M. Zeng.* Chinese Agricultural Press, Beijing, China. pp. 173–184. [In Chinese.]
7. O. S. Turayev, A.A. Dolimov, B. T. Tursunmurodova, S. S. Baboyeva, F. N. Kushanov (2023), *Academic Research in Educational Sciences*, P.259-266.



PAXTANI MAYDA IFLOSLIKLARDAN TOZALASHDA ISHTIROK ETADIGAN ISHCHI ORGANLARNING KONSTRUKTIV PARAMETRLARI VA REJIMLARINI ULARNING ISH SAMARADORLIGIGA TA'SIRI

Muzaffar Gulomjanovich Djurayev

Termiz davlat universiteti

muzaffar_2410@mail.ru

ANNOTATSIYA

Ushbu maqolada mahalliy amaliyotda paxta xom ashyosini titish va mayda iflosliklarning aralashmalari, ya'ni barglar va ularning parchalangan qisimlaridan tozalash shu bilan birga diametri 4 mm bo'lgan uzaygan shakldagi hamda paxtani ulyuk va ulyukni ajraqtib olish va ulardan tozalash uchun kolosnikli panjaralar yoki teshikli to'rlar bilan birgalikda ishlaydigan qoziqchali-plankasimon barabandan foydalaniladi. Ushbu paxtani mayda iflosliklardan tozalash uskunalarining asosiy ishchi organlari va ularning ishlash jarayonlari, uning asosiy kamchiliklari va uni bartaraf etish bo'yicha takliflar keltirilgan.

Kalit so'zlar: ulyuk, kolosnikli panjara, qoziqchali-plankali paraban, cho'tkalar, disk, val, UXK, 1XK, RX

ABSTRACT

In this article, in domestic practice, cotton raw materials are cleaned from a mixture of small impurities, that is, leaves and their broken parts, having an elongated shape with a diameter of 4 mm, and pile, working together with colossal gratings or perforated meshes. To separate and clean cotton wool from lint and fluff, a flat drum is used. The main working parts of this cotton ginning equipment and the processes of their operation, the main shortcomings and proposals for eliminating them are presented.

Keywords: ulyuk, colossal lattice, drum with pegs, brush, disk, shaft, UXK, 1XK, RX

KIRISH

Paxtani titish va mayda iflosliklar va ulyukdan tozalash uchun kolosnikli panjara yoki teshikli to'rlar bilan birgalikda ishlaydigan qoziqchali-plankali barabanlar, paxtani yirik va mayda iflosliklar va ulyukdan tozalash uchun cho'tkalar yoki kolosniklar bilan uyg'unlikda ishlovchi arrali silindrlaridan foydalaniladi.

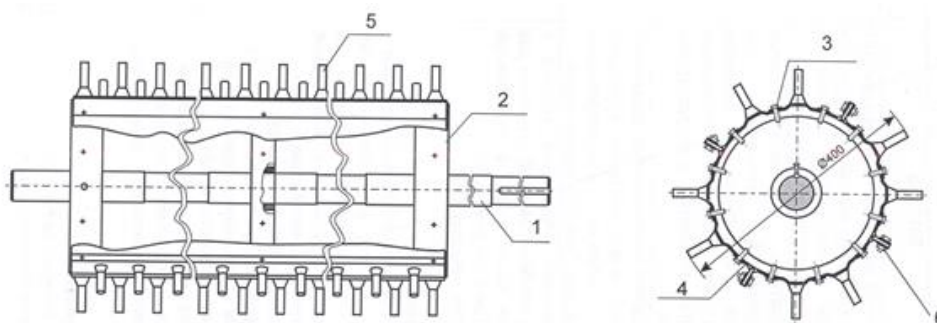


Jahon paxta tozalash sanoatida yuqori samaradorlikka ega texnologik jarayonlarga asoslangan paxta xomashyosini iflosliklardan tozalash tizimlarini yaratish yetakchi o'rinni egallaydi. Bu borada AQSh, Avstraliya, Xitoy, Hindiston, O'zbekiston va boshqa davlatlarda ma'lum yutuqlarga erishilgan bo'lib, paxta tozalash sanoati sohasi ishlab chiqarish samaradorligini oshirish, texnologik jarayonlarni takomillashtirishga e'tibor qaratilmoqda. «Paxta xomashyosini dastlabki ishlashda tolaning tabiiy sifat ko'rsatkichlarini saqlab qolish va resurstejamkor texnologik uskunalardan foydalanish natijasida tola tannarxi kamayishiga erishilmoqda»

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Paxta xom ashyosini iflosliklardan tozalash uskunolari quyidagi asosiy ishchi organlardan tashkil topgan: paxta xom ashyosini titish va mayda iflosliklar va ulyukdan tozalash uchun kolosnikli panjara yoki teshikli to'rlar bilan birgalikda ishlaydigan qoziqchali-plankali barabanlar, paxta xom ashyosini yirik va mayda iflosliklar va ulyukdan tozalash uchun cho'tkalar yoki kolosniklar bilan uyg'unlikda ishlovchi arrali silindrlaridan foydalaniladi. [1]

Zamonaviy qoziqchali-plankasimon barabanlar (1-rasm) beshta diskli 2 val 1 dan tashkil topib, ularga aylanasi bo'ylab boltlar 3 bilan umumiy soni 300 ta bo'lgan qoplamasiga payvandlangan qoziqchalar 5 dan tashkil topgan to'rtta qoplama mahkamlanadi. Qoplamalarning cheti radial egilgan va qo'shni qoplamalar bir-biriga boltlar bilan gaykalar 6 yordamida birlashtiriladi. Qoplamalarni disklarga mahkamlashda qo'llaniladigan boltlarning umumiy soni 60 ta bo'lib, qoplamalarni bir-biriga mahkamlashda esa 52 ta gaykali boltlar ishlatiladi. [2]



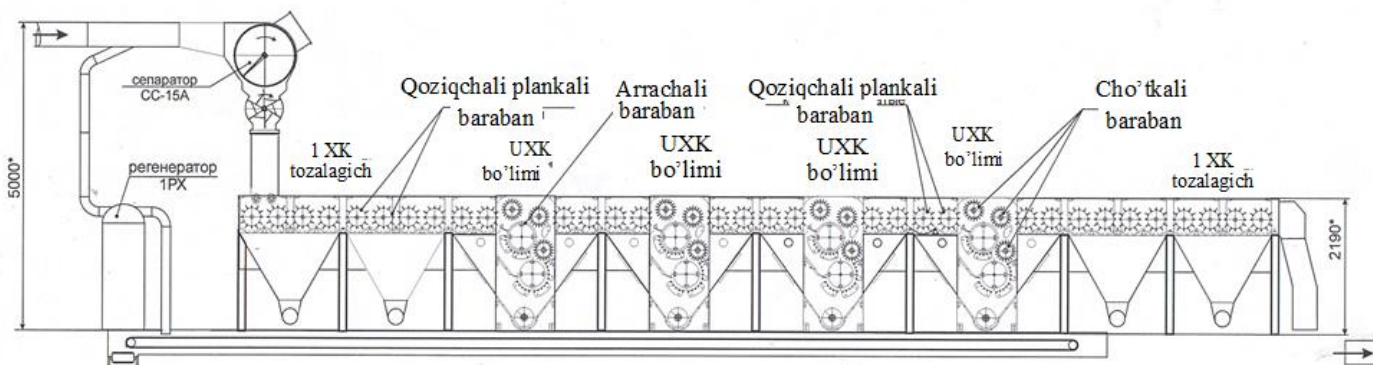
1

-rasm. Qoziqchali plankasimon baraban

1-val, 2-disk (5 dona), 3-diskni qoplamaga maxkamlovchi bolt (60 dona),

4-qoplama (4 dona) 5-qoziqchalar (300 dona) 6-radial egilgan qoplamalarni bir biriga mahkamlash uchun boltlar

Qoziqchali-plankasimon barabanlarning diametri 400 mm, plankalarni hosil qiladigan qoplamalarning bukilgan qismi bo'yicha 340 mm, qoziqchalarning qoplamalardan balandligi 50 mm, plankalarning balandligi 20 mm. Qoziqchali-plankasimon barabanlar 1XK tozalagichlari va UXK agregatlarida (2-rasm) qo'llanilib, ular hozirgi kunda paxta tozalash zavodlarida ekspluatatsiya qilinayotgan



paxta tozalash uchun mo'ljallangan asosiy uskunalari hisoblanadi.

2-rasm. UXK seriyali paxta tozalash moslamalarining sxemasi

1 XK va regenerator 1 RX o'rnatilgan tozalagichlar paxta xomashyosini SS-15A separatoriga yetkazib berish uchun pnevmatik quvur oqimi ulangan qoziqchali-plankasimon barabanlarning ko'p yillik ekspluatatsiyasini ko'rsatishicha, ularning asosiy kamchiligi ekspluatatsion ishonchligini pastligi va tayyorlanishini murakkabligi hamda u tomonidan paxta xom ashyosi urug'larini shikastlanishi va uning tozalash samaradorligini chegaralanganligidan iborat. Ekspluatatsion ishonchligini pastligi quyidagilar bilan izohlanadi. Birinchidan, qoziqchalar baraban qobig'iga faqatgina o'zining bitta kesimiga payvandlangan, buning natijasida uzoq ekspluatatsiyadan so'ng hamda yuqori namlik va ifloslanganlik darajasiga ega paxta xom ashyosini tozalashda yuzaga keladigan qoziqchalarga tushadigan kuchning oshishi, tozalagichlarning tiqilib qolishi va ularga yot jismlarning kirib qolishi tufayli qoziqchalar radial holatidan og'adi yoki qoplamasidan sinib tushadi. Buning natijasida barabanning uzatish va tozalash qobiliyati susayib, tez-tez ta'mirni va qoziqchalarni qayta payvandlanishini talab qiladi. [3] Qoziqchalarni qayta payvandlanishidan qoplama teshiklarida payvand choklarning mustahkamligi har gal kamayib boradi, oxir oqibat qoplamani yangisiga almashtirishga ehtiyoj tug'iladi.

Ikkinchidan, qobiq qoplamalarini bukilgan joyi va qoplamalar va tashqi diskalar kesishmalari orasidagi kichik yoriqlar hamda qoziqchalarning sinishi tufayli yuzaga keladigan teshiklardan barabanlarning bo'shliqlariga mineral va organik changning zarralari kirib, ular to'planib barabanlar aylanishdan to'xtaganda ularning paski qismida yig'ilishi natijasida aylanish tiklanganida statik va dinamik disbalansga olib kelib, oxir oqibat podshipniklar va barabanlarning vallarini bo'yinlarini tezroq yemirilishiga sabab bo'ladi. Podshipniklar va vallarning xizmat muddatini uzaytirish uchun kapital ta'mir jarayonida barabanlarning qismlarini yechish va ularning ichki bo'shliqlarini chiqindilardan tozalash zarur bo'lib qoladi. [4] Bu kabi konstruksiyadagi barabanlarni tayyorlashning murakkabligi shundaki buning uchun maxsus tayyorlangan press-shakllarda qoplama qobiqlarini ikki marta shtampdan o'tkazishni qo'llash zaruriyati va tayanch nuqtani olish maqsadida qoziqchalarni chilangarlik ishlov berilishi hamda barabanlarni yig'ishda boltli birikmalardan foydalanilishi bilan izohlanadi.

MUHOKAMA

Paxta xom ashyosini qoziqchali-plankasimon barabanlar bilan tozalash samaradorligi chigitning shikastlanishi bilan chegaralangan bo'lib, bu holat paxta xom ashyosini bir barabanning ta'siridan keyingi barabanga uzatishda qoplama qobiqlarining bukilgan joylari va asos qismlariga momiqlarni urilishi hisobiga amalga oshadi. Ushbu urilishlar kuchi va shunga mos tarzda shikastlangan chigitning miqdori barabanlarning aylanish tezligi va qo'shni barabanlarning qobiq qoplamalarining shikastlaydigan elementlari orasidagi masofaga bog'liq. Shuning uchun barabanlarning aylanish tezligi "tozalash samarasi-urug'larning shikastlanganligi" optimal parametri mutanosibligi bo'yicha tanlangan bo'lib, bu yerda urug'larning shikastlanishi chegaralovchi omil hisoblanadi va u barabanlarning tezligi hamda tozalash samarasini oshirilishiga yo'l qo'ymaydi. Bundan tashqari ma'lumki, to'ring uzunligini birinchi yarimdan keyin har bir baraban ostida uning aylanish yo'nalishi bo'ylab havo teshiklar orqali ichkariga havo purkalib, bu iflos aralashmalarni ajralib chiqishiga yordam beradi, to'ring uzunligini ikkinchi yarmida esa havo teshiklardan so'rib olinadi va bu iflos aralashmalarning ajralishini murakkablashtiradi.

Tashqi yot aralashmalar tolaga asosan paxta xom ashyosidan kelib tushadi sababi ular deyarli qoziqchali tozalagichlarda tutib olinmaydi, arrali tozalagichlarda va ayniqsa jinlarda ular qisman titiladi va arralarning tishlariga tiqilib qoladi, bu esa ularning ishini ishonchligi va samaradorligini kamaytiradi. Mazkur muammoni yechishda barcha turdagi



tozalagichlar va jinlarning ta'minlagichlarida tashqi yot yumshoq aralashmalarni tutib olinishini ta'minlash maqsadga muvofiqdir. Qoziqchali-plankasimon barabanlarning pasport bo'yicha aylanish chastotasi 420 ayl/min bo'lib, bu 8.8 m/sek chiziqli tezlikka to'g'ri keladi. Ayrim paxta zavodlarida tozalanish samarasini oshirish uchun barabanlarning aylanish chastotasi 500 ayl/min gacha (10.5 m/sek) va hattoki boshlang'ich bo'limlarida paxta xom ashyosini tezlashtirilgan holda titish uchun 600 ayl/min (12.6 m/sek) gacha ham oshirilgan. [5]

XULOSA

Bundan quyidagicha xulosa qilish mumkinki, urug'larning shikastlanishini asosiy sababi paxta xom ashyosining qoziqchalarga urilishi emas, balki uni plankalar va bo'rtgan joylarga urilishi bo'lib, u yerda qoziqchalar mahkamlanadi hamda barabanlarning qobiqlarni silindrik qismiga urilishi, ya'ni paxta xom ashyosi bir qismini plankalar va bo'rtgan joylarga qarshi urilishga uchrashi va paxta xom ashyosining boshqa qismi deyarli qobiqqa amalda to'g'ridan-to'g'ri urilishini oldini olib bo'lmaydi. Demak, urug'larning shikastlanganligini kamaytirish uchun qobiq konstruksiyasidan plankalar va bo'rtgan joylarini olib tashlash va imkon qadar uni barabanning atrofidan olib tashlash, ya'ni imkon qadar qoziqchalarni uzaytirishdan iborat. Shu bilan birga shikastlangan urug'larning ulushini o'sishi paxta xom ashyosi momiqlarini teshikli to'rlarga urilishida sodir bo'lib, biroq bu yo'nalishda hali tadqiqotlar olib borilmagan.

Yuqorida ko'rsatilganidek, qoziqchali-plankasimon barabanlarning ekspluatatsiyasini ko'p yillik tajribasini ko'rsatishicha, uning asosiy kamchiliklari yig'ma qobiq va qoziqchalarni konsolli mahkamlanish usulini qo'llanilishidan iborat. Shuning uchun disklarga mahkamlanadigan yig'ma qobiq o'rniga payvandlangan sapfali quvurlarni qo'llanilishi va tutgichlarning barabanlari ekspluatatsiyasi tajribasini hisobga olgan holda uzun qoziqlarni rezbali mahkamlash o'rniga quvurga ikki tomonlama payvandlangan va diametral joylashgan teshiklar orqali trubaga kiritilgan qoziqlarni qo'llash maqsadga muvofiq bo'ladi.

REFERENCES

1. Самандаров С.А., Будин Е.Ф. Результаты испытания плоских и других колосников Хлопковая промышленность 1977 № 2 стр 12-14
2. Лугачев А.Е. Исследование основных элементов очистителей хлопка сырца с целью повышения качественных показателей процесса. Дисс. к.т.н., Т-1981



3. Djurayev M.G., Khakimov Sh.Sh., Ochildiyev B.B., Jurakulov E.N. Managed Technological Indicators during the Cotton Cleaning Process International Journal of Advanced Research in Science, Vol. 6, Issue 11 , November 2019
4. Хақимов Ш. Ш, Джураев.М.Г, Ибрагимов.А.О УХК агрегати бўлимларининг тозалаш кўрсаткичлари тадқиқи. Фарғона политехника институти илмий-техника журнал 2023 й
5. Джураев.М.Г, Пахта таркибидаги ифлос аралашмалар ва уларнинг классификацияси Golden Brain scientific Journal 16-июн 2023 102-106 б



БИОЭНЕРГИЯ-М БИОПРЕПАРАТИНИ ҚЎЛЛАШНИНГ ПОМИДОР ХОСИЛДОРЛИГИГА ТАЪСИРИ

Байрамбай Айдосович Жумашев

Қорақалпоғистон қишлоқ хўжалиги ва агротехнологиялари институти
ассистенти

Индира Жумамуратовна Абдимухаммедалиева

Қорақалпоғистон қишлоқ хўжалиги ва агротехнологиялари институти
ассистенти

Азамат Серикбай ўғли Сапарбаев

Қорақалпоғистон қишлоқ хўжалиги ва агротехнологиялари институти
3-босқич талабаси

АННОТАЦИЯ

Мақолада Қорақалпоғистон шароитида сабзавот экини помидорга Биоэнергия-М биопрепаратынинг таъсирини аниқлаш бўйича илмий фаолиятлар олиб борилган. Бу бўйича аниқ татбиқ технологиясини ва фойдаланиш коэффициентини аниқлаш бўйича илм-фан изланиш ишлари олиб борилган.

Калит сўзлар: қурғоқчилик, совуқ, шўрланиш, нав, ҳосилдорлик, абиотик, сифат.

АБСТРАКТ

In the article, scientific activities were carried out to determine the effect of Bioenergiya-M biopreparation on tomato in the conditions of Karakalpakstan. In this regard, scientific research work was carried out to determine the exact application technology and utilization coefficient.

Keywords: drought, cold, salinity, variety, productivity, abiotic, quality.

КИРИШ

Ўзбекистон Республикаси Президентнинг 18.05.2020 йилдаги “Қишлоқ хўжалиги маҳсулотларининг сифат ва хавфсизлик кўрсаткичлари халқаро стандартларга мувофиқлигини таъминлашга доир кўшимча чора-тадбирлар тўғрисида”ги Фармони имзоланди. Жаҳон бозорида маҳсулотларга қўйилган сифат ва хавфсизлик талабларининг тобора кучайиб бориши, юртимизда етиштириладиган



маҳсулотларнинг халқаро бозорлардаги ўрнини мустаҳкамлаш учун кўшимча чоралар кўришни талаб қилмоқда. Ўзбекистонда етиштирилаётган помидор таркибидаги қуруқ моддалар миқдори эса 5,5 фоиздан ошади. Бу кўрсаткичлар европалик ишлаб чиқарувчиларнинг шундай маҳсулотларидагидан анча юқори бўлиб, шуниси билан харидорни ўзига тортади. Шу боис органик деҳқончиликга асосланган ҳолда помидорнинг маҳаллий навларини, қурғоқчиликка, иссиқликка ва шўрга чидамлигини ошириш ва агротехникасини ишлаб чиқиш зарур.

Қорақалпоғистон Республикасида қишлоқ хўжалик экинларидан, шунинг ичида сабзавот экинларидан юқори ҳосил етиштириш катта қийинчилик туғдиради, фақатгина тажрибали ва ернинг барча қонуниятларини яхши билган фермер хўжаликлари яхши натижага эришмоқта. Бироқ, кўпчилик фермер хўжаликлари мамлакат томонидан белгиланган режаларини бажара олмаётгани ҳеч кимга сир эмас. Бунга бир қанча сабабларди, хусусан экинзор ерларнинг шўрланиш даражасини, тупроқ унумдорлиги пастлигини, минерал ўғитларнинг кам ёки ўз вақтида қўлланилмаслиги ерларнинг нотекислигини, табиий унумдорликнинг пастлигини ва бошқа омилларни сабаб қилиб кўрсатиш мумкин.

АДАБИЁТЛАР ТАҲЛИЛИ ВА МЕТОДОЛОГИЯ

Экологик тоза маҳсулот етиштириш жаҳоннинг кўпчилик мамлакатларида жуда тез суръатлар билан ривожланмоқда. Статистик маълумотларга қараганда 2000-2010-йиллар давомида дунё юзидан экологик тоза маҳсулот тайёрлаш 3 баробардан ортиқ ривожланди. Аниқроқ қилиб айтиладиган бўлса, 2000 йилда ишлаб чиқарилган экологик тоза маҳсулотлар баҳоси 18 миллиард долларга тенг бўлса, орадан 10 йил ўтиб бу кўрсаткич 60 миллиард долларни ташкил этди. Мутахассисларнинг фикрича, органик маҳсулотларнинг дунё бозоридаги айланмаси 2020-йилда 200-250 миллиард долларга етиши мумкин. Демак, органик деҳқончилик, қишлоқ хўжалиги ер юзидан аграр соҳа келажаги бор йўналиши эканлигини кўрсатмоқда. Бу тармоқ билан дунёнинг 160 давлати шуғулланади ва 84 мамлакатда органик қишлоқ хўжалиги тўғрисидаги ўз қонунлари ишлаб чиқилган [2].

Экологик тоза маҳсулот етиштириш жараёни, аynи вақтдаги қишлоқ хўжалигида қўлланиладиган технологиялардан кескин фарқ этиши билан фарқ қилади. Органик қишлоқ хўжалигида кимёвий ўғитлар, пестицидлар, антибиотиклар, гармонлар, ген - модификацияланган [ГМО] каби унсурлардан мутлоқ



фойдаланилмайди, аниқроғи уларни бекор қилади ва органик ва биологик ўғитлардан фойдаланилади.

Республикамизда етиштирилаётган маҳсулотлар таркибида инсон организми учун зарарли моддаларнинг кўплаб тўпланишидан қатъий назар минерал ўғитларга талаб йилдан-йилга ортиб бармоқда. Шунинг билан бирга минерал ўғитларни қўлланишда сарфланаётган харажатларнинг юқори бўлишига, ҳосил сифатига таъсир қилади ва тупроқ тузилмасининг бузилишига ҳамда тупроқларнинг шўрланишига олиб келмоқда. Шу сабабли айни вақтда Ҳукуматимиз раҳбари томонидан асосий эътибор тупроқ унумдорлигини кўтариш масаласига қаратилмоқда [1].

Дала тажрибалари 4 қайтариқта, 4,2 м² ҳисоб майдонида ўтказилди. Ўлимий тажрибаларда фенологик кузатишлар, биометрик ўлчамлар олиб борилди, маҳсулотнинг миқдори ва товарбоплиги аниқланди. Лаборатория шароитида 1000 дона уруғ массаси, униб чиқиш энергияси ва кўгарувчанлиги ўрганилди. Қўшимча баргдан Биоэнергия-М биопрепарати билан озиклантиришнинг ҳосилдорликка таъсири қай даражада бўлиши кузатилди. Олинган маълуматларга статистик таҳлил Доспехов [3] методикаси бўйича ўтказилди.

НАТИЖАЛАР ВА МУҲОКАМА

Помидорнинг тажриба хўжалигида вегетация даврида ўсиб ривожланишининг турли фазаларида Биоэнергия-М биопрепарати билан баргдан қўшимча озиклантиришнинг ўсимликка таъсири умумий қабул қилинган ва тасдиқланган методик усуллардан фойдаланиб олиб борилди.

Аждодларимиз, шу жумладан деҳқончилик билан шуғулланиб келган ғаллакорлар тупроқ унумдорлигини оширишда, тупроқнинг ҳар қандай қишлоқ хўжалиги экинини озуқа моддалар билан тўлиқ таъминлайдиган даражага олиб келиш имкониятлари мавжудлигини билган. Шу сабабли улар тупроқ унумдорлигини барқарор ошириш чораларини кўрган. Шу билан бирга олимлар тупроқ унумдорлигини кўтаришда ҳар хил ўғитлардан фойдаланиш билан бирга қўшимча баргдан озиклантиришнинг помидорнинг ҳосилдорлигига таъсирини ўрганишга, тупроққа органик ўғитлар билан бирга қўшимча баргдан озиклантирилганда тупроқда қандай ўзгаришлар юз беради, унумдорлигини кўрсатувчи микрофлора активлигини қай даражада ўзгаришини ўрганиш бўйича илмий тажрибаларимизди олиб бордик ва олинган маълуматларни статистик таҳлил ўтказдик [4].

Ҳукуматимиз томонидан қўйилаётган асосий талабларнинг бири, томорқа ер участкаларига эга ҳар битта оила эгаси ўз участкасидан самарали фойдаланиш ва ўз хўжалигини озиқ-овқат маҳсулотлари билан тўлиқ таъминлаши ва ортиғини бозорларга сотиб озиқ-овқат мўлчилигига эришиш ҳисобланади. Ушбу кўз-қарашдан келиб чиқиб, кичик уй олди томорқа участкаларидан помидордан юқори ҳосил олишда баргдан озиқлантириш усулининг таъсирини ўрганиш ва такомиллаштириш орқали сабзаёт экинларидан юқори ҳосил олиш усуларини ўрганиш муҳим.

Тажриба учун помидорнинг Волгоград 5/95 навини вегетация даврида Биоэнергия-М биопрепаратини қўллаш билан қўшимча баргдан озиқлантиришнинг ҳосилдорликка таъсирини ўргандик.

Тажрибада помидорнинг Волгоград 5/95 навини вегетация даврида ҳар хил вақтда ва ҳар хил саналарда баргдан қўшимча озиқлантирганимизда тажриба вариантларига алоқадор ўзгаришга учрашини кўрдик. Тажрибага статистикалик таҳлил қилганимизда фонга солиштирганимизда вегетация даврида 7 мартаба суспензия билан озиқлантирилган вариантта помидор бўйининг баландлиги 75,1 см, барглар ва гулларининг сони 3 ва 5 мартаба озиқлантирилган вариантга нисбатан сезиларли юқори бўлганлигини аниқланди. Бу вариантта фонга нисбатан ўсимлик баландлиги 6,4 см, барглар сони 7 ва гуллар сони 7 га ортиқ бўлганлиги аниқланди.

Жадвал

Ўғит меъёрлари ва баргдан қўшимча озиқлантириш муддатларининг помидорнинг ер устки қатламига мослашувчанлигига таъсири

Экиш муддатлари	Ўсимлик бўйи, см	Битта поядаги барглар сони, дона	Битта поядаги гуллар сони, дона
Органик ўғит 30 тонна/гектар (фон);	68,7	41	18
Органик ўғит 30 тонна/гектар +3 марта суспензия	70,1	43	20
Органик ўғит 30 тонна/гектар +5 марта суспензия	72,3	45	22
Органик ўғит 30 тонна/гектар +7 марта суспензия	75,1	48	25

ХУЛОСА

Тажрибаларимиздан олинган якуний натижаларга кўра, помидорнинг вегетация даврида 7 мартаба суспензия билан



озиқландирилган вариантга помидорнинг бўйи 75,1 см, барглар ва гулларининг сони 3 ва 5 мартаба озиқлантирилган вариантга нисбатан юқорирак бўлганлигини аниқланди. Фонга нисбатан ўсимлик бўйи 6,4 см, барглар сони 7 ва гуллар сони 7 га кўп бўлди.

REFERENCES

1. Ваҳобов А., Тиркашов Л. ва бошқалар. Шахсий томорқа участкаларида биогумус. Ўзбекистон қишлоқ хўжалиги журнали. №11, 2014. 35-39 б.
2. Долиев Т. Ортга қайтаётган одомзод Ўзбекистон қишлоқ хўжалиги журнали. №11, 2016. 45-49 б.
3. Доспехов Б.А. Методика полевого опыта. М., Агропромиздат, 1985.
4. Ҳазратқулов Ш. Экологик деҳқончилик нима?. Ўзбекистон қишлоқ хўжалиги журнали. 2011. №9, 28-29 б.



RUBUS CAESIUS L. NAVLARINING SUV ALMASHINUV XUSUSIYATLARI

Noila Shokirovna Jumakulova

Sh.Rashidov nomidagi Samarqand davlat universiteti Biokimyo instituti, doktorant
jumakulovanoila1@gmail.com

Flora Djabbarovna Kabulova

Sh.Rashidov nomidagi Samarqand davlat universiteti Biokimyo instituti,
professor

Alisher Nuraliyevich Xujanov

Sh.Rashidov nomidagi Samarqand davlat universiteti Biokimyo instituti, PhD
dotsent

ANNOTATSIYA

Ushbu maqolada *Rubus caesius* L. (maymunjon)ning Djambo, Tornfri, Karaka black, Brazos, Brzezina, Cacansca bestna, Chester navlarining suv almashinuv xususiyatlari haqida ma'lumotlar keltirilgan. Samarqand viloyati tuproq-iqlim sharoitida o'tkazilgan tadqiqot natijalari maymunjon navlarining morfologik, fiziologik xususiyatlari va ekish me'yorlari ko'rsatkichlari keltirilgan.

Kalit so'zlar. *Rubus caesius* L., maymunjon, nav, suv almashinuv xususiyatlari, suv saqlash qobiliyati.

ABSTRACT

This article provides information on the water exchange characteristics of *Rubus caesius* L. (monkey) varieties Djambo, Thornfree, Karaka black, Brazos, Brzezina, Cacansca bestna, Chester. The results of the research carried out in the soil-climatic conditions of Samarkand region, the morphological and physiological characteristics of the blackberry varieties and the indicators of planting norms are presented.

Keywords. *Rubus caesius* L., blackberry, variety, water exchange characteristics, water storage capacity.

KIRISH

Mamlakatimizda atrof muhitni muhofaza qilish, shahar va tumanlarda ekologik muhitni yaxshilash, "Yashil makon"



umummilliy loyihasini amalga oshirish borasida bir qator ishlar amalga oshirilmoqda. Ushbu loyiha doirasida har yil kamida 200 million tup daraxt ekish rejalashtirilgan va tarzda respublikaning 10 ta hududida aerobiologik monitoring tizimini yo'lga qo'yish ko'zda tutilmoqda. O'zbekiston Respublikasi Prezidentining 2022-yil 20-may, PQ-251-son "Dorivor o'simliklarni madaniy holda yetishtirish va qayta ishlash hamda davolashda ulardan keng foydalanishni tashkil etish chora-tadbirlari to'g'risida" qaroriga binoan insonlar sog'lig'iga alohida e'tibor berilishi, bugungi kunda dorivor o'simliklarga bo'lgan talab tobora ortib borishi, salomatlik sirlaridan xabardorlikning ortishi, keksa va surunkali kasalliklarga chalingan insonlarning immun tizimini faollashtirish uchun tabiiy vositalarni avzal ko'rilishi, tabiiy vositalarning mutloq zararsizligi investitsiyalar hajmining va xalqaro bozordagi dorivor o'simliklarga bo'lgan talabning keskin ortishiga sabab bo'lmoqda.

O'zbekiston tabiiy va geografik jihatdan dorivor o'simliklarga boy hudud hisoblanib, floramizda 4500 turga yaqin yuksak o'simliklar mavjud bo'lib, shundan 1200 ga yaqini dorivorlik xususiyatiga ega.

Bugun sohaga e'tiborning ortishi hamda mavjud imkoniyatlardan oqilona foydalanish natijasida respublika rasmiy tibbiyotida 100 dan ortiq turdagi dorivor o'simliklardan foydalanishga ruxsat berilgan bo'lib, ushbu dorivor o'simliklarning asosiy qismini tabiiy holda o'suvchi o'simliklar tashkil etadi. Ushbu tabiiy holda o'suvchi dorivor o'simliklarning xom ashyo zahirasi chegaralangan bo'lib, ularni muhofaza qilish, bioekologik xususiyatlarini o'rganish, xom ashyo zahirasidan to'g'ri foydalanish va ko'paytirishning ilmiy asoslangan usullarini ishlab chiqish dolzarb muammolardan biridir. Shuning uchun, O'zbekistonda farmatsevtika sanoatining ehtiyojlarini dorivor o'simliklar xom ashyosi bilan ta'minlash, mahalliy florani yangi introdutsent o'simlik turlari bilan boyitish va ularni yetishtirish texnologiyalarini ishlab chiqishni taqozo etmoqda [1].

O'simliklarning hayoti suv bilan bog'liq bo'lib, suv yetarli bo'lgandagina organizmda boradigan barcha fiziologik va biokimyoviy jarayonlar ma'lum izchillikda davom etadi. O'simlik hujayralaridagi suv miqdori 70-80% va ayrimlarida esa 95%ga yetadi. Suv hayotiy jarayonlar uchun zarur omil hisoblanib, barcha fiziologik va biokimyoviy jarayonlarda qatnashadi. Suv fotosintez va nafas olish, mineral oziqlanish, o'simlik tanasining turgor holati, moddalar transporti kabi jarayonlarda bevosita ishtirok etadi. O'simlik organizmda sodir bo'ladigan barcha hayotiy jarayonlarning jadalligi ularning suv bilan ta'minlanganlik darajasiga bog'liq bo'ladi [2,6].

Tashqi sharoit omillarining o'zgarishi ko'pchilik o'simliklarda suv miqdorining o'zgarishiga olib kelsa suv

taqchilligi o‘simlik barglari va to‘qimalarida suvning miqdori keskin kamayishiga sabab bo‘ladi [3,4].

Ma‘lumki, to‘qimalarda suv miqdorining kamayishi o‘simliklar tanasida boradigan asosiy fiziologik va biokimyoviy jarayonlarning sustlashishiga, natijada o‘simliklarning o‘sishi va rivojlanish jadalligining ham sustlashishiga sabab bo‘ladi. Respublikamiz qishloq xo‘jaligi asosan sug‘orma dehqonchilikka asoslanganligini hisobga olsak, qishloq xo‘jaligi ekinlarini yetishtirish va hosilning miqdori muayyan hududni, aniqroq aytganda, o‘simliklarni vegetatsiyasi davomida yetarli darajada suv bilan ta‘minlashga bog‘liqligi namoyon bo‘ladi.

Keyingi yillarda olimlar tomonidan o‘simliklarning noqulay tuproq-iqlim sharoitlari va turli xil stress omillar ta‘siriga chidamliligini oshirish maqsadida ularda kechadigan morfofiziologik vabiokimyoviy jarayonlarni tadqiq qilishga bo‘lgan talab ortib bormoqda [5,9].

ADABIYOTLAR TAHLILI VA METODOLOGIYA

O‘simliklardan yuqori va sifatli xom ashyo hosilini olish uchun avvalambor biologik xususiyatlarini chuqur o‘rganish orqali yetishtirishning zamonaviy agrotexnologiyalarni ishlab chiqarishga tadbiiq qilish zarur. Shu boisdan ham, bizning ilmiy tadqiqotlarimiz biologik talablar asosida Samarqand viloyati tuproq-iqlim sharoitida aholi uchun noan‘anaviy o‘simlik tikonsiz maymunjon (*Rubus caesius* L.) ning tik o‘sovchi: Brazos, Brzezina, Cacansca Bestrna, Chester navlari; Sudralib o‘sovchi: Karaka black navi; Yarim yotib o‘sovchi: Djambo, Tornfri navlarini “Adilov Rashid Agro Meva” fermer xo‘jaligida yetishtirish jarayonida ularning morfofiziologik xususiyatlarini o‘rganish maqsad qilinib olingan.

Tajriba maydonini tanlash, tatqiqot o‘tkazish, o‘simliklarning namunalarini olish va tahlil qilish, fenologik kuzatishlar, morfologik ko‘rsatkichlar suv rejimi metodlari amalga oshirildi.

O‘simliklarning suv bilan ta‘minlanishini tahlil qilish natijasida o‘rganilgan maymunjon navlarining ko‘pchiligi uchun rezavorlar pishishining turli bosqichlarida olib borildi. Suv miqdori va suv tanqisligi ko‘rsatkichlarini aniqlash uchun burglar novdalarining o‘rta qismidan olinib iyun - avgust oylarida (2021-2023 yil) aniqlandi. Statistika ma‘lumotlarni qayta ishlash “Dala eksperimenti metodologiyasi” metodi yordamida Exel kompyuter dasturi yordamida amalga oshirildi. O‘simlikni ekish tartibi 2,0×2,5 m [7].

MUHOKAMA VA NATIJALAR

O‘zbekiston sharoitida introduksiya qilinayotgan o‘simliklarni o‘rganishda ko‘pgina omillarga ya‘ni tuproq namlik va havo harorati asosiy me‘zon hisoblanadi. Shunday ekan, namlikning tanqisligi va yuqori harorat shu sharoitda o‘shishga moslashgan o‘simliklarning o‘shishi va rivojlanishini muayyan darajada belgilovchi omillardan bo‘lganligi bois, ularning suv rejimini o‘rganilishi talab qilinadi.

Ma‘lumki, o‘simliklarda transpiratsiya jadalligining pasayishi ularda suv saqlash qobiliyatining ko‘tarilishiga olib keladi. Sho‘rlagan tuproqlarga bir necha yil takroriy ekilgan o‘simlikning barglari shu tuproqlarga moslashganligi sababli sho‘rlagan tuproqlarga birinchi yili ekilgan o‘simlik barglariga qaraganda suv saqlash qobiliyatining yuqoriligi bilan ajralib turadi. Bu esa o‘simlikda bog‘langan suv miqdori yuqoriligi bilan izohlanadi. O‘simliklarning sho‘r tuproqlarda o‘shib, rivojlanishi va shu tuproqlarga moslashishi bilan barglarida suv saqlash qobiliyati oshib boradi [10,11].

Suv yo‘qotish tezligiga teskari jarayon barglarning suv saqlash qobiliyati hisoblanadi. Suv rejimining bu ko‘rsatkichi o‘simlikning turli suvsizlik darajasiga bardosh bera olish qobiliyatidan darak beradi.

Maymunjon navlarida suv rejimi ko‘rsatkichlarini aniqlashdan oldin biz Samarqand viloyatining yoz mavsumida o‘rtacha havo namligi (%) ga e‘tibor qaratdik. Natijalar 1-jadvalda keltirilgan.

1-jadval

Samarqand viloyatining yoz mavsumida o‘rtacha havo namligi (%).
(2021-2023)

Dekada	Yil/oy		
	iyun	iyul	avgust
2021			
I	22,2	11,7	2,5
II	20,4	31,4	3,5
III	8,6	28,2	1,7
Σ oyiga	17,1	23,8	2,6
2022			
I	14,7	14,2	0,2
II	20,6	41,6	6,4
III	11,2	10,7	0,1
Σ oyiga	15,5	18,9	2,3
2023			

I	28	29	26
II	27	27	24
III	24	25	23
Σ oyiga	26,3	27	24,3

Bizning tadqiqotlarimizda maymunjon navlari barglarining suv saqlash qobiliyati o'rganilganda bir muncha farqlar kuzatildi. Jumladan, maymunjon navlari barglarida suv saqlash qobiliyati o'rtacha qiymati mavsum davomida 16,1%, suv tanqisligi o'rtacha 17,4% ga o'zgarib turishi aniqlandi. Maymunjon rezavorlari pishish mavsumidan oldin suv miqdori eng yuqori bo'lgan ko'rsatkich Djambo navida (58,4%) kuzarildi. Mavsum oxirida bu ko'rsatkich 1% ga kamayganligi aniqlandi. Bu ko'rsatkichlar mos ravishda Chester navida 10% ga, Brzezina navida 11% ga, Cacansca Bestrna navida 13,6% ga kamaydi. Brazos navida 1,3%, Tornfre navida 2,6%, Karaca black navida 1,9% ga ortgan. Navlarda suv tanqisligi rezavorlar pishishi mavsumidan oldin yuqori ko'rsatkichga ega bo'lgan bo'lsa, mavsum oxirida bu ko'rsatkichlar sezilarli darajada kamayganligi kuzatildi. Ushbu natijalar Brazos navida 3,9%, Brzezina navida 1,8%, Cacansca Bestrna navida 1,6%, Chester navida 3,2%, Karaka black navida 1,3%, Djambo navida 5,6%, Tornfre navida 2,9% ni tashkil etadi (2-jadval).

2-jadval

Maymunjon navlari barglarining suv rejimi (umumiy suv miqdoriga nisbatan % hisobida)

Navlar nomi	Rezavorlar pishishidan oldin		Rezavorlarning pishish mavsumi		Rezavorlar pishish mavsumidan keyin	
	suv saqlash	suv tanqisligi	suv saqlash	suv tanqisligi	suv saqlash	suv tanqisligi
Tik o'suvchi navlar						
Brazos	57,6	15,8	59,1	11,2	58,9	11,9
Brzezina	56,8	15,4	45,9	13,4	45,8	13,6
Cacansca bestrna	56,8	17,2	43,4	14,5	43,2	15,6
Chester	57,5	17,4	48,5	12,8	47,5	14,2
Sudralib o'suvchi navlar						
Karaka black	55,3	14,5	59,2	23,8	57,2	24,2
Yarim yotib o'suvchi navlar						
Djambo	58,4	17,4	56,4	9,7	57,4	11,8

Tornfri	55,7	27,1	59,3	10,9	58,3	12,6
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Maymunjon navlari rezavorlar pishishi davrida suv miqdori eng yuqori ko'rsatkich Tornfre navida 59,3%, eng past ko'rsatkich Cacansca Bestrna navida 43,4% ni tashkil qilsa, suv tanqisligi Karaka black navida 23,8%, Djambo navida 9,7% ga ega ekanligi aniqlandi.

XULOSALAR

O'tkazilgan ilmiy tadqiqot ishlari bo'yicha quyidagi xulosaga kelindi:

Maymunjon navlarida rezavorlar pishish mavsumidan oldin maymunjonning suv saqlash qobiliyati bo'yicha eng yuqori ko'rsatkich Djambo navida (58,4%), kuzatildi. Ushbu ko'rsatkich bo'yicha eng past natija maymunjonning Karaka black navida (55,3%) kuzatilganligi aniqlandi. Suv taqchilligi eng yuqori ko'rsatkich Tornfe navida (27,1%), eng past ko'rsatkich Karaka black navida (14,5%) kuzatildi. Rezavorlar pishishi mavsumida va undan so'ng barglardagi suv miqdori eng yuqori ko'rsatkichlar Tornfre (59,3%), Brazos (58,9%) navlarida, eng past natija Cacansca Bestrna (43,2%) navida kuzatildi. Suv taqchilligi eng yuqori ko'rsatkich Karaka Black (23,8%) navida, eng past ko'rsatkich Djambo (9,7%) navida aniqlandi.

Turli morfologik shaklga ega bo'lgan maymunjon navlarining suv miqdori va suv tanqisligi bir-biridan farqli ravishda o'simlikning tashqi muhitda turli xil shaklda moshlashishiga asos bo'ladi. Shunga ko'ra eng yuqori suv ko'rsatkichi Tornfre (59,3%) navida, eng past natija Cacansca Bestrna (43,2%) navida kuzatildi. Suv tanqisligi eng yuqori bo'lgan nav Tornfre (27,1%), eng past ko'rsatkich esa Djambo (9,7%) navida aniqlandi.

Shunday qilib, o'tkazilgan tadqiqot natijalari maymunjon navlarining morfologik va fiziologik xususiyatlarining tahlil qilish asosida ushbu o'simlikni Samarqand viloyati tuproq-iqlim sharoitida ekish va yetishtirish mumkinligi aniqlandi.

Samarqand viloyatining unumdorligi past bo'lgan tuproqlarda, lalmikor maydonlarda maymunjonning yaxshi o'sib rivojlanadigan, sifatli texnologik hamda yuqori hosil ko'rsatkichga ega Djambo navlarini ekish yaxshi samara beradi.

REFERENCES

1. O'zbekiston Respublikasi Prezidentining 2022-yil 20-may, PQ-251-son "Dorivor o'simliklarni madaniy holda yetishtirish va qayta ishlash hamda davolashda ulardan keng foydalanishni tashkil etish chora-tadbirlari to'g'risida" qarori

2. Азизова Н.А. Водообмен и солеустойчивость сортов хлопчатника в условиях почвенной засоления и засухи// М.: «Международный Образовательный Центр», 2016. –С. 17-26.
3. Грюнер Л.А. Ежевика. // Помология. Земляника. Малина. Орехоплодные и редкие культуры. – Т.V / под ред. Е.Н. Седова, Л.А. Грюнер. Орел: ВНИИСПК, 2014. С.300-308
4. Грюнер Л.А., Кулешова О.В. Зимостойкость ежевики в условиях Орловской области при использовании зимнего укрытия и ретарданта ТУР // Современное садоводство –Contemporary horticulture. 2017. № 2. С. 1-9. DOI: 10.24411/2218-5275-2017-00020
5. Ерёмин Г.В., Гасанова Т.А. Изучение жаростойкости и засухоустойчивости сортов //Программа и методика сортоизучения плодовых, ягодных и орехоплодных культур / под ред. Е.Н. Седова, Т.П. Огольцовой. Орел: ВНИИСПК, 1999. С. 80–85.
6. Жолкевич В.Н., Гусев Н.А., Капля А.В Водный обмен растений// - М.: «Наука», 1989. С.-256.
7. Жумакулова Н.Ш, Кабулова Ф.Дж., Хужанов А.Н. Самарқанд вилояти шароитида тикансиз маймунжоннинг морфофизиологик хусусиятлари Academic research in educational sciences 2021 Vol 2 Issue № 9. pp. 818-825
8. Косаковская И.В. Физиолого-биохимические основы адаптации растений на стрессы// – Киев, 2003. С.-192.
9. Семенова Л.Г., Добренков Е.А. Адаптационный потенциал ежевики в условиях западного предгорья Северного Кавказа. Майкоп : Эдви, 2001. 73с.
10. Abdurakhimov U.K., Madaminov R.R., Jumaniyazov F.K., Doschanov J.S. Saint-Mary- Thistle (*Silybiummarianum* (L) Gaetn.); crop productivity, ways of sowing and standard quantity of seeding in condition of Khorezm region. // International journal for innovative research in multidisciplinary field (IJIRMF). Issue-11, Nowember-2018. India. 182-185 pp. №29-1. С.6-7.
11. Strik B.C., Finn C.E., Clark J.R., Pilar Bañados M. Worldwide Production of Blackberries // Acta Horticulturae. 2008. №777. P.209-218. DOI: 10.17660/ActaHortic.2008.777.31.



QORAQALPOG'ISTON SHAROYITIDA YETISHTIRILGAN JÓXORINING XALQ XÓJALIGIDA AHAMIYATI

Oygul Islambek qizi Kamolova

Qoraqalpo'giston qishloq xójaligi va agrotexnologiyalari instituti
3-bosqich talabasi

Azamat Serikbay ógli Saparbaev

Qoraqalpo'giston qishloq xójaligi va agrotexnologiyalari instituti
3-bosqich talabasi

Laylo Bóranbek qizi Norimmatova

Qoraqalpo'giston qishloq xójaligi va agrotexnologiyalari instituti
3-bosqich talabasi

ANNOTATSIYA

Jóxori unining juda katta miqdorda foydasi bor, undan turli xil narsalar tayyorlash mumkin. Suv resurslari bilan kam táminlangan hududlarda ham yetishtirsa bóladi, uni yetishtirish bu'gdoyni yetishtirish qiyin bólgan joylarda ham yetishtirsa mumkin.

Kalit sózlar: jóxori, don, un, oziq-ovqat, oqsil, kraxmal, kókat.

ABSTRACT

Sorghum has a huge number of benefits, you can cook many different things from it. It can be grown in areas with limited water resources, or it can be grown in places where it is difficult to grow wheat.

Keywords: sorghum, grain, flour, products, protein, starch, silage

KIRISH

Jóxori muhim don e'kini bólib oziq-ovqat, em-xashak, texnik va agrotexnik ahamiyatga e'ga. Donidan un tayorlanadi, kleykovina tarkibida kam bóladi, shuning uchun jóxori uniga 30-50 % bu'gdoyni qóshilib non yopiladi. Em sifatida doni, kókatni silos tayyorlash ushuni ishlatiladi. Jóxori qayta ósib yangi poyalar hosil qilish xususiyatiga ega, shuning uchun undan 2-3 marta kókat hosilini olish mumkin. Jóxorining donidan spirt, kraxmal olinadi. Qandli navlarining poyasidan shinni (qiyom), supurgisimon navlaridan esa xójalik supurgisi va har xil



shchyokalar tayorlanadi. Jóxorining kók massasi mollarga beriladi yoki silos bostiriladi. Jóxori poyasi dağallashguncha órilsa yaxshi pishan bóladi. Jóxorining 100 kg doni 119, kók massasi 23,5, silosi 22 va pishani 49,2 oziq birligiga teng. Doni tarkibida 15% protein bólib, lizinga boy. Jóxori qurgoqshilikka, shórga chidamli ekin.

Jo'xori donining 100 grammida 339 kkal ozuqaviy moddalar mavjud. Bundan tashqari jo'xori tarkibida 26% B1, 7% B2, 7% B5, 25% B6 vitaminlari mavjud.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Jóxori (*Sorghum Pers.*) - gálladoshlar (gállagullilar) oilasiga mansub bir va kóp yillik ósimliklar turkumi, don va yem-xashak ekini. Jóxorining 50 ga yaqin yovvoyi va madaniy turi bor. Donli jóxori (*Sorghum sernuum*; oq jóxori, qóqon jóxori, gaolyan va boshqalar), shirin jóxori (*Sorghum sassharatum*), durra jóxorisi (*Sorghum durra*), supurgi jóxorisi (*Sorghum teshnisum*), ótsimon jóxori (sudan óti — *Sorghum Sudanense*, ótsimon jóxori— *Sorghum alnum*) kabi bir yillik turlari kóproq ekiladi [4].

Vatani Markaziy Afrika. Miloddan avvalgi 4-3-ming yillikdan beri ekib kelinadi. Eron, Hindiston, Xitoy, AQShda va Afrika, Okeaniya, Avstraliya, O'rtasiy, Ukraina janubida ekiladi. Jahon bóyisha jóxori ekin maydonlari 43,6 mln.ga dan ortiq, yalpi hosili 68,2 mln. t, hosildorligi 14,4 s/ga. O'zbekistonda ekin maydoni 9 ming gektarga yaqin maydonga ekiladi. Aytish joizki, Qoraqalpog'iston hududida yetishirtirilgan jo'xori o'ziga xosliklarga ega. Jóxori suv resurslari kam táminlangan hududlarda ham ekiladi. Asosan jóxorining oq jóxori va qora jóxori navi kóproq ekiladi. Sababi oq va qora jóxorining unida juda kóp mikro va makro elementlar hamda vitaminlar bor bólib, ushbu maqolada shu jóxorining unini non va non mahsulotlari ishlab shiqarishda ularni jóxori uni bilan boyitish asosan oq jóxori haqida málumotlar berilgan [1,2,3].

NATIHALARI VA MUHOKAMA

Jo'xorining kimyoviy tarkibi órganish maqsadida ekilgan tajriba maydonlarida agrotexnik tadbirlar umumiy qabul qilingan qóllanma asosida olib borildi. Jo'xorining kimyoviy tarkibi-odatda quruq vazniga qarab taxminan 7-16% oqsil, 55-75% kraxmal, 0,5-5% lipidlar, 1-6% tola, 1-1,45% kul saqlaydi.

Oqsil miqdori: Jo'xori donining ikkinshi asosiy komponenti oqsildir. Irsiy va atrof-muhit omillari jo'xori tarkibidagi oqsilga ta'sir qiladi. Oqsilning taxminan 80% endaspermda, 16% embrionda, 3% qopigida mavjud. To'liq jo'xori donidagi oqsil miqdori 7-15% gasha. Sodeks alimentarius jo'xori oqsil miqdori minimal darajada 8,5% bo'lishini tafsiya etadi.

Jami uglevodlar: Kraxmal jo'xori tarkibida uglevodlarni saqlaydi. Jo'xori tarkibida kraxmal 56% dan 73% gasha bo'ladi. Jo'xori kraxmalining taxminan 70-80% amilopektik qolgan 20-30% amiloza, Butun jo'xori unining uglevod miqdori taxminan 74,63% tashkil qiladi.

Vitamin va minerallar: Jo'xori ma'gzida mineral moddalar notekis taqsimlangan va ko'proq urug' va urug' qobigida topilgan. Ko'pgina ma'lumotlarga ko'ra, maydalangan jo'xori uni vitamin va minerallarga boy. Hozirda jo'xori unidan tayyorlangan non va non mahsulotlari juda to'yimli hamda ozuqaviy jihatidan juda turli xil minerallar, vitaminlar bilan boyitilgan. Buning natijasida oddiy bug'doy unidan tayyorlangan mahsulotlarga nisbatan ozuqaviy qiymati yuqori hisoblanadi. Quyida non jo'xori uni qoshib qorilgan hamir haqida ma'lumotlar berilgan.

Non tayyorlash ushuni biz dastlab non retseptini tanladik. So'ngra bug'doy va jo'xori unini 5 xil miqdorda solib xamir tayyorladik. Biz 5 xil namuna tayyorladik va uni bir biridan farqini aniqladik. Hamir tayyorlash ushuni retseptura:

Joxoridan foydalanish: Yuvilgan jo'xori qobigi yo'q, maydalangan jo'xori bo'lib, ular tolaga va ozuqaviy foydali xususiyatlarga ega. Minimal qayta ishlash tufayli don eng foydali jo'xori uni mahsuloti hisoblanadi. Biroq, bunday qayta ishlash donni bo'tqa pishirishga vaqtlari bo'lmaganlar ushuni juda qulay emas: 40 dan 60 daqiqagacha davom etadi. Hersules - jo'xori qayta ishlangan donasi. U tozalanadi, silliqilanadi, yarmiga bo'linadi va tekislanadi. Ushbu qayta ishlash usuli bilan ba'zi foydali moddalar yo'qoladi, lekin faqat qisman - gerkules foydalari jihatidan jo'xori unidan bir oz pastroq. U donga qaraganda bir nasha baravar tezroq tayyorlanadi, uni faqat 15-20 daqiqada pishirish kerak. Demak shuni aytish mumkinki joxorini unidan tezroq narsa tayyorlash mumkin. Donidan tayyorlaganda ko'proq vaqt talab qiladi.

Jo'xori unidan ko'p maqsadlarda foydalanish mumkin uni "atlama bo'tqa" ga o'xshashligini ko'rgansiz: u shilimshiq, ta'msiz va tashqi ko'rinishida mutlaqo yoqimsiz bo'lib qoladi. Agar siz uni noto'g'ri pishirsangiz, bu sodir bo'ladi.

Oq jo'xori oziq-ovqat, yem-hashak va texnikaviy maqsadlarda foydalaniladigan eng muhim donli ekinlardan biridir. O'zbekiston sharoitida oqjo'xori qur'g'oqshilikka, sho'rga shidamli ekin sifatida katta ahamiyatga ega. Tuproqlari sho'r mintaqalarda Qoraqolpo'g'iston respublikasi, Xorazm, Buxoro, Navoiy, Sirdaryo, Jizzax viloyatlarida u makkajo'xori va arpaga nisbatan yuqori hosil beradi. Oq jo'xorining doni Markaziy Osiyo halqlari shu jumladan O'zbekistonda ham ikkinshi jahon o'rushigacha va 1950 yillargacha asosiy oziq-ovqat ekinlaridan biri hisoblangan. Donidan tanqis milliy taom go'ja tayyorlanadi. Qoramollar ushun uning doni qimmatli oziqa, omixta yem va kraxmal, spirt ishlab shiqaruvshi sanoat ushun qimmatli hom ashyo. Afrika, Hindiston va Sharqiy Osiyo mamlakatlarida oqjo'xori hozir ham asosiy oziq-ovqat ekini. Sug'oriladigan yerlarda, O'zbekiston sharoitida oqjo'xori bir nasha marta o'ribolinadi. Uning yashil massasi silos yoki pishan tayyorlashda ishlatiladi.

XULOSA

Insonlar qashonki to'yimli ovqat yeb olishsagina ulardagi immunitet yaxshi ishlaydi va ularni har xil kasalliklardan himoya qiladi bu isbotlangan narsa. Joxori unidagi turli xil minerallar va vitaminlar sababli joxori unidan tayyorlangan non va non mahsulotlarini iste'mol qilish orqali insonlar oz immun tizimini yaxshilash boladi. Ushbu maqolada xulosa qilib shuni aytish mumkinki yuqorida asosiy qismda keltirilib otilgan malumotlarga tayangan holda, joxori unining juda katta miqdorda foydasi bor. Undan turli xil narsalar tayyorlash mumkin. Suv resurslari bilan kam taminlangan hududlarda ham yetishtirsa boladi. Uni yetishtirish bu'g'doyni yetishtirish qiyin bolgan joylarda ham yetishtirsa boladi.

REFERENCES

1. R. Normaxmatov, G.Y. Pardayev, Sh.I. Ismoilov "Oziq-ovqat mahsulotlari ekspertizasi obektlari" Toshkent-2019.
2. S. Tursunov, Z. Muqimov, B. Norinboyev "Donni saqlash va dastlabki ishlash texnologiyasi" Toshkent-2019.
3. X.N. Atabayeva, J.B. Xudayqulov "O'simlikshunoslik" Toshkent-2018.
4. <http://library.ziyonet.uz> internet sayti.



TA'LIMNI RAQAMLASHTIRISH SHAROITIDA O'QUVCHILARINI AXBOROT MADANIYATINI SHAKLLANTIPIH PEDAGOGIK MUAMMO SIFATIDA

Dilmurod Roxatullaevich Raxmatullayev

Pedagogik innovatsiyalar instituti mustaqil tadqiqotchisi

ANNOTATSIYA

Ushbu maqolada o'quvchilarning axborot madaniyati mazmuni, raqamlashgan jamiyat talablari, ta'lim jarayonida axborot madaniyatini o'rni va ahamiyati, axborot madaniyatini shakllantirishning pedagogik muammolari yoritib berilgan.

Tayanch so'zlar: internet, axborot, axborot madaniyati, axborot maydoni, axborot oqimi, glaballashuv.

ABSTRACT

This article describes the content of the information culture of students, the requirements of the digital society, the place and importance of the information culture in the educational process, and the pedagogical problems of the formation of the information culture.

Keywords: Internet, information, information culture, information space, information flow, globalization.

KIRISH

Raqamli jamiyatga o'tish jarayonida inson faoliyatining turli sohalarini axborotlashtirilishi va raqamlashtirilishi jamiyatda axborot madaniyatini shakllantirishning zaruriyatini oshiradi. Hozirgi bosqichda jamiyatning axborot madaniyatini shaxsning axborot madaniyati darajasiga olib chiqish masalasi qo'yilmoqda. Zamonaviy jamiyat hayotiga raqamli texnologiyalarni jadal joriy etish axborot makonini shakllantirish va elektron ta'lim tizimlarini rivojlantirish, ta'lim muassasalarida raqamli ta'lim muhitini tashkil etish, ta'limga yondashuvlarni va paradigmalarni qayta ko'rib chiqish, shuningdek, ta'lim tizimini takomillashtirish to'g'risida yangi ilmiy va pedagogik g'oyalarni shakllantirishiga olib keladi. Raqamli va axborot texnologiyalarini ta'lim tizimiga va o'quv jarayoniga keng joriy etish dunyo miqyosidagi tendensiya sifatida shakllanib bormoqda.

Raqamli jamiyat va uning tuzilmasi qanday? Raqamli jamiyat - bu raqamli texnologiyalar, xususan, katta xajmdagi axborotlar, sun'iy intellekt, algoritmlar va algoritmik tizimlar,



bulutli hisoblash va blokchen, platformalar va boshqa raqamli texnologiyalar orqali ishlaydi jamiyatni tashkil etish va jamiyatdagi ijtimoiy o'zaro ta'sirning asosiy shakli. Raqamlashtirishni raqamli texnologiyalarning ijtimoiy hayotning barcha sohalariga kirib borishi va integratsiyalashuvida ko'rinadi. Raqamlashtirish quyidagi jarayonlar to'plami sifatida aks etadi: tarmoqlashtirish, tanishish, platformalashtirish va algoritmlashtirish. Ularning har biri raqamli jamiyatning texnologik infratuzilmasi — tarmoq, texnologiya elementlariga asoslangan katta xajmdagi ma'lumotlar, platformalar va algoritmlardir. Ushbu texnologik infratuzilma, o'z navbatida, zamonaviy raqamli dunyoning super aloqasi, murakkabligi va harakatchanligini ta'minlaydi [1,2].

Shu bilan birga, ta'lim sohasini texnologik yangilash bosqichi vazifasini bajaruvchi ta'limni kompyuterlashtirish, ta'lim jarayoniga kompyuter texnologiyalarini joriy etish bilan birga, ta'lim jarayonini kompyuter asosiga o'tkazishni, kompyuterli o'qitish usullarini yaratishni, kompyuterli o'qitish tizimlari va o'rgatuvchi dasturlarni tasvirlaydi.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Raqamli jamiyatning kommunikativ muhiti juda xilma-xil va ochiq bo'lib, u tarmoq tugunlari bo'lgan turli manbalardan kodlar va xabarlarini birlashtirishga imkon beradi. Har qanday moliyaviy operatsiyalar, telefon qo'ng'iroqlari, internetdagi yoki ijtimoiy tarmoqlardagi qidiruv so'rovlari, elektron pochta, ijtimoiy tarmoq saytlaridagi aloqa ma'lumotlari yagona aloqa muhitiga birlashtirilganda raqamli kuzatuvning majburiy elementiga aylanadi. Bu esa, raqamli jamiyatning o'ziga xosligini anglatadi va axborot madaniyatiga bo'lgan ehtiyojni ko'rsatadi.

Raqamli texnologiyalarning paydo bo'lishi telekommunikatsion sohada tub o'zgarishlarga olib keldi. An'anaviy tovushli aloqa xizmatlari Internet, ma'lumotlarni uzatish, mobil aloqa kabi interaktiv xizmatlar bilan o'rin almashmoqda.

Ta'lim tizimida yangi axborot texnologiyalarining roli va ahamiyati ko'plab mualliflar tomonidan ko'rib chiqiladi. Xususan, ta'lim jarayonida kompyuter texnologiyalaridan foydalanish bo'yicha A.A.Abduqodirov[3,4], U.Sh.Begimqulov[5,6], J.A.Hamidov[7] kabi olimlar ilmiy-tadqiqotlar olib borganlar.

Xorijiy tadqiqotlarda ta'limni raqamlashtirish tashkiliy masalalar, texnologik infratuzilmadan boshlanib, pedagogik yondashuvlar bilan yakunlanadigan turli jihatlarni o'z ichiga oladi hamda interaktiv va moslashuvchan ta'lim dasturlarini taklif qilish orqali xalqaro miqyosda tashkillashtirishga ta'sir qiladi. Deyarli barcha tadqiqotlar ta'limni raqamlashtirish odamlarni jamiyatdagi o'zgarishlarga va kasbiy muhitga



moslashtirishning moslashuvchan ko'nikmalarini rivojlantirishga olib keladi degan tushuncha bilan bog'liq [8].

Raqamlashtirish ta'lim va boshqaruv uchun yangi imkoniyatlar yaratib, ma'lumotlar yig'ish va tahlil qilish, o'zaro hamkorlik va muloqot qilishni osonlashtirdi. Raqamlashtirishning afzalliklari samaradorlikni oshirish, ta'lim oluvchilar faolligini oshirish, shaxsga qaratilgan ta'lim va yangi o'qitish usullaridan foydalanishni o'z ichiga oladi. Bundan tashqari, raqamlashtirish ta'lim muassasalarini, o'quv dasturlarini, professor-o'qituvchilarni, xodimlarni va resurslarni boshqarishni osonlashtiradi.

Raqamlashtirishning asosiy afzalliklaridan biri bu o'quvchilarning faolligini oshirish imkoniyatlaridir. Onlayn ta'lim platformalari, ijtimoiy tarmoqlar va mobil ilovalar kabi raqamli vositalardan foydalangan holda universitetlar o'quvchilarni motivatsiya va yo'lda ushlab turadigan interaktiv hamda qiziqarli ta'lim tajribalarini yaratishi mumkin.

Ta'lim tizimining raqamlashtirish bosqichiga o'tishi jamiyatni raqamli davrga ishonchli o'tishni va iqtisodiyotni raqamli o'zgartirishni axborot texnologiyalari, texnologik jarayonlarni avtomatlashtirish va axborot xavfsizligi sohasidagi yuqori malakali mutaxassislar bilan ta'minlashni ta'minlashi kerak. Raqamli transformatsiya tufayli zamonaviy sharoitda oliy ta'lim tizimining rivojlanishi o'quv jarayonini qurishga, shu jumladan ilg'or o'quv texnologiyalaridan foydalangan holda zamonaviy elektron axborot-ta'lim muhitini yaratishga, ta'limni boshqarish strategiyasini amalga oshirishga va individual xususiyatlarga asoslangan o'quv materiallarini moslashtirishga yangi talablarni qo'yadi.

Glaballashuv davrida ta'lim sohasi shaxsning axborot madaniyatini shakllantirishga eng katta ta'sir ko'rsatadi. Buning uchun ta'lim jarayonida shaxsning axborot madaniyati va uning asosiy elementlari shakllanishi kerak.

NATIJALAR

Jamiyatni raqamlashtirish pedagogik faoliyatga sezilarli o'zgarishlar kiritadi, ko'p jihatdan fikrlashning mohiyati, rasmiy va norasmiy, reproduktiv (algoritmik) va ijodiy fikrlash va faoliyatdagi munosabatlar to'g'risida yangi savollar tug'diradi. Va bu vazifa, ayniqsa, dunyoning eng rivojlangan mamlakatlari raqamli jamiyat davriga kirgan sharoitda dolzarb bo'lib qoladi.

Shu bilan birga, ilmiy-texnik taraqqiyot ta'limga bo'lgan yondashuvlarning o'zgarishiga, ta'limga bo'lgan ehtiyojning oshishiga olib keldi, bu ta'lim jarayoniga kiritilganlar sonining miqdoriy o'sishida namoyon bo'ladi: eng rivojlangan mamlakatlarda yoshlarning



aksariyati o'rta maktabni tugatishni boshladilar va ularning yarmidan ko'pi kollej, institut va universitetlarda o'qishni davom ettirmoqdalar. O'qitish nafaqat yoshlarga, balki butun aholiga ham tatbiq etilib, qayta tayyorlash, kadrlar malakasini oshirish, universitetdan keyingi bosqichlar va qo'shimcha ta'lim shakllarini oldi.

Bir tomondan, ta'limning vazifasi yuqori malakali mutaxassislarni, yuqori shaxsiy fazilatlariga, dunyoqarashga, ma'naviyatga ega bo'lgan muayyan faoliyat turidagi mutaxassislarni tayyorlashdir. Boshqa tomondan, bu fazilatlarni shaxsning faol hayoti davomida saqlab turishni ta'minlashda. Boshqacha qilib aytganda, bu odamni o'rganishga o'rgatishdir.

Bo'lajak mutaxassisning axborot madaniyati shaxsiga yo'naltirilgan ta'lim texnologiyalarini hisobga olgan holda shakllantirish AKT vositalari, axborot tarmoqlari imkoniyatlaridan samarali foydalanishni nazarda tutadi. Buning uchun ta'limni yangi shakllarini, o'qitish usullarini rivojlantirish, raqamli jamiyatini rivojlantirishning zamonaviy tendensiyalariga muvofiq ularning kasbiy darajasini doimiy ravishda oshirishga e'tibor berishni talab qiladi.

MUHOKAMA

Bugungi kunda professional ta'limi yo'nalishining muhim xususiyatlari kompyuter texnologiyalari va axborot vositalarining professional ta'lim o'quvchisi shaxsini shakllantirish va rivojlantirish jarayoniga ta'sirini o'rganishga undashi, axborotlashtirish asosida ta'lim sohasini yangilashning mohiyati va maqsadlarini, shu jumladan kasbiy rivojlantirishning muhim jarayonini anglash uchun sharoit yaratish-bularning barchasi dolzarb vazifaga aylanmoqda.

Bo'lajak mutaxassisning kasbiy rivojlanishi kasbiy faoliyatga asoslangan va shaxsiy xususiyatga ega bo'lgan yana bir muhim omil bilan tavsiflanadi - bu kasbiy maadniyatidir. Kasbiy madaniyat bo'lajak mutaxassislarning kasbiy ahamiyatli fazilatlari sifatida olimlar tomonidan uzoq vaqtdan beri ko'rib chiqilib, ushbu konsepsiya mazmunan to'ldirilib bormoqda. Xususan, XXI asr mutaxassisi kasbiy madaniyati tarkibiga axborot madaniyati kiritildi.

Bo'lajak mutaxassisning kasbiy rivojlanishi deganda kasbga oid bilim va ko'nikmalar, qobiliyatlar, shaxsiy xususiyatlarning o'sishi, shakllanishi, amalga oshirilishi, ichki dunyosini faol ravishda sifatli o'zgartirishi, kasbiy faoliyatning ijodiy usullarini amalga oshirishga olib kelishi tushuniladi.

XULOSA

Ta'limni axborotlashtirishning zamonaviy darajasi nafaqat kasbiy rivojlanishning yangi shakllari va usullarini joriy etadi,



balki bu konsepsiyaning mohiyatini sifat jihatidan o'zgartiradi, bunda pedagogik yo'nalish, pedagogik kompetensiya, ijodiy faoliyat va o'z-o'zini tarbiyalash faoliyati kabi tarkibiy qismlarning yangi xususiyatlari paydo bo'ladi.

Shunday qilib, biz ko'tarib chiqqan muammoning holatini o'rganish quyidagilarni aniqladi: raqamli jamiyatda axborot madaniyatini shakllantirish muhim, dolzarb, va shu bilan birga, kam tadqiq qilingan muammolar sirasiga kiradi. Muammoni hal qilish uchun yaxshigina tajriba to'plangan, uning nazariy asosining ahamiyati bunga misol bo'ladi; uchinchi, davr talabiga, raqamlashgan jamiyat ehtiyojlariga hamda professional ta'lim muassasalaridagi axborot madaniyatiga ega bo'lajak mutaxassis modeli ishlab chiqilgandagina uni samarali yechimini topish mumkin.

REFERENCES

1. Добринская Д.Е. Цифровое общество в социологической перспективе // Вестник Московского университета. Сер. 18: Социология и политология. 2019. Т. 25. № 4. С. 175–192. DOI: 10.24290/1029-3736-2019-25-4-175-192.
2. Добринская Д.Е., Мартыненко Т.С. Цифровой разрыв в России: Особенности и тенденции // Мониторинг общественного мнения: Экономические и социальные перспективы. 2019. № 5. С. 100–119. DOI: 10.14515/monitoring.2019.5.06.
3. Abduqodirov A., Pardaev A. Masofali o'qitish nazariyasi va amaliyoti. Monografiya. – T.: Fan, 2009. 145 b.
4. Abduqodirov A.A. Bo'lajak o'qituvchilarning axborot kommunikatsiya texnologiyalariga oid kompetentligi. — Pedagogning shaxsiy va kasbiy axborot maydonini loyihalashda axborot kommunikatsiya texnologiyalariga oid kompetensiyalar mavzusidagi ilmiy-amaliy anjuman materialari. – T.: TDPU, 2015. 3 b.
5. Begimqulov U.Sh. Pedagogik ta'lim jarayonlarini axborotlash-tirishni tashkil etish va boshqarish nazariyasi va amaliyoti. Ped. fan. dokt. ... diss. – T.: 2007. – 305 b.
6. Begimqulov U.Sh. Pedagogik ta'lim jarayonlarini axborotlashtirishni tashkil etish va boshqarish nazariyasi va amaliyoti: Ped.fan.dok. ...diss. – T., 2007. – 305 b.
7. Hamidov J.A. Ta'lim jarayonida axborot texnologiyalarini qo'llash o'qitish samaradorligini oshirish omili // Kasb-hunar ta'limi.-Toshkent, 2013.- № 6.-B. 15-20.
8. Anarbaeva F.U., Qoraev A.F. Ta'lim jarayonini raqamlashtirish. Analytical Journal of Education and Development. Volume: 02 Issue: 07 | Jul-2022 ISSN: 2181-2624. – B.6-9.



БИОАЗОТ ПРЕПАРАТИНИ ҚЎЛЛАШНИНГ БАҲОРГИ ҲОСИЛДОРЛИГИГА ТАЪСИРИ

Азамат Серикбай ўғли Сапарбаев

Қорақалпоғистон қишлоқ хўжалиги ва агротехнологиялари институти
3-босқич талабаси

Гулайхан Рейимбай қизи Джанабаева

Қорақалпоғистон қишлоқ хўжалиги ва агротехнологиялари институти
4-босқич талабаси

Хусан Соли ўғли Ҳожиев

Қорақалпоғистон қишлоқ хўжалиги ва агротехнологиялари институти
2-босқич талабаси

АННОТАЦИЯ

Тадқиқотларимизда юмшоқ буғдойнинг дуварак навларини баҳорги экин сифатида Оролбўйи ҳудуди тупроқ иқлим шароитида етиштириш ҳамда баҳорги буғдой навларининг ҳосилдорлигининг маълум бир даражада ортиб бориши билан бирга шу ҳудудга мослашган навлар сони камайиб бориши исботланди.

Калит сўзлар: буғдой, дон, ҳосилдорлик, клейковина, оқсил, нав, дуварак, тупроқ.

ABSTRACT

In our studies, it was proved that the Aral Sea region as a spring crop of soft wheat is cultivated in soil climatic conditions, as well as the number of varieties adapted to this area decreases with a certain increase in the yield of spring wheat varieties.

Keywords: wheat, grain, yield, gluten, protein, variety, optional, soil.

КИРИШ

Республикамизда касаллик ва зараркунандаларга чидамли, рентабеллиги юқори, рақобатбардош, дон сифати аҳоли талабларига жавоб берадиган янги буғдой навларини яратиш бўйича кенг қамровли илмий-тадқиқот ишлари олиб борилмоқда. Мазкур йўналишда амалга оширилган дастурлар асосида занг касалликларига ва



қўрқоқчиликка чидамли бўлган навлар яратилган. Ўзбекистон Республикасини янада ривожлантиришнинг тараққиёт стратегиясида “Қишлоқ хўжалигини илмий асосда интенсив ривожлантириш орқали деҳқон ва фермерлар даромадини камида 2 баравар ошириш, қишлоқ хўжалигининг йиллик ўсишини камида 5 фоизга етказиш” [1] вазифалари белгилаб берилган. Мазкур вазифалардан келиб чиққан ҳолда, маҳаллий шароитларга чидамли янги, серҳосил, турғун, юқори сифатли дон бераоладиган буғдой навларни яратишда бошланғич манбаларини танлаш, уларни ўрганиш ва селекция дастурларида фойдаланиш муҳим аҳамият касб этади.

Дунёда буғдой энг муҳим озиқ-овқат экинларидан бири ҳисобланиб, йилдан-йилга аҳоли сонининг кўпайиб бораётганлиги сабабли, дон маҳсулотларига бўлган эҳтиёж ҳам ортиб бормоқда. ФАО маълумотларига кўра, 2022 йилда буғдой донининг жаҳон бўйича ишлаб чиқарилиши 783,8 млн тоннани ташкил этган. Буғдой дони етиштиришни янада кўпайтириш, асосан ҳосилдорликни ошириш ва турли стресс омиллар таъсирида йўқотишларни камайтириш ҳисобига амалга оширилади. Юқори маҳсулдор навларнинг генетик салоҳиятидан ишлаб чиқариш шароитида атиги 25-40% дан фойдаланилади ва ҳозирги вақтда юқори ҳосилни юқори дон сифати билан уйғунлаштириш замонвий селекциянинг энг муҳим вазифаларидан бири ҳисобланади.

Дунёда ноқулай экологик омилларга чидамли ва барқарор ҳосил берувчи буғдойнинг янги навларини яратишда унинг генетик ресурслари хилма-хиллигидан кенг фойдаланиш бўйича илмий-тадқиқот ишлари олиб борилмоқда. Бу борада буғдойнинг замонвий ишлаб чиқариш талабларига жавоб берадиган навларини яратиш учун генетик жиҳатдан узоқ шаклларни дурагайлашда юқори оқсилли, клейковина ва лизин миқдори юқори бўлган ёввойи, ярим ёввойи ва қадимий маҳаллий шаклларида фойдаланиш, атроф муҳитнинг ноқулай омилларига чидамли, серҳосил ва сифатли навларни яратиш муҳим аҳамият касб этади.

АДАБИЁТЛАР ТАҲЛИЛИ ВА МЕТОДОЛОГИЯ

Буғдой ўсимлигининг кенг диапазонли иссиқлик, ёруғлик ва тупроқ шароитларида етиштириладиган камёб экинлар сирасига киради. Муаллифнинг фикри бўйича, буғдой мўтадил иқлимли ҳудудларда жазирама даштдан то совуқ шимол минтақаларигача бўлган ҳудудларда етиштирилади. Бунда юқорида қайд этилган минтақаларда буғдойнинг кузги (мўтадил зона барча майдонларининг $\frac{3}{4}$



қисми) ва баҳорги тезпишар совуққа чидамли навлари устунлик қилади. Қайд этилган минтақалардаги навлар уруғининг униб чиқиши ва униб чиққан ўсимликлар шаклланиши учун 12 -14°C ҳарорат етарли бўлиб, бунда ёш ўсимликлар қисқа муддатли музламаларга бардошли бўлади. Буғдой ўсимлиги бошқа бошоқли ўсимликлардан фарқли ўлароқ унинг генератив фазаларининг ўтиши учун (поялаш, туплаш, гуллаш, пишиш) ўртача кунлик ҳарорат 18 дан 28°C гача кўтарилишини талаб этилади. Ўсимликнинг вегетация даври давомида фаол ҳароратлар суммаси (10°C дан юқори) 1200-1700° С дан паст бўлмаслигини лозим [4].

Кўпчилик тадқиқотчиларнинг атроф-муҳит шароитини буғдойнинг технологик хусусиятлари ва ундан тайёрланган уннинг реологик хусусиятларига таъсирини ўрганиш бўйича олиб борилган тадқиқотларида [3] кўрсатилишича, ун ва хамирнинг технологик хусусиятларини белгиловчи генетик маълумотларни амалга оширишда таъсир этувчи омилларга: ўсимликларни намлик билан таъминланганлиги, ҳарорат, тупроқдаги ҳамда атмосфера ҳавосидаги кимёвий элементлар таркибининг ўзгариши каби омилларга боғлиқ.

Буғдой дони сифатига намлик билан таъминланганлик ва ҳарорат режимининг таъсирини ўрганиш бўйича олиб борган тадқиқотларида кўрсатишича, чангланишдан кейинги юқори ҳарорат кўринишдаги абиотик стресс (зарба) захира тўпланиши учун керак бўлган крахмал етказиб берилишини чеклаб қўяди. Муаллифларнинг таъкидлашича, дон етилиши давридаги ҳарорат зарбаси ундаги оқсил таркибини ва уннинг кучини оширади, бироқ, ҳароратнинг 30°C дан ошишиши шароитида оқсил ва крахмалнинг таркиби ўзгариши натижасида хамирнинг физик хоссаларига жиддий таъсир кўрсатиб, бунда крахмалнинг биосинтези аҳамиятли ва оқсилники эса аҳамиятсиз равишда ўзгаради [5].

Дала тажрибалари 4 қайтариқта, 4 м² ҳисоб майдонида ўтказилди. Илмий тажрибаларда фенологик кузатишлар, биометрик ўлчамлар олиб борилди, маҳсулотнинг миқдори ва товарбоплиги аниқланди. Лаборатория шароитида 1000 дона уруғ массаси, униб чиқиш энергияси ва кўгарувчанлиги ўрганилди. Қўшимча баргдан Биоазот биопрепарати билан озиклантиришнинг ҳосилдорликка таъсири қай даражада бўлиши кузатилди. Олинган маълумотларга статистик таҳлил Доспехов [2] методикаси бўйича ўтказилди.

НАТИЖАЛАР ВА МУҲОКАМА

Бугунги кунда Республикамизда ғаллачиликни ривожлантиришнинг асосий йўналишлардан бири ғаллачиликда моддий техника таъминотини мустаҳкамлаш, юқори дон ҳосилини бериш билан бирга ташқи муҳитнинг ноқулай шароитларига чидамли бошоқли дон экинларини янги навларини яратиш, ва уларни уруғчилигини ташкил этиш ва бошоқли дон экинларни етиштириш агротехникасини ишлаб чиқишдир.

Қишлоқ хўжалик экинларидан юқори ва сифатли ҳосил етиштиришнинг энг қулай ва арзон усули бу сифат кўрсаткичлари юқори бўлган уруғликларни экишдир. Маълумки сифатли сара уруғликларни экилиши натижасида ҳосилдорлик 25-30 фоизга ошиши олимларимиз тажрибаларида ва деҳқонларимиз амалиётида ўз исботини топган.

Бугунги куннинг талаби бўйича экилган буғдой навлари юқори ҳосилли бўлибгина қолмасдан унинг дон таркибидаги клейковина, шаффофлиги ва оқсил миқдори Давлат андозаларига жавоб берадиган бўлиши керак. Чунки буғдой унидан тайёрланадиган нон ва нон маҳсулотларининг сифатли, юқоридаги моддаларнинг миқдори билан белгиланади.

Республикамиз ва Оролбўйи минтақаларида иссиқликнинг таъсири, қурғоқчилик ва тупроқ шўрланиши буғдой етиштиришда айниқса дон тўлиш фазасида рўй берадиган охириги юқори ҳарорат кучли таъсир кўрсатмоқда. Бунинг оқибатида ҳосилдорлик кескин пасайиб кетиши ва доннинг сифат даражаси талаб даражасида бўлмапти. Дон тўлиш даврида об-ҳавонинг кескин кўтарилиши донни физиологик тўлиқ етилиши, ҳосилдорликнинг тушуши, 1000 та дон вазни ва сифат даражасини камайишига олиб келмоқда.

Оролбўйи минтақалари тупроқ ва иқлим шароитларида абиотик омилларга чидамли бўлган навларни экин майдонини кенгайтириш учун ушбу навларни уруғчилик тизимини йўлга қўйиш ва сифатли уруғликлар билан таъминлаш тадқиқотларнинг муҳим омилидир.

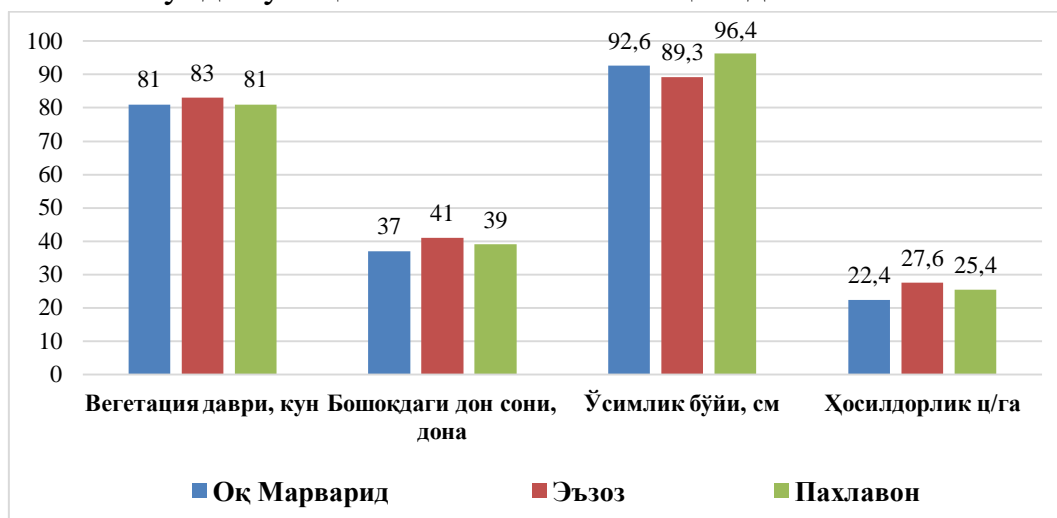
Дарҳақиқат Оролбўйи минтақасида баҳорнинг охириги ойлари ва ёз ойларида қуруқ ва иссиқ ҳаво орқали учаётган тузларнинг нафақат инсон саломатлигига етиштираётган буғдой навлари ҳосилдорлигига ҳам катта зарар етказмоқда.

Ушбу муаммоларни ҳал этиш чораларидан бири оролбўйи минтақасида юқори ҳосилга эга бўлган, эртапишар, дон сифати юқори баҳорги буғдой навларини яратишда селекция дастурлари орқали дон ҳосили ва сифатини янада ошириш ва янги яратилган навларни кенг майдонларга жорий этишдир.



Юмшоқ буғдой маҳаллий навларини Оролбўйи худуди тупроқ иқлим шароитида баҳорги буғдой сифатида экиб ўрганиш натижасида, ушбу худудга мослашган баҳорги буғдой навларини танланади. Баҳорги буғдой навларининг Оролбўйи худуди тупроқ-иқлим шароитига ва об-ҳавонинг глобал исишига бошқа амалиётдаги навларга нисбатан чидамли бўлиши, навлари тупроқ-иқлим шароитига мос тушиши, биотик ва абиотик стресс омилларга чидамли бўлиши, техника ёрдамида йиғиштириб олишга қулай бўлиши кераклигини тақозо этади. Танлаб олинган навларнинг энг оптимал экиш муддатлари ва меъёрлари аниқланди.

Ўсув даврининг давомийлигига қараб селекцион материаллар (нав ва намуналар) 3 гуруҳга бўлинади: тезпишар, ўртапишар ва кечпишар. Буларнинг ишлаб чиқаришда учаласининг ҳам аҳамияти катта бўлиб, экиннинг тури, экиладиган жойнинг имконияти, хусусияти ва экиннинг мақсадига қараб эртапишар, ўртапишар ёки кечпишар навлар экилиши мумкин. Баҳорги буғдой навлари учун экинларнинг тезпишар навларини яратиш селекциянинг асосий вазифаларидан биридир. Тажрибадаги навларнинг вегетация даври таҳлил қилинганда Оқ Марварид ва Пахлавон навлари 81 кунда пишиб етилган бўлса, Эъзоз нави 83 кунда тўлиқ пишиб етилгани аниқланди.



Баҳорги юмшоқ буғдой намуналарида бошоқдаги дон сонига май ойининг иккинчи ва учунчи декадасидаги ҳароратнинг кескин кўтарилиши жуда катта салбий таъсир кўрсатади. Чунки юқори ҳарорат натижасида бошоқчаларда дон ҳосил бўлмайди ёки ривожланишдан орқада қолиб кетади. Шунинг учун ҳам баҳорги юмшоқ буғдой намуналарининг бошоқдаги дон сонига селекция жараёнларида катта эътибор берилади. Тажрибадаги навларнинг битта бошоқда дон шаклланиши энг кўп Эъзоз навида 41 дон, Пахлавон навида 39 донани ташкил қилган бўлса, энг кам натижани Оқ

Марварид навида 37 дона дон шаклланганлиги аниқланди. (1-расм).

Тадқиқотлардан маълумки ўсимлик бўйининг 60 смдан паст бўлиши ҳосилдорликка салбий таъсир кўрсатади. Айниқса боҳорги буғдой навлари учун тез ўсиш қобилиятига эга бўлиш ва 75-80 см оралиғида бўлиши ўта муҳимдир. Таҷрибада экиб ўрганилган навларнинг ўсимлик бўйи орасидаги фарқ яққол кузатилиб, ўсимлик бўйи 89,3 см дан 96,4 см гачани ташкил қилди.

ХУЛОСА

Кузги буғдой навлари баҳорги буғдой сифатида экилиб ўрганилганда ҳосилдорлиги, Оқ Марварид – 22,4 ц/га, Эъзоз – 27,6 ц/га ва Пахлавон 25,4 ц/га дан ҳосил йиғиштириб олинди. Демак, Қорақалпоғистон Республикаси шароитида қурғоқчиликка, шўрга ва табиатнинг ноқулай стресс омилларига чидамли кузги юмшоқ буғдойнинг Оқмарварид, Эъзоз ва Пахлавон навларини баҳорги буғдой сифати экиб, ҳосилдор ва юқори сифатли дон етиштириш мумкин.

REFERENCES

1. Ўзбекистон Республикаси Президентининг 2022 йил 28 январдаги “2022-2026 йилларга мўлжалланган Янги Ўзбекистоннинг тараққиёт стратегияси тўғрисида”ги ПФ 60-сон Фармони.
2. Доспехов Б.А. Методика полевого опыта. М., Агропромиздат, 1985.
3. Жуковский П.М., Ботаника М.: 1982 –С. 623-626.
4. Сандакова Г.Н., Елисеев В.И. Параметры моделей погодных факторов для формирования урожая яровой сильной пшеницы в условиях степной зоны Оренбургской области//Известия Оренбургского государственного аграрного университета. 2017. №2 (64). –С. 16-19.
5. Nuttall J.G., O'Leary G.J., Panozzo J.F., Walker C.K., Barlow K.M., Fitzgerald G.J. Models of grain quality in wheat-a review. Field Crop Res., 2017, 202: –pp. 136-145 (doi: 10.1016/j.fcr.2015.12.011).



ДИСТАНЦИОННЫЙ МОНИТОРИНГ ДИНАМИКИ РАСТИТЕЛЬНОГО ПОКРОВА В РЕСПУБЛИКЕ КАРАКАЛПАКСТАН

Т. Х. Эримбетов
И. М. Сулайманов
Б. Е. Абдикаиров

АННОТАЦИЯ

В статье была проведена оценка динамики растительного покрова в Республике Каракалпакстан на основе данных ДЗЗ за период 1992-2022 гг. Для обработки спутниковых снимков использовались доступные данные инвентаризации лесов Узбекистана, данные полевых исследований, мозаика спутниковых данных LANDSAT и Sentinel-2 на ГИС-интернет платформе «Google Earth Engine». Для проведения тематического картографирования и согласования данных геоинформационной системы (ГИС) и дистанционного зондирования земли (ДЗЗ) был использован экспертный анализ. Основным видом работ по набору тестовых участков (ТУ) включал сравнительный анализ структуры объектов наземного покрова с данными ДЗЗ высокого разрешения. Всего были сформированы и оценены 215 тестовых участков. Полевыми данными – 26 ТУ.

Растительность, на территории исследования, в основном сосредоточена в центральной, южной и юго-восточной части Республики. В основном, эти участки сосредоточены на особо охраняемых природных территориях (ООПТ). Для оценки делимости определенных ТУ были использованы ресурсы платформы «Google Earth Engine» позволяющие оценить спектральные кривые по всем имеющимся спектральным каналам. Процедура классификации включала два этапа. На первом этапе была проведена предварительная неуправляемая классификация. Далее, после выделения полигональных границ крупных доминирующих классов, где произошло перемешивание, используя набор ТУ (70% от общего набора данных ТУ) были проведены процедуры по вторичной классификации. В результате были получены итоговые карты наземного покрова на территорию республики за 1992 и 2022 гг. Оценка точности проводилась с использованием матрицы различий и стандартных показателей точности картографирования (коэффициента Каппа и коэффициента Общей точности классификации). В рамках правительственных постановлений Республики Узбекистан и региона Каракалпакстан полученные данные могут служить

вспомогательным материалом для проведения мониторинга и инвентаризации структуры и состояния растительного покрова, и лесных территорий Каракалпакстана.

Ключевые слова: *Растительный покров, мониторинг, Landsat, ГИС, тематические слои, оценка точности, анализ изменений.*

Введение. Мониторинг динамики растительного покрова Каракалпакстана имеет важное значение для устойчивого управления природными ресурсами и сохранения биоразнообразия. Территория региона в основном представлена пустынями и полупустынями, где растительный, в том числе лесной покров, сосредоточен в центральной, южной и юго-восточной частях республики, в основном, и границах ООПТ республики: заповедниках, заказниках и национальных парках. Поэтому основное внимание при мониторинге растительного покрова было уделено именно этим категориям земель. В связи с этим использовались разновременные спутниковые данные для оценки характеристики растительных экосистем и анализа тенденции развития растительного мира Республики Каракалпакстан. Учитывая прошлое и современное состояния растительного мира региона, можно оценить характер и интенсивность влияния антропогенных и природно-климатических факторов, которые являются важнейшими индикаторами для предотвращения или смягчения их последствий, а также динамики растительного мира в будущем. Данная работа в определенной степени служит для реализации задач, предусмотренных Постановлением Президента Республики Узбекистан №5209 от 12.02.2018 «О мерах по развитию космических исследований и технологий в Республике Узбекистан» и другими нормативно-правовыми документами, принятыми в данной сфере.

Целью данной работы является оценка динамики лесных экосистем республики и выработка рекомендаций для дальнейшего устойчивого управления ими. Для достижения поставленной цели были решены следующие задачи:

- Получение цифровых карт наземного покрова за 1992 и 2022 гг.
- Проведение анализа динамики растительного покрова на территории исследования за оцениваемый период времени.
- Предложение рекомендации по увеличению возможностей устойчивости растительного покрова Республики Каракалпакстан.

Объект исследования

Республика Каракалпакстан, находящийся в составе Республики Узбекистан является пустынной страной, общей



площадью почти 166 000 км² и протяженностью с севера на юг - 930 км, с запада на восток - 1425 км, состоящей из гор (20%) и засушливых/полузасушливых районов (70%). Остальная часть страны представлена интенсивно орошаемыми долинами, расположенными вдоль реки Амударья (ФАО, 2018 г.). Деграляция и потери растительного покрова, с течением времени, проявляются в снижении его доли ко всей площади республики. В Узбекистане, как и других странах Центральной Азии, леса имеют в основном защитное значение и играют важнейшую роль в борьбе с опустыниванием, предотвращением эрозии и другими природными катаклизмами, а также в защите орошаемых сельскохозяйственных угодий и пастбищ от деграляции. Они оказывают существенное влияние на другие сектора национальной экономики, такие как сельское хозяйство, животноводство и т.д. Высыхание Аральского моря в значительной степени вносит вклад в постоянно прогрессирующее увеличение опустынивания, что оказывает сильнейшее негативное влияние на окружающую среду (Захадуллаев А). В этом контексте большое значение для мониторинга растительного покрова имеет применение данных дистанционного зондирования. Анализ текущих и архивных данных, в совокупности с ГИС облачными сетями позволяют проводить ретроспективный анализ состояния и развития растительных экосистем в различных пространственных масштабах. Таким образом, ГИС и ДЗЗ позволяет разработать рекомендации по устойчивому управлению как земельными, так и лесными ресурсами, которые снизят зависимость от ирригации, нехватки воды, эрозии почв, засоления и опустошения, при этом основываясь на объективных, воспроизводимых и пространственно-точных подходах (Кучкарова Б. Т).

Главный объект исследования по этой теме – растительный покров территории Республики Каракалпакстан. (Рис. 1)

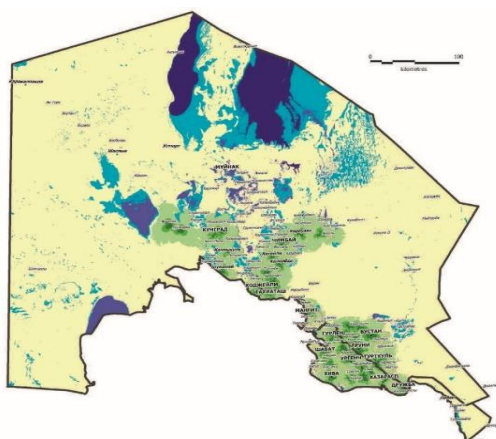


Рисунок 1. Территория Республики Каракалпакстан

Природно-климатическая характеристика Республики Каракалпакстан

Республика Каракалпакстан занимает часть Среднеазиатской равнины пустынной зоны Евразийского континента в схеме природно-географического районирования Узбекистана. Северная подзона Туранской провинции включает южную часть Аральского моря — современную дельту Амударьи и часть прилегающего к ней плато Устюрт, а также северо-западную часть пустыни Кызылкум. Современная дельта Амударьи является верхней границей «живой» части, а земли (43000° с.ш. и 43010° в.д) можно рассматривать как условную границу от города Кунград до Устюртской щели на Западе. Ее граница справа соединяется с массивом Казакдарья (Сулейманова М. Х.). Все орошаемые земли включены в Нижнеамударинский климатический район. Прибрежные районы имеют свою растительность, и ландшафтная структура этих территорий довольно разнообразна. Здесь 51 вид растений изолирован, нанесен на карту и сгруппирован по различным видам, типам и группам на основе классификационной схемы. Только в растительном покрове северо-западных Кызылкумов идентифицированы 908 видов, относящихся к 345 родам и 68 семействам. Среди них однолетние травы составляют 47% всех видов растений, многолетние травы — 38%, деревья и кустарники — 11%, полукустарники — 4%. В дельтовой части Амударьи можно выделить тугайные, галофитные и пустынные группы растений (Шомуродов Х. Ф. и др.). В результате стремительного сокращения площади водно-болотных угодий изменилось разнообразие видов растений, а также масштабы ареалов их распространения. Наиболее распространенная растительность озер и периодически затопляемых территорий вдоль Аральского моря — это тростниковые образования. Согласно анализу современных данных космической съемки, площадь тростника составляет 70 тыс/га. В последующие 20–30 лет площадь тростника в зоне орошаемых земель резко сократилась, что привело к вскрытию верхнего слоя почвы, усилению процесса опустынивания (Муталов К. А и др.).

Лесные экосистемы Каракалпакстана и их географическое описание

Лесной фонд Республики Узбекистан составляет 11 975,2 тысячи гектаров, или 26,7 процента территории страны, в том числе 3 235,7 тысячи гектаров площади покрыты лесом. Имеется разное колебание в площадях по областям республики: самая большая площадь лесов и насаждений в Навоийской области – 1 258, 3 тыс. га, на втором месте Республика Каракалпакстан – 875, 6 тыс.га (ПРИЛОЖЕНИЕ

№1 к Постановлению Президента РУз от 06.10.2020 г. №ПП-4850)

Леса Каракалпакстана существенно различаются по своему природному составу, продуктивности и выполняемым функциям. Поэтому они разделены по природным зонам на тугайные, галофитные, пустынные и полупустынные леса.

Постоянными и основными древесными растениями тугайных лесов являются *Turangil-Ropulusarainal*, *Lox Elca cagnustureosnica*. Виды *Jungarivasi Solissongaria* и *Solis Wilhelmsiana-Vilgelma* по сей день, очень редки. В настоящее время в хорошем состоянии находятся растения турангильской свиты — Бадай-Тугай и Нуримтубек. Турангильская формация широко распространена на обоих берегах реки Амударьи. В других частях дельты это образование резко сократилось. В местах с повышенной влажностью особенно распространены болотные растения *Typha* — рогоз, *Phragmitesaustralis* — тростник, *Seattophyllum* — роголистник. Под влиянием тугайных растений происходят специфические процессы почвообразования. Ветви дерева улавливают солнечный свет и создают тень, тем самым снижая скорость движения воздуха. В то же время тугайные леса служат пастбищами для скота зимой, а иногда и в течение всего года.

Тугайные леса также являются источником древесины. Древесина используется как топливо и при строительстве мостов и домов в местных условиях (Проект ГЭФ/ФАО).

Основными лесообразующими породами насаждений пустынной зоны является саксаул черный и белый (*Holoxilon persicum* Vge и *Holoxilon aphillum* Hjin.), большие площади также занимают черкезы (*Salsola Richterii* Kar., *Salsola paletziana* Litv.), кандымы (*Calligonum*), гребенщики (*Tamarix*). Большинство пустынных насаждений являются низкорослыми 0,3 – 0,4 м и с небольшим запасом древесины: запас саксаульников до 60 куб.м/га, черкезников – 30 куб.м./га, гребенщика – 3-4 куб.м./га. (Рамазонов Б. Р. и др.)

Леса **пустынно-песчаной зоны** также являются хорошими пастбищами. Они в большей своей части произрастают на песчаных почвах и выполняют большую защитную роль в предупреждении дефляции песков и смягчении резко континентального пустынного климата. Из общей (25200 тыс.га) площади пустынно-песчаных лесов покрытая лесом площадь составляет около 1010 тыс.га или 25,5% площади (Кучкарова Б. Т). В песках насаждения из саксаула, черкеза и кандыма защищают культурные земли, пути транспорта, ирригационные сооружения и селения от грозной песчаной стихии. Они являются базами местного топлива. Различают 3 типа пустынных почв:

- солончаковые пустыни (соляные отложения, влажные солончаки, голыцы и солончаки).
 - песчаная пустыня (супеси, белые пески, летучие песчаные почвы).
 - гипсовые пустынные (мелко каменные смешанные карбонатные почвы)
- типы почв. Изредка встречается и четвертый тип суглинистых почв.

Расположение лесных экосистем в Узбекистане объясняется его пустынной и горной местностью. (Рис. 2).

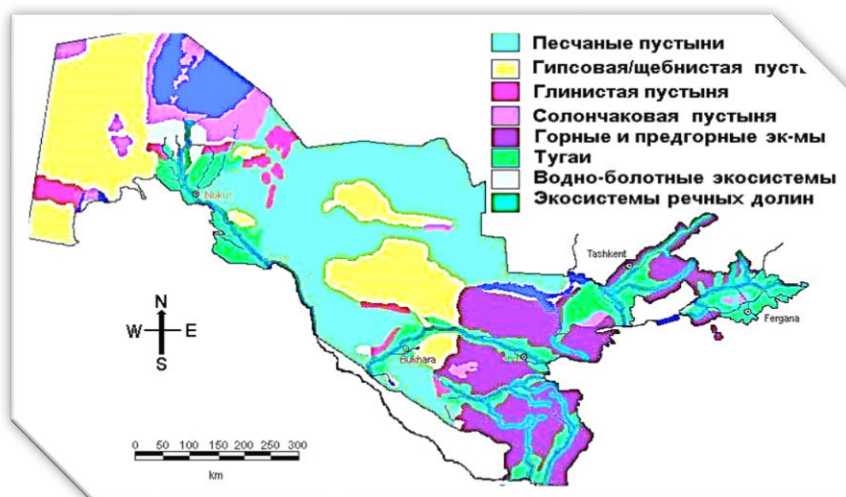


Рисунок 2. Схематическая карта лесных экосистем.

Методика исследования

В исследовании, для оценки динамики растительного покрова в Республике Каракалпакстан были использованы доступные данные инвентаризации лесов Узбекистана, данные полевых исследований, мозаика спутниковых данных LANDSAT и Sentinel-2 на ГИС-интернет платформе «Google Earth Engine, данные для контроля ресурса «Dynamic World V1», интернет-ресурсы Google Map и Yandex Map.



Рисунок 3. Область исследования в границах Республики Каракалпакстан по данным а) Google Maps, б) MODIS

В работе были использованы следующие документы и данные:

- Описание объекта исследуемой территории: биологические характеристики растительных экосистем Республики Каракалпакстан, природные и социальные условия исследуемой территории.

- Результаты инвентаризации и оценки лесных экосистем Каракалпакстана.

- Сводные документы, отчеты и правовые документы, регламентирующие порядок оценки в области лесного хозяйства на исследуемой территории.

- Данные по растительному покрову.

- Климатические показатели (значения температур и осадков за период с 2000 по 2021 гг.).

- Значения вегетационного индекса NDVI за 1992 и 2022 г.

Спутниковые данные.

Исходные данные в виде мозаики спутниковых данных Landsat и Sentinel-2 (Рис. 4) были получены и обработаны на ГИС-интернет платформе «Google Earth Engine» (Рис. 5).

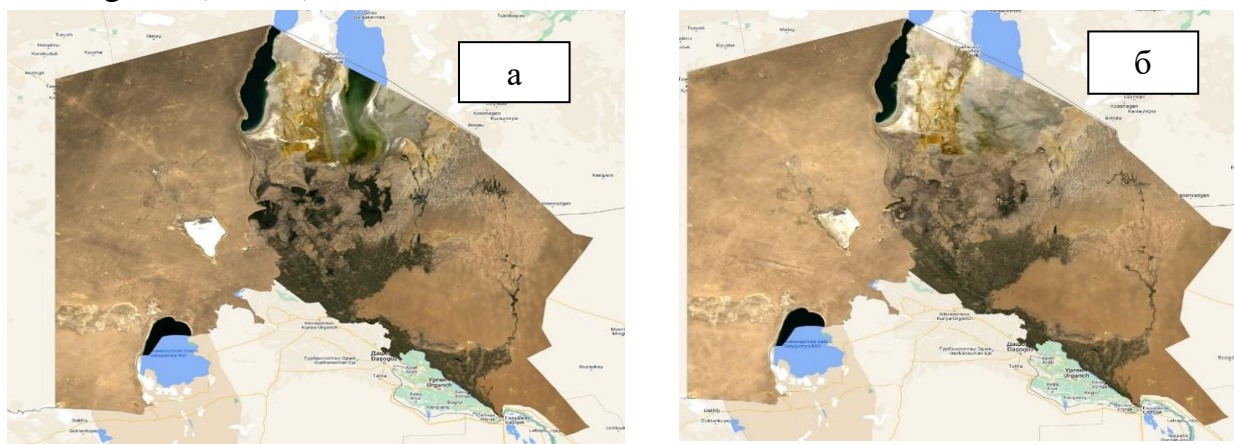


Рисунок 4. Мозаика спутниковых данных Landsat, а) 1992 г. и б) 2022 г. по границам Республики Каракалпакстан

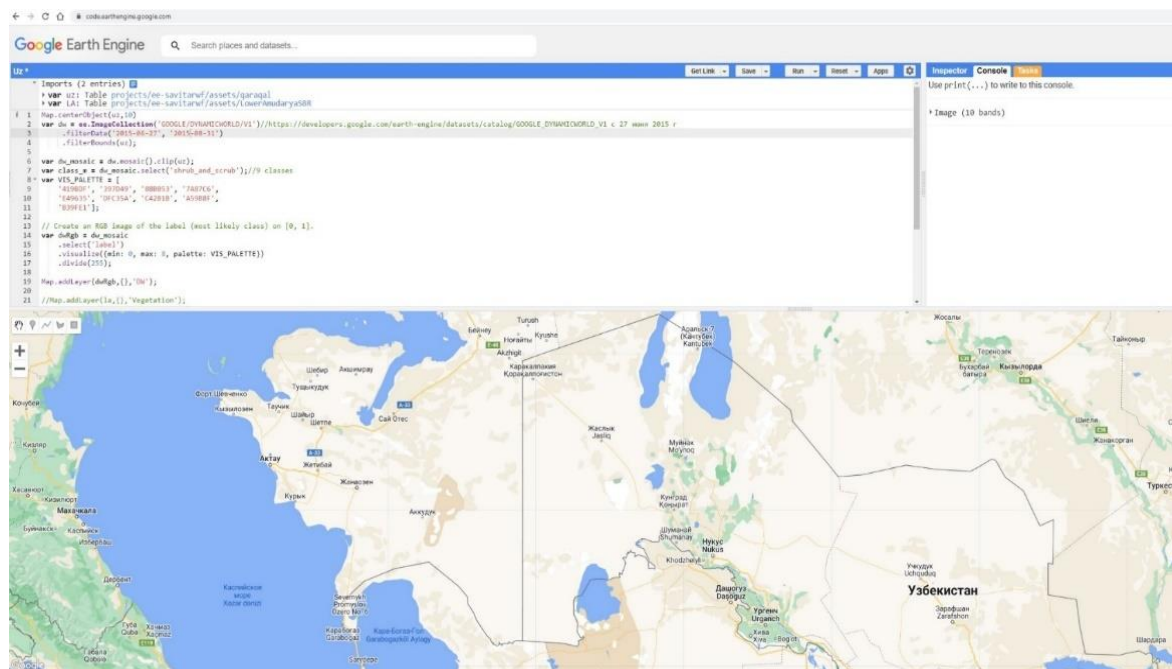


Рисунок 5. Интерфейс интернет-платформы «Google Earth Engine» на территорию исследования

Подбор тестовых участков для экспертной оценки.

Для проведения тематического картографирования и согласования данных ГИС и ДЗЗ, был использован экспертный анализ, основанный на данных полевых исследований в рамках экспедиции, доступных данных лесоинвентаризации и данных высокого пространственного разрешения доступных интернет-ресурсах.

Для этого оценивались тестовые участки (ТУ) в пределах границ территории исследования. Основной вид работ по набору ТУ включал сравнительный анализ структуры объектов наземного покрова с данными ДЗЗ высокого разрешения. Данные полевых исследований базировались на результатах ранее проведенных работ и данные лесоинвентаризации. В первую очередь определялся породный состав насаждений и далее, по возможности, определялись таксационные показатели древостоев. Всего было сформировано и оценено 215 тестовых участков. Полевыми данными – 26 ТУ (Рис. 6).

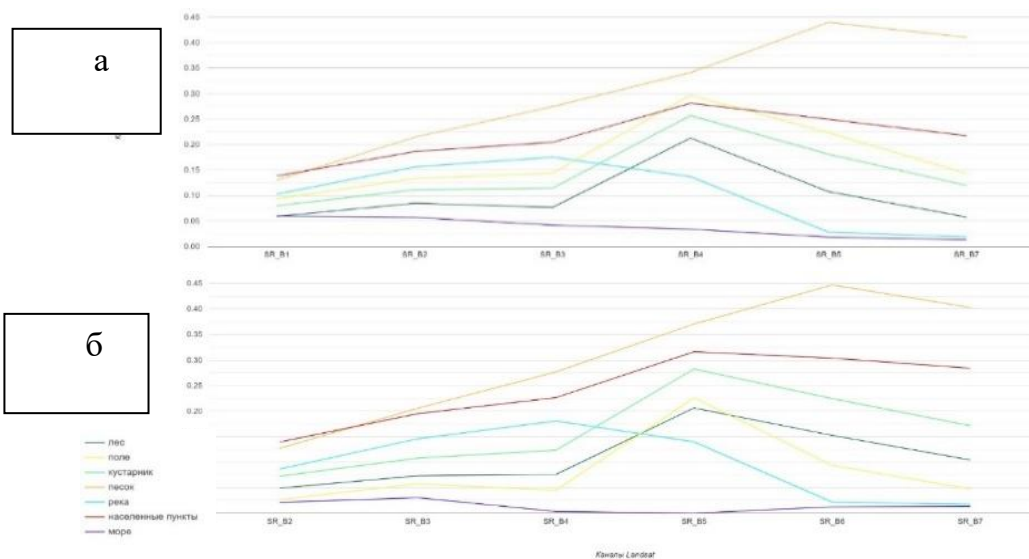
Как и во всем Узбекистане, так и в Республике Каракалпакстан кроме многообразия коренных видов, представлены деревья, завезенные из других стран, это: платан, дуб, акация, шелковица, каштан.

На следующем этапе экспертной оценки был проведен подбор ТУ согласно принятому набору основных доминирующих классов наземного покрова (лес, кустарник, трава, без растительности, населенные пункты, вода) в среде «Google Earth Engine» с дополнительной экспертной оценкой по дынным высокого пространственного разрешения ресурсов с использованием интернет ресурсов Google Map и Yandex Map.



Рисунок 6. Набор тестовых участков

Для оценки разделимости определенных ТУ были использованы ресурсы платформы «Google Earth Engine» позволяющие оценить спектральные кривые по всем имеющимся спектральным каналам (Рис.7)



**Рисунок
Оценка**

7.

разделимости ТУ по кривым спектральной яркости а) 1992 б) 2022 гг.

Анализ показал высокую долю точности выбранных ТУ для проведения как непосредственно классификации исходных изображений, так и последующей их оценки точности. Всего было набрано 215 ТУ (Рис. 8).

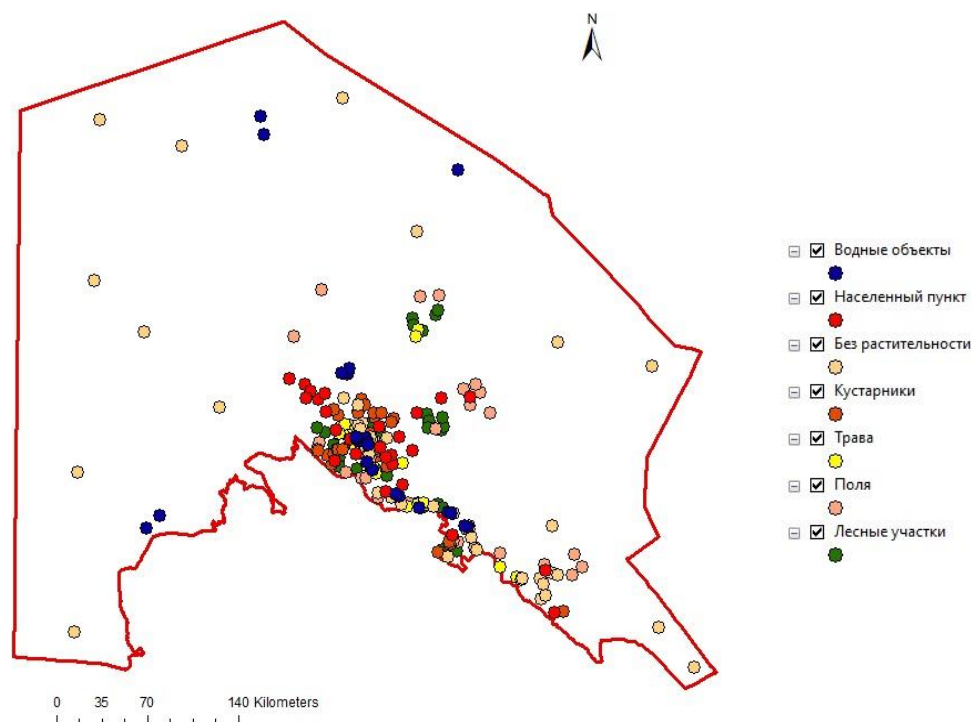


Рисунок 8. Пространственное распределение ТУ на территории исследования

В дальнейшем, 70 % ТУ были использованы для проведения управляемой классификации, а 30% для проверки точности тематического картографирования.

Оценка динамики растительных экосистем Каракалпакстана по данным ГИС и ДЗЗ с использованием пошаговой классификации.

Процедура классификации включала два этапа. На первом этапе была проведена предварительная неуправляемая классификация с целью получения основных доминирующих классов наземного покрова и оценкой их возможного перемешивания (Рис. 9).

Далее, после выделения полигональных границ крупных доминирующих классов, где произошло перемешивание, используя набор ТУ (70% от общего набора данных ТУ) были проведены процедуры по вторичной классификации. В результате были получены итоговые карты наземного покрова на территорию республики за 1992 и 2022 гг. (Рис. 9).

Оценка точности тематического картографирования на основе данных ТУ, проводилась с использованием матрицы различий и стандартных показателей точности картографирования (коэффициента Каппа и коэффициента «Общей точности классификации») (Таб. 1).



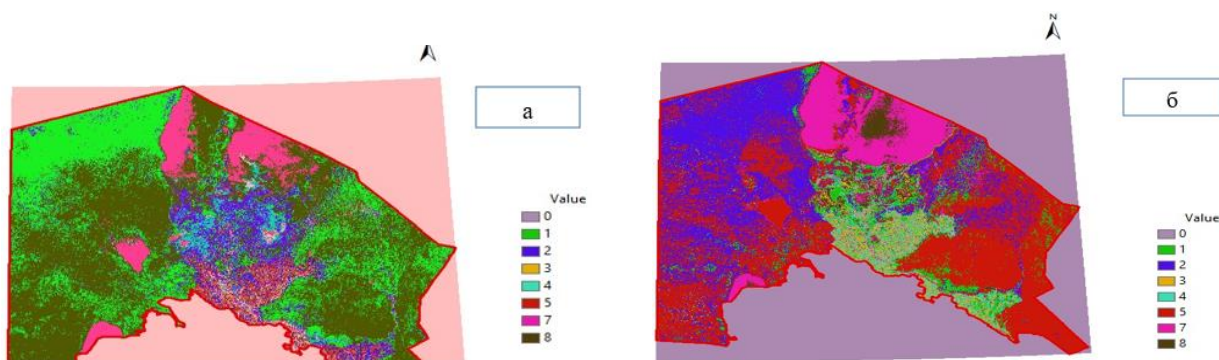


Рисунок 9. Тематические карты после неуправляемой классификации, а) 1992 г б) 2022 г.

Результатов управляемой классификации показаны на Рис.10.

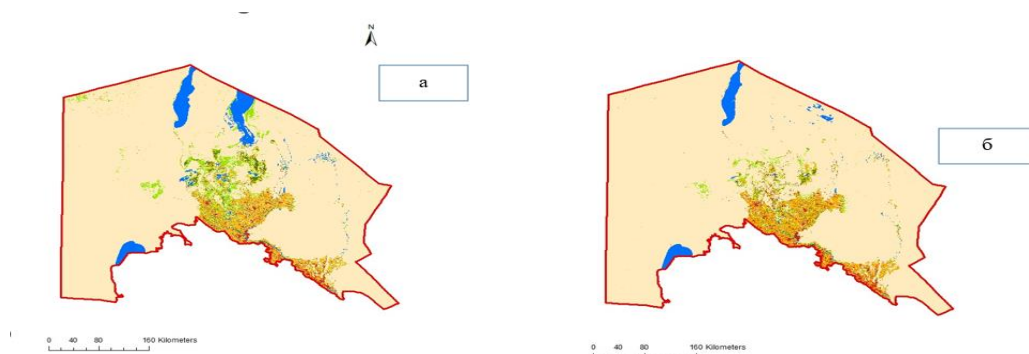


Рисунок 10. Итоги управляемой классификации а) 1992 б) 2022 гг.

Таблица 1. Точность тематического картографирования

Индексы точности	1992	2022
Общая точность классификации	0.64	71%
Каппа Коэффициент	0.68	73%

Экспертная оценка

Дополнительно, была проведена экспертная оценка по имеющимся картам наземного покрова ресурса «Dynamic World V1».

Сопоставление полученных тематических карт 1992 и 2022 гг. было проведено на основе сравнительного анализа полученных тематических карт биорезервата Бадайтугай и заповедника Нурумтубек (Рис. 11).

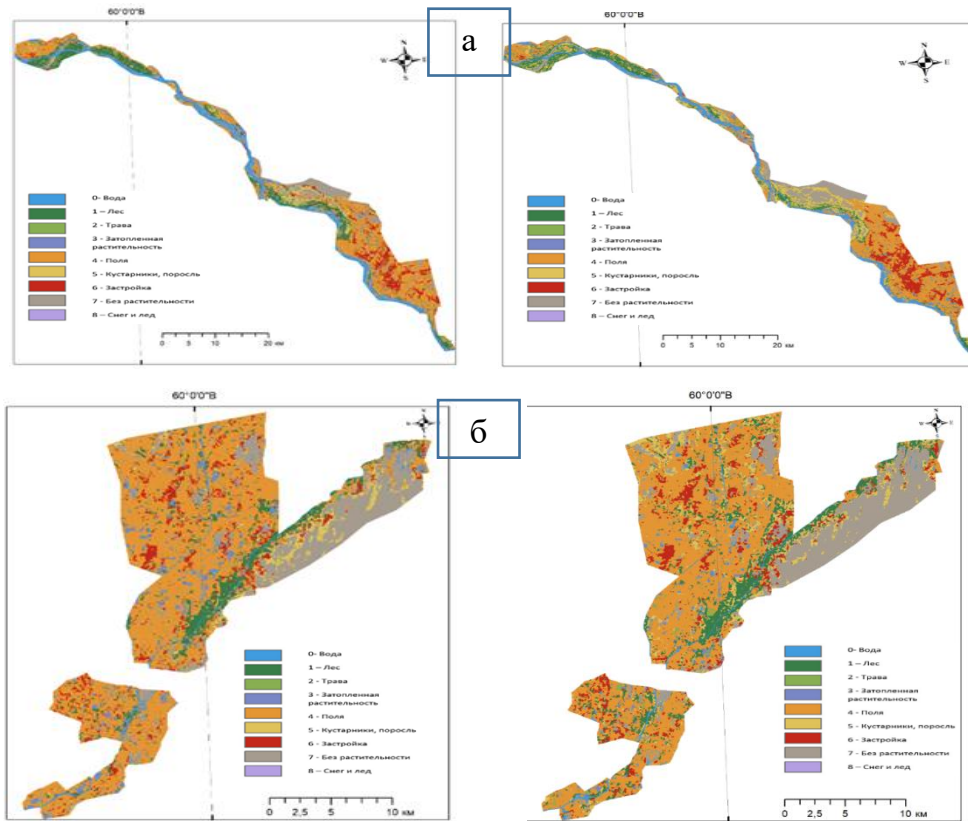


Рисунок 11. Карты динамики наземного покрова, а) биорезервата Бадай тугай, б) заповедника Нурумтубек
Сравнительный анализ фрагмента наземного покрова показан на Рис.12.

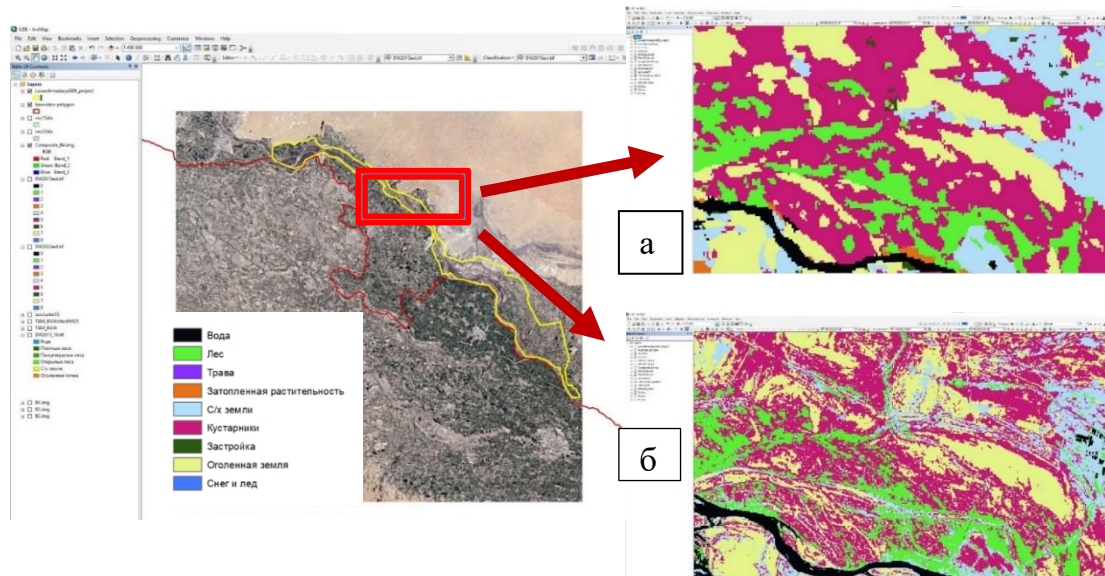


Рисунок 12. а) Фрагмент контрольной карты биорезервата Бадайтугай б) Фрагмент итоговой тематической карты

Таким образом общий сравнительный анализ выявил достаточно высокую степень соответствия полученных карт 1992 и 2022 гг. и данных карт ресурса, что говорит о значительной степени достоверности проведенного тематического картографирования.

По итогам тематического картографирования получены следующие результаты Таб. 2 и Рис. 13.

Таблица 2. Результаты исследования

Класс	1992 (га)	2022 (га)	Динамика (га)
Древесная растительность	217319,9	107249,7	-110070
Кустарники, поросль	762549	406315,4	-356234
Трава	71197,92	21494,61	-49703,3
Сельхозземли	1127619	931645,9	-195973
Населенные пункты	238286,5	299259,3	6097,2
Без растительности	19323645	19028477	-295169
Вода	960665,7	468267,1	-492398,64
Итого	21740618	20794441	-1001052

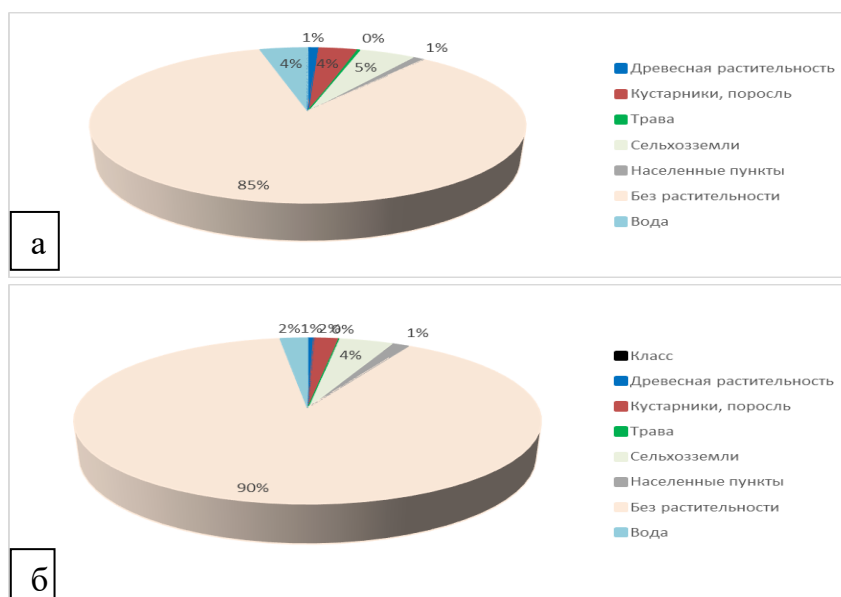


Рисунок 13. Сравнительный анализ динамики площадей, доминирующих классов, а) 1992 и б) 2022 гг.

В целом отрицательная динамика хорошо видна при оценке растительного покрова по данным NDVI на платформе «Google Earth Engine» (Рис. 14).

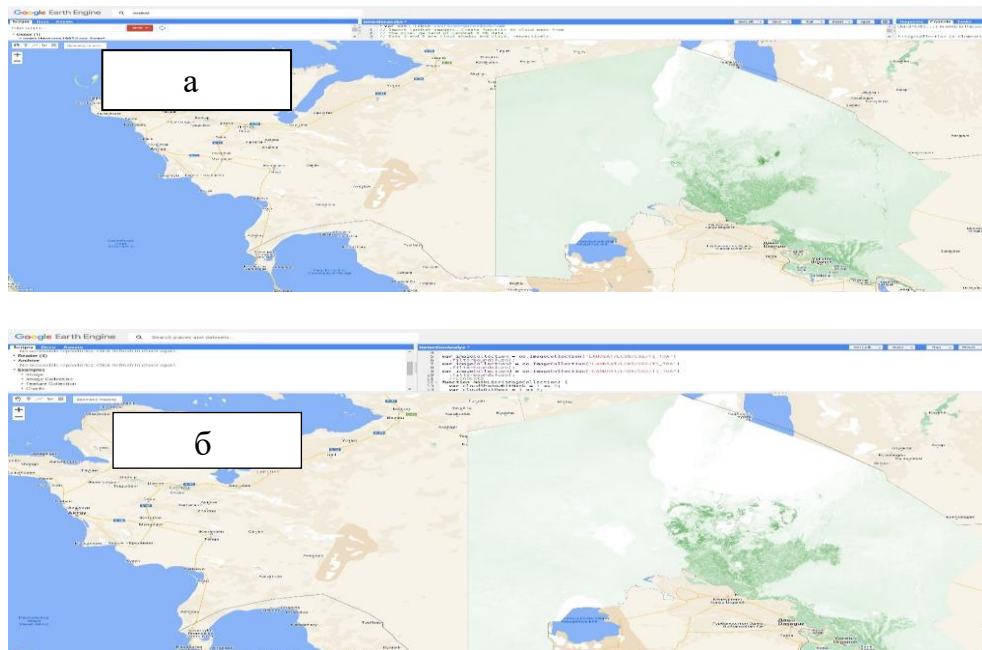


Рисунок 14. Сравнительный анализ динамики значений NDVI на территории исследования, а) 1992 и б) 2022 гг.

ВЫВОДЫ ПО РЕЗУЛЬТАТАМ ИССЛЕДОВАНИЯ.

Растительный покров территории исследования за последние 30 лет претерпел существенные изменения. Древесно-кустарниковая растительность на лесных землях, отдельно кустарники и травянистый покров имели отрицательную тенденцию в динамике развития. Хотя в процентном отношении доля лесных земель не изменилась в абсолютном значении площади сократились на 110 070 га. Доля кустарниковой растительности, играющей важную роль в данном засушливом регионе, уменьшилась с 4 до 2%, или почти на 365 000 га. Травянистый покров изменился не существенно. Уменьшилась доля земель сельскохозяйственного назначения, почти на 200 000 га. Доля площади класса «Без растительности» увеличилась на 5%, но уменьшилась в абсолютных величинах почти на 300000 га. Существенно уменьшилась площадь водных объектов. В первую очередь это связано с усыханием акватории Аральского моря. Единственный класс имеющий тенденцию увеличения - это класс «Населенные пункты». Рост населения, естественно, ведет к росту площадей населенных пунктов. Что и наблюдается по полученным данным. Полученные данные свидетельствуют о крайне неравномерном распределении растительного покрова на территории исследования.

Результаты подтверждают, что площадь растительного покрова на территории исследования имеет тенденцию к

уменьшению вследствие влияния антропогенных и природных факторов на растительность в пределах республики. Это связано с меняющимися климатическими факторами, увеличением засушливых периодов, уменьшением количества осадков, увеличением частоты засух, острой нехватки почвенной влаги, эксплуатацией ирригационных сооружений и существенным увеличением хозяйственной деятельности человека.

РЕКОМЕНДАЦИИ

Для преодоления негативных последствий рекомендуется осуществление мероприятий по комплексной механизации и автоматизации производства в лесных хозяйствах, внедрению в отрасль высокоэффективных ресурсосберегающих технологий. Усиление надзорных функций районных подразделений Инспекции по контролю самовольной порубки деревьев и от иных действий, причиняющих ущерб лесу. Совершенствование системы мониторинга состояния лесов, формирование фонда информационных ресурсов. Результаты исследования могут помочь заинтересованным лицам и организациям в оценке и планировании мероприятий по улучшению условий ведения хозяйственной деятельности предприятий лесного комплекса на основании результатов научных исследований для усиления мер по защите лесных земель и их постепенного увеличения. В рамках правительственных постановлений Республики Узбекистан и региона Каракалпакстан полученные данные могут служить вспомогательным материалом для проведения мониторинга и инвентаризации структуры и состояния растительного покрова, и лесных территорий Каракалпакстана.

Применяемая технология позволяет с минимальными затратами получать объективные данные в виде картографического и статистических данных для использования их в принятии ответственных решений при мониторинге устойчивости растительных и лесных экосистем.

REFERENCES

1. Б. Т/ Шестой национальный доклад Республики Узбекистан о сохранении биологического разнообразия. – 2018. – С. 235.
2. Максимов М.М. Мониторинг площадей и состояния зеленых зон городов по данным дистанционного зондирования Земли (на примере г. Минска) / М.М. Максимов, А.С. Скачкова // ГИС и природные ресурсы. – 2017. – № 2(81). –С. 22-26.
3. Муталов К. А, Рамазонов Б. Р, Гулматова М. К/



Кейреуковая формация юго-западного Кызылкума// *Журнал биологии и экологии*. – 2020. – Vol. 1. – Issue 3. – P. 35-38. - № 4

<http://dx.doi.org/10.26739/2181-0575-2020-4-6>

4. Постановление Президента Республики Узбекистан от 06.10.2020 г. №ПП-4850 «Об утверждении концепции развития системы лесного хозяйства Республики Узбекистан до 2030 года»

5. Проект ГЭФ/ФАО «Устойчивое управление лесами в горных и долинных районах Узбекистана» <https://www.uzdaily.uz/ru/post/60173>

6. Рамазонов Б. Р/ Природные условия – климат, растения приаральской области// *Science and education scientific journal*. – 2020. – Vol. 1. – Issue 7. – P. 48-58

7. Сулейманова М. Х/ Основы лесоустройства и проектирования защитных лесных полос// *учебное пособие*. – 2017. – страниц 123

8. ФАО источник: Городское и пригородное и пригородное лесное хозяйство Рим, 16–20 июля 2018 года, FO: COFO/2018/5.2

9. Шомуродов Х. Ф., Хасанов Ф. О/ Кормовые растения пустыни Кызылкум// *Аридные экосистемы*. – 2014. -том 20. - №3(60), - с. 94-101

PROBLEMS OF MODERN APPROACHES IN TEACHING READING OF ENGLISH AT UNIVERSITIES

Yusup Khaytbayevich Kushakov

Senior teacher, Tashkent State Transport University

ABSTRACT

The article is devoted to the problems of modern approaches in teaching reading of English, which is a means of indirect communication, as well as a process aimed at obtaining information contained in written text. According to the author, during the teaching process, it is important to take into account two components: reading technique and reading comprehension. As the author considers, the main importance in the reading process is the comprehension of what is written and the attitude towards what is read. The author emphasizes the key problems in the process of teaching reading.

Keywords: activity, academic, advantage, character, communicative, communication, competence, conversation, development, disadvantage, English, feature, method, reading, speech, verbal

INTRODUCTION

At the present stage of development of lingual didactic science, quite extensive theoretical material has already been accumulated on teaching reading in a foreign language and is reflected in the works of many researchers. “Reading is defined as a type of communication that is part of the field of people’s speech activity, which is realized in the form of indirect verbal communication”[2]. Reading also determines the written form of communication. Statement of the purpose of the article. In order to identify in the future the most effective technologies for teaching reading, it seems necessary to analyze existing theories, comprehend the goals, content and objectives of this type of speech activity, and critically examine existing classifications of types of reading. Presentation of the main material of the article. There is a variety of definitions of reading, which is due, in our opinion, to what the author tends to pay special attention to. Foreign authors consider it as: “recognition of a variety of linguistic signals - letters, morphemes, syllables, words, phrases, grammatical elements and speech markers - and isolation of units that represent meaning for the reader” [3], “psycholinguistic game of probabilistic hypotheses regarding meaning text by selecting graphical hint elements in accordance with existing knowledge” [4], “extracting the



necessary information from printed text as much as possible” [5], “this is the process of attributing meaning to the written symbols contained in it” [6]. In the works of domestic researchers, reading is described as “a verbal interaction between the author of a written text and its reader, while awareness of the text implies the unity of the conclusions made by the reader with the intention of the sender of this information, i.e. author, visual understanding of the printed text and its awareness with varying degrees of expansion, clarity and depth the receptive nature of communication, aimed at understanding and comprehending the written text, during which the information contained in the text is assimilated and evaluated” [7].

METHODS AND LITERATURE’S ANALYSES

In order to find out the main character of reading I have applied to many works written by scientists in this sphere. Theoretical analysis of literary sources on the research topic, analysis of legal and organizational and administrative documents regulating the professional activities of teaching staff, diagnostic methods (observation, conversation, questioning, testing). In general, reading features, despite their diversity, is characterized by the following features: Learning objectives are aimed at the components of communicative competence (linguistic, sociocultural, compensatory), and are not limited to grammatical or even linguistic. During the research process, the following hypothesis was put forward: it is assumed that if the systematic use of a set of exercises and tasks for teaching reading and writing in foreign language lessons is organized, this will increase the effectiveness of teaching and will contribute to the formation of foreign language communicative competence of students. According to the opinion of many researchers (Z.I. Klychnikova, E.N. Solovova), reading in a foreign language as one of the types of speech activity, along with speaking, listening and writing, is an important part of foreign language communicative competence as a type of speech activity, as well as indirect model of communication. In most cases, relatively few people can achieve natural interaction with native speakers, while almost everyone can read a foreign language. That is why teaching reading is the target dominant [11].

RESULTS

Reading, which involves deep thought processes (analysis, synthesis, inference, etc.), and its consequence - obtaining information - play a large role in the communicative activities of society. This type of written interaction guarantees the transfer of the experience accumulated by humanity, improves the intellect, enhances feelings, that is, it

teaches, develops, and educates. Z.I. Klychnikova believes that “reading is a process of perceiving and processing received information, graphically encrypted according to the system of a particular language in the form of written and printed texts. Reading sets the following goals: a) interaction with their author; b) deciphering the information available in the text; c) teaching native and foreign languages; d) development of the reader’s personality; e) acquiring aesthetic satisfaction and informative impact; f) improvement of imaginative thinking and expressive speech; g) stimulating the reader’s mental activity” [8]. The visual reception of information is transformed into an externally or internally reproduced statement and ends with the recognition of a linguistic unit, namely the correlation with its meaning. As for the semantic processing of the text, it is possible to judge this only indirectly, since direct observation of the process of comprehension of written speech is impossible. Only data obtained from reading results is available for analysis. This process is clearly described by A.A. Mirolyubov, who conditionally “divides it into several stages: analysis of the situational context preceding the start of reading; putting forward a hypothesis about the content of the text; further anticipation, or probabilistic forecasting; and, finally, the process of semantic processing” [10].

Here it is impossible not to share the opinion of S.K. Folomkina about the existence of two levels of understanding - the level of meaning related to the perception of linguistic units, and the level of meaning aimed at understanding the meaning of the text as an integral speech work [12]. A similar position is close to N.I. Ghez, who believed that “although in the real act of reading the processes of perception and comprehension occur simultaneously and are closely interconnected, the skills and abilities that ensure this process are usually divided into two groups: a) associated with the “technical” side of reading, they provide the perceptual processing of text, for example, perception of graphic signs and correlating them with certain meanings or recoding visual signals into semantic units; and b) providing semantic processing of what is perceived - the establishment of semantic connections between linguistic units of different levels and thereby the content of the text, the author’s intention, etc.; these skills lead to understanding the text as a complete speech utterance” [4].

T.G. Egorov, formulating the definition of reading, proceeded from two points of view: some researchers saw in this process, first of all, the order of mechanized actions, while others, in turn, looked at reading from the point of view of mental operations that are part of this process. Both points of view cannot be completely true, since they are one-sided: both the first and second emphasize only one side of the reading process, without

revealing it completely. If we consider reading exclusively as a system of patterns that have developed between visual patterns (text) and pronunciation, then we will not understand this type of speech activity in all its diversity. The process of connecting the visible and spoken word determines only the reading technique. The main importance in the reading process is the comprehension of what is written and the attitude towards what is read [7].

DISCUSSION

Another point of view, which considers reading only as a process of comprehension, is also one-sided. To understand the text, it is important to master the reading technique. The difficult process of reading can only be understood by taking into account both of these aspects - reading technique and assimilation of the text. These two aspects of the reading process are indivisibly interconnected. Many of the graduates who take the Unified State Exam in English in grade 11 refuse to take the oral part of this exam. This happens because they are afraid of not being able to handle it. To prepare for the first task (reading a text), the graduate must learn the rules of reading, pronunciation and know the exceptions. When teaching reading techniques, you need to use as many exercises as possible that explain the rules of reading and the rules of English phonetics. Particular attention must be paid to the rules when some consonants in combination with other letters are not readable:

- ng[ŋ]bring, long
- gn[n]reign, design
- wh[w]where, why
- wh +o[h]who, whose
- kn[n]know, knee
- wr[r]write, wrong
- st[s]castle, listen
- ph[f]phone, elephant

After a thorough explanation and analysis of these rules using tables and cards, reinforcing exercises are recommended, for example, aimed at phonetically practicing the following words in choral and individual modes: hasten, strong, fasten, listen, Christmas, castle, whistle, jostle, nestle, wrestle; cupboard, pneumonia, psychology, philosophy, raspberry; neighbor, nightingale, straight, naughty, high, height, through, sigh, etc. This exercise and others using information and communication technologies contribute to the development of the principles of reading, make this type of speech activity exciting, and increase motivation to learn English [6].



In turn, the second side - understanding what is written and establishing one's relationship to the author's thoughts and feelings - must be considered as the main goal of reading. It is absolutely clear that these two aspects of the reading process are interconnected and determine each other. Consequently, we can assume that the perception of a text and its pronunciation is certainly influenced by the meaning of what is read and, conversely, the process of understanding a written text is determined by perception. The interaction of the processes of perception and comprehension during reading explains the following: the presence of conditions for understanding the text depends on the quality of its perception. When there are errors in perception, such as incorrect reading of words or assimilation of words of similar shape, a distortion of meaning occurs. At the same time, a false understanding of the meaning encourages a false guessing of the form of the word. A.N. Leontiev identifies an important psychological component of the reading process, defining it as "a mechanism of probabilistic forecasting, manifested at the semantic and verbal levels. Semantic forecasting is the ability to predetermine the content of a text, as well as correctly guess about the subsequent development of events based on the title, first sentence and other parts of the text. Verbal forecasting includes the ability to predict a word from the initial letters, to predict the construction of a sentence from the first words, and the subsequent construction of a paragraph from the first sentence. Forecasting helps create emotional attitudes in students and prepare them for reading" [9]. Proposing hypotheses and a system of expectations contribute to the development of the reader's predictive skills; they activate the continuous construction of the reader's knowledge structure, bringing into play his background knowledge and language experience. According to O.N. Kuzhel, "when preparing the consciousness for the perception of information, the reader remembers, guesses, assumes, that is, includes the abilities of his long-term memory and his personal and social experience" [9]. Despite the fact that in the real act of reading the processes of perception and comprehension are closely interconnected and take place simultaneously, the skills and abilities that ensure its process are conditionally divided into two groups: a) associated with the "technical" aspect of reading - they provide the perception of graphic symbols and comparing them with specific meanings or recoding visual signals into semantic units; b) creating conditions for semantic processing of the perceived material - the formation of semantic connections between linguistic units of different levels and the content of a given text. These skills determine the understanding of the text as an integral speech utterance. Understanding of the content is realized through a series of complex logical operations, as a result of



which connections are established in the text and a transition from words to meaning occurs. The stepwise nature of understanding text in a foreign language is shown in 3.I. Klychnikova, who identified four types of information obtained from the text and seven stages of different understanding - this is the understanding of words, phrases, sentences, text, the sixth stage involves the understanding of meaningful and emotional-volitional information, and the seventh - the understanding of all types of information, including motivating-volitional. "As a result of all these processes, the reader evaluates the text in a broad social and cultural context, and reading itself is determined by maturity" [8]. The essence of the main reading strategy is as follows: the reader alternately "runs ahead" along the line, to the next word (words), which underlies "guessing", creating semantic "hypotheses" ("probabilistic forecasting" of what is being read), then again turns to what was previously read, during which it checks the initially created hypothesis with what was written, and only after that decodes the concept of the word. A reading strategy of this type, which consists in the reader running ahead ("anticipation") and going back (comparison, control), occurs due to complex acts of eye movements. However, eye movements are only a condition that is necessary to complete the reading function; and if we talk about the reading process itself, then it is characterized by the interaction of at least two levels - sensorimotor and semantic, which are in a complex synthesis. The sensorimotor level consists of several tightly interconnected "links": the retention link; sound-letter analysis link; comparison and control (comparing emerging hypotheses with given material), storing the information received in memory; semantic guesses that arise from this information. The "technique" of reading is ensured thanks to the sensorimotor level - this is the speed of perception of what is read, its accuracy. The semantic level, based on its data, determines the understanding of the meaning and meaning of both individual words and a complete speech utterance. "The reading process is realized thanks to the complex interaction of these levels on two sides: firstly, on the part of the speed and accuracy of perception and identification (recognition) of language signs; secondly, from an adequate understanding of the meaning contained in these signs. Accurate, correct perception of the text is the main condition for the correct understanding of the text by the reader. This requires possession of a specific set of phonetic, lexical and grammatical informative features, making the recognition process instant" [2].

CONCLUSION

Thus, reading, being a process of communication, is associated with the need for students to possess: 1) the graphic



structure of the language 2) ways of extracting information. In this regard, the following main interconnected distinctive features are identified in the reading process: first, it is the process of perceiving a printed or written text, and then the process of comprehending what is being read. This makes it necessary to teach two sides of reading: technical, that is, mastery of a graphical system, and semantic, that is, mastering the ability to understand the text being read. Thus, the normative reading process is specific. This is a receptive, indirect type of speech activity, which includes at least four interacting elements: information retention, sound-letter analysis and synthesis, conceptual guesses and the process of comparing “hypotheses” that appear during reading with written words. Moreover, reading, along with other types of speech activity, is motivated by psychological attitudes, the needs and tasks of the reader for which information is obtained and its further transformation, which determines certain methods and techniques of work and technologies for teaching this type of speech activity.

REFERENCES

1. Bazarova A. A. Peculiarities of working with an English-language newspaper article at the language department of a university. // <http://moluch.ru/archive/105/24911/> (last accessed 04/10/18)
2. Bogdanova E. A. Methods of working with text in a foreign language. // <http://cyberleninka.ru/article/n/metodika-raboty-s-tekstom-na-inostrannom-yazyke> (last accessed 04/12/18)
3. Galskova N. D. Modern methods of teaching foreign languages: A manual for teachers. – M.: ARKTI, 2003. 192 p.
4. Gez N.I., Lyakhovitsky M.V., Miroljubov A.A. et al. Textbook. - M.: Higher School, 1982. 373 p.
5. Gordeeva I. V. Reading as one of the types of speech activity in English lessons // Young scientist. 2015. No. 19 (99). pp. 569-571
6. Daricheva M.V. Experience in using information and communication technologies in teaching foreign languages at a non-linguistic university. // Bulletin of Minin University. N. Novgorod: electron. magazine 2013. No. 1 (last accessed 04/11/18).
7. Egorov T.G. Psychology of reading acquisition. St. Petersburg: Karo, 2006. 304 p.
8. Klychnikova 3. I. Psychological features of teaching reading in a foreign language: A manual for teachers. M.: Education, 1983. 205 p.
9. Kuzhel O. N. Features of teaching English reading to primary school students. // Young scientist. 2015. No. 4(84). pp. 584-586.

10. Methods of teaching foreign languages: traditions and modernity. / Ed. A. A. Miroljubova. Obninsk: Title, 2010. 464 p.
11. Obraztsov P.I., Ivanova O.Yu. Professionally oriented foreign language teaching at non-linguistic faculties of universities: Textbook. Orel: OSU, 2005. 114 p.
12. Folomkina S.K. Teaching reading in a foreign language at a non-linguistic university. M.: Higher School, 2005. 253 p.
13. Aebersold J. A., Lee Field M. From reader to reading teacher: issues and strategies for second language classrooms. Cambridge University Press, Vol.21. Issue 3. 1997. 263 p.
14. Brown D. Teaching by principles: an interactive approach to language pedagogy. Pearson Education ESL, 2010. 491 p.
15. Grellet. F. Developing reading skills: A practical guide to reading comprehension exercises. – Cambridge University Press, 1999.
16. Paran. A. Reading in EFL: facts and fictions. // The Reading Matrix Vol.5, No.2, September 2005, p.143-154



FAST AND SIMPLE IDENTIFICATION AND MEASUREMENT OF PHOSALONE USING ION MOBILITY SPECTROSCOPY

Abdul Sattar Danishyar

Department of chemistry, Faculty of education, Ghor Institute of Higher Education, Afghanistan

Mohammad Nabi Karimi

Department of physics, Faculty of education , Alberoni University, Afghanistan

Sayed Ali Aqa Sadat

3Department of chemistry, Faculty of education, Alberoni University, Afghanistan

ABSTRACT

Phosalone is a chemical compound used as a pesticide in agriculture and horticulture. Phosalone can be identified and measured with different devices in all kinds of agricultural and horticultural products. Despite the various methods of spectroscopy with various applications in the fields of chemistry and physics, it can be used to identify and measure a variety of chemical compounds. But the ion mobility spectrometer is a simple, low-cost method that does not require complex extraction methods to identify and measure organic compounds. With this research, the possibility of measuring Phosalone pesticide by ion mobility spectrometer in positive polarity was investigated. This test was performed without the need for complicated sample preparation steps. At first, the Phosalone standard sample was identified by the IMS device and the optimal conditions for its measurement were determined. The data was analyzed with SigmaPlot software. The optimal temperature of the tube was 200°C and the optimal temperature of the injection chamber was 260°C. The linear range for measuring Phosalone ppm was determined to be 0.5-20. The detection limit of 1.4 ppm and determination limit of 4.7 ppm was obtained.

Keywords: Phosalone, ion mobility spectrometer, detection, measurement, optimization, detection limit and determination limit

INTRODUCTION

The world's population is expanding, which makes the need for food more pressing [1, 2]. It is essential and important to increase and sustain agricultural and food output in the near future

[1, 3, 4]. Among these are compounds that shorten the shelf life of agricultural and food items. Plant pesticides are one of the main things that lower food[5, 6].

Chemical or non-chemical substances known as pesticides are used to eradicate or manage a variety of pests and nuisance organisms, including animals, plants, fungi, weeds, and aquatic creatures as well as bacteria, viruses, and microbes[7, 8]. These chemicals kill plant pests but also severely harm agricultural crops [6, 9, 10]. The aforementioned article states that because pesticides have the ability to produce goods that are not hazardous to human health, several studies have been carried out to evaluate, extract, identify, and quantify them. For testing organic molecules, an ion mobility spectrometer is an appropriate, straightforward, and affordable tool [11, 12]. An organophosphorus insecticide called Phosalone is used in agriculture and horticulture to get rid of several plant pests[13]. Overuse of Phosalone has a negative impact on human and other living things' health. The purpose of this study is to present a low-cost, straightforward technique for measuring and identifying the pesticide Phosalone without the need for intricate extraction and separation procedures. The ion mobility spectrometer is a valuable method for identifying and measuring organic compounds, and especially for measuring and identifying agricultural pesticides and food. Fusalon residues in agricultural products are also harmful to humans, and how identifying these residual pesticides in fruits and vegetables requires comprehensive research on various laboratory devices. And how to test the pesticides in the device and how to optimize the devices, in this sense, this research is an urgent need. The ion mobility spectrometer device used in this research was made in Isfahan University, Iran, by Taf Technology Company[12, 14].

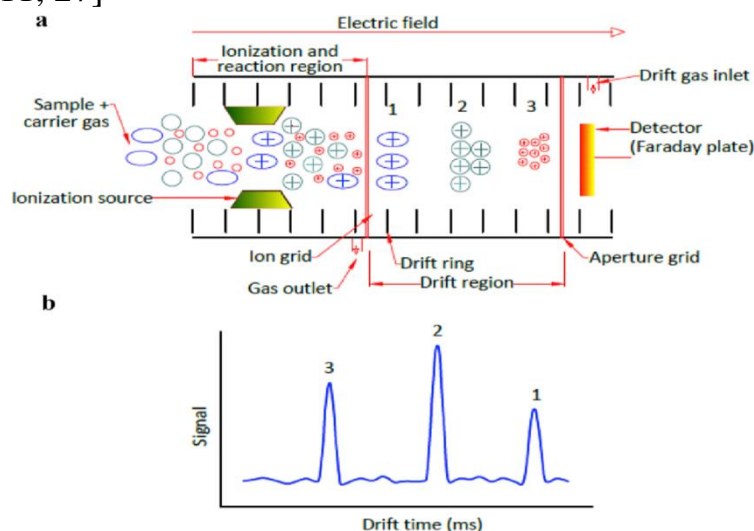
In the sample preparation and analysis section, the various methods introduced in scientific sources for pesticide analysis show the importance of this issue at the world level [15-17]. Sample preparation can be considered as one of the most important stages of pesticide measurement, which includes sample pre-concentration and cleaning[18, 19]. In most cases, sample preparation is necessary for the analysis of various chemical compounds in complex tissues. So far, various sample preparation technologies include liquid-liquid extraction (LLE), solid phase extraction (SPE), hanging drop micro extraction (SDME), solid phase micro extraction (SPME) and liquid phase micro extraction (LPME), have been presented

Chromatographic methods require long times for separation in the column, which leads to a decrease in the speed of the analysis flow [13, 20, 21]. In addition, one of the main requirements of HPLC is the use of high-purity washing solvents. On the other hand, identification methods by GC are limited to the analysis of volatile compounds or require

time-consuming and laborious derivatization methods before sample analysis. Additionally, IMS doesn't require a vacuum system like MS does. This device's mobility, fast reaction time, great sensitivity, and simplicity of use are further benefits[13]. Analyzing genuine samples with intricate textures is one of the IMS device's issues, particularly when analyzing real samples

Liquid-liquid micro extraction and negative corona discharge ionization have been integrated for the purpose of detecting and measuring pesticides[22, 23]. The practical application of the suggested technology has demonstrated its efficacy.

The ion mobility spectrometer device consists of four main parts, including the detector, the drift region of the ion source, and the ion grid[24, 25]. Carrying out chemical reactions of the sample with reactant ions (in positive polarity) or electrons (in negative polarity) in the ionization region, turns the sample vapors into desired ions[26]. The pulse injection of ions from the ionization zone to the thrust zone is done through the ion network. Ions move to the drift region under the influence of the applied electric field and hit the detector at different times based on the difference in size and mass. The signal resulting from the impact of the ions on the detector, after being amplified with the help of an amplifier, creates the ion mobility spectrum. Figure (1. a and b) shows the principle of operation of the ion motion spectrometer. The ion source is one of the main and important parts of the IMS device. In order to ionize the sample molecules in the IMS device, different ionization sources can be used[11, 27]



Figure(1) Schematic of ion mobility spectrometer[28]

Materials and methods

1- Solubilization of Phosalone

In this research, Phosalone of Merck company was used, 10 mg of Phosalone powder was weighed and transferred to a 100 ml flask and made up to 100 ml with methanol. A solution of 100 ppm Phosalone was prepared and to measure Phosalone by an ion mobility spectrometer under different conditions, one microliter was injected into the device with a 10 microliter Hamilton syringe, and its ion mobility spectrum was recorded..

2. Phosalone injection and recording peaks

In this practical work, the input gas to the ion mobility spectrometer to produce interacting ions is compressed air. The interacting ions in the ionization region and the presence of air thrust gas include $(H_2O)_nH^+$, $NH_4^+(H_2O)_n$ and $NO^+(H_2O)_n$.

The first peak at 4 milliseconds corresponds to protonated ammonia. The second peak at 4.6 milliseconds corresponds to NO^+ and the third peak at 5.2 milliseconds corresponds to H_3O^+ ions (protonated water vapor).

In the ionization zone, Phosalone molecules take protons from interacting ions and become ions. Phosalone ions enter the thrust area of the IMS device from the electrical network in a pulsed manner and move under the influence of an electric field of about 500 V/cm and reach the detector in 12.5 milliseconds.

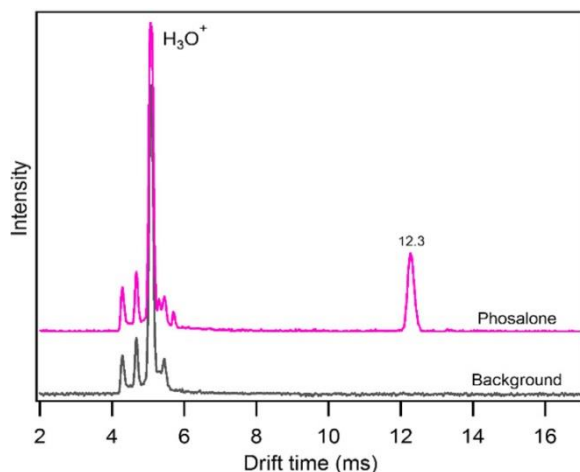


Figure (2) background and the peak of Phosalone to the ion mobility spectrometer injection at 200 C temperature

3- The temperature of the thrust tube and the injection chamber to measure Phosalone

As can be seen in Figure (3), with the increase in the temperature of the cell, the peaks of Phosalone are shifted to a shorter time and its intensity increases. Finally, the peak intensity

of Phosalone has increased at high temperatures, so the temperature of 200°C was chosen as the optimal temperature for measuring Phosalone. In figure (4), the maximum peak intensity of Phosalone at each temperature is plotted in terms of temperature.

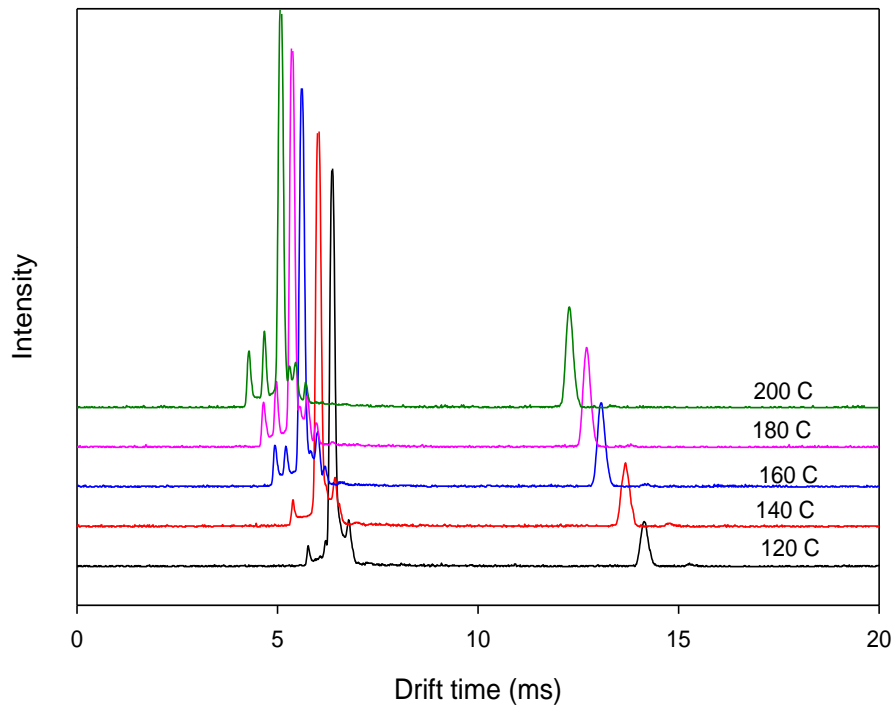


Figure (3) Ion mobility spectrum resulting from the injection of two microliters of 100 ppm Phosalone at different temperatures of the thrust tube

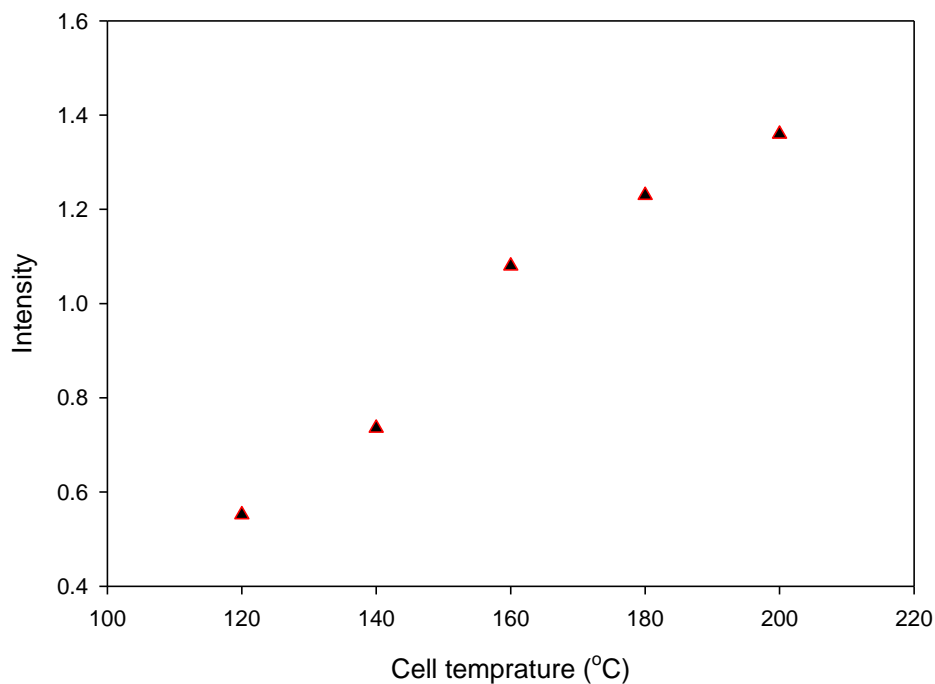


Figure (4) The maximum intensity of Phosalone signal at each temperature according to the temperature of the thrust tube

To check the temperature of the injection area, two microliters of 100 ppm Phosalone solution were injected into the device at different temperatures of the injection area and the optimum temperature of the cell (200 degrees Celsius) and their spectrum was recorded as seen in Figure (5) with Increasing the temperature of the injection area, the peak intensity of Phosalone increased. The temperature of 260 °C was obtained as the optimal temperature. In fact, the increase in the intensity of the Phosalone signal can be attributed to the increase in its evaporation rate and the increase in the sample input to the ionization zone. Other optimized parameters are listed in Table (1).

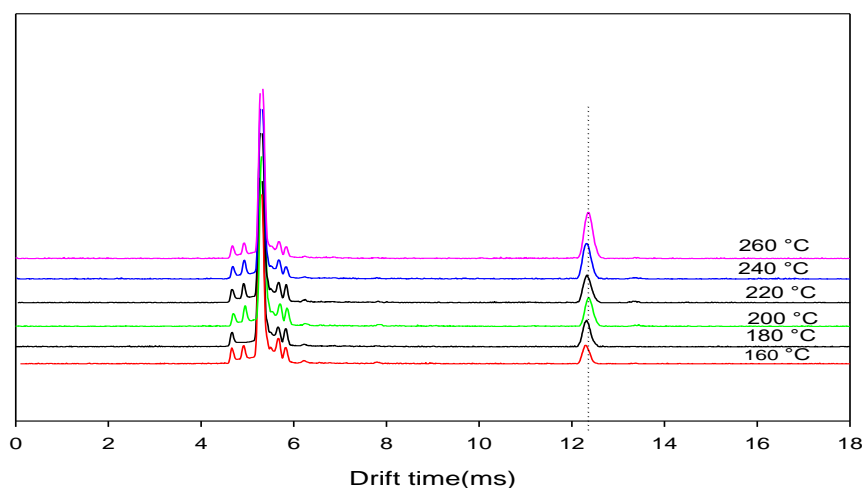


Figure (5) ionic mobility spectrum of Phosalone at different temperatures of the injection chamber

Table (1) optimal parameters of the ion mobility spectrometer device for the measurement of Phosalone

parameter	Settings
Corona voltage	2300 V
Thrust area voltage	8000 V
Thrust tube field	500V/cm
Buoyancy gas flow rate (compressed air)	600 ml/min
Carrier gas speed (compressed air)	300 ml/min
The temperature of the injection chamber is	260 °C

The temperature of the thrust tube is	200 °C
Pulse width	50 μ s
device polarity	Positive

research findings

4- Calibration curve and figures of merit

In order to obtain the calibration curve, different concentrations of Phosalone 0.5-100 ppm were prepared in methanol solvent. Then, in the optimal conditions obtained for the measurement of Phosalone (Table 1), the amount of two microliters of different concentrations of Phosalone was injected three times into the IMS device and their spectrum was recorded.

To obtain the calibration curve, the area under the peak was plotted against the concentration. Figure (5) shows the calibration curve of Phosalone. In this graph, the Y-axis is the sub-peak level and the X-axis is the concentration of Phosalone. In the line equation $y=ax+b$, a is the slope of the calibration curve and b is the width from the origin. In Figure (6), there is a linear range (0.5-20 ppm) and a saturation range. In the linear range of Figure (7), with increasing concentration, the area under the peak increases linearly. Therefore, its line equation can be obtained. In the saturation range, the level below the peak does not change with increasing concentration. In fact, the maximum signal that the device can show does not increase from the saturation concentration onwards.

In quantitative and accurate measurement, the linear range of the calibration graph is important because the area under the peak indicates the specific concentration. By obtaining the linear equation, the unknown concentration can be calculated.

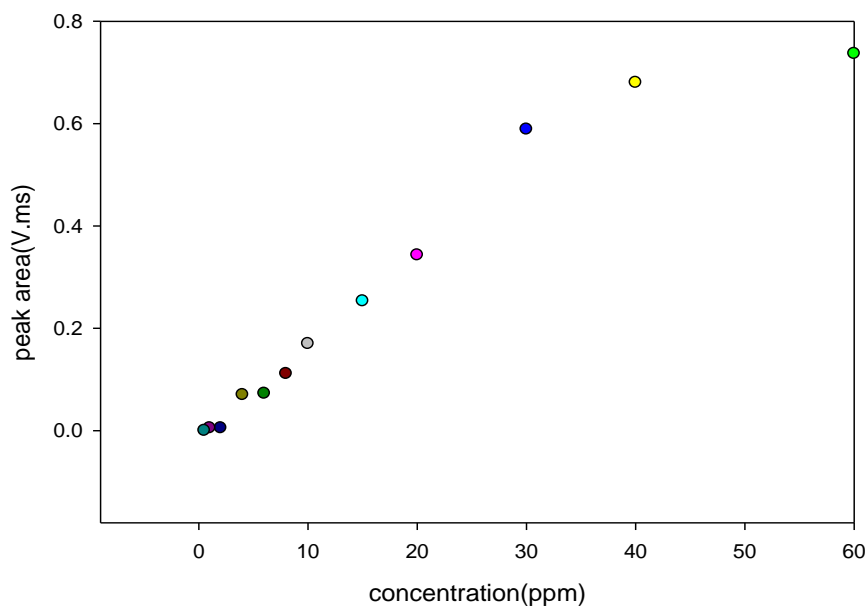


Figure (6) Phosalone calibration curve at 0.5-100 ppm concentrations

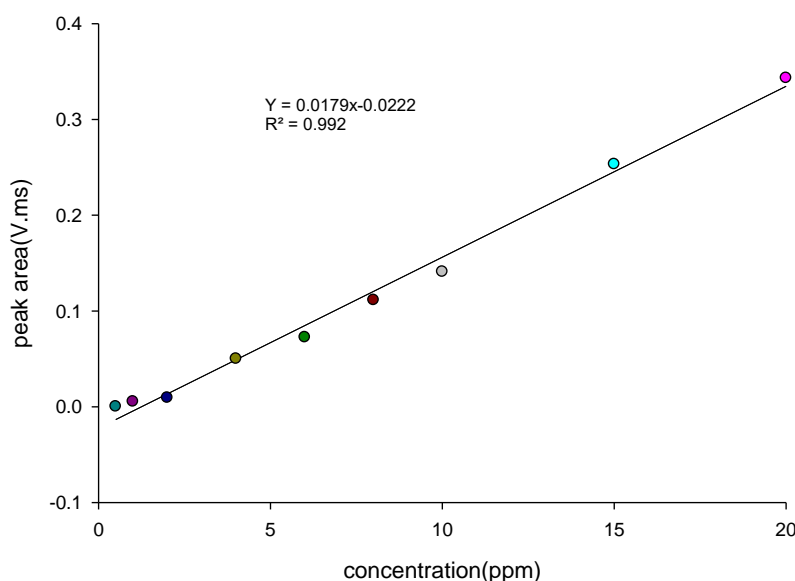


Figure (6) The linear range of Phosalone calibration curve

5. detection limit of ion mobility spectrometer (LOD)

The minimum concentration that a method can detect with a certain degree of confidence (Gosciny, Séverine, et al. 2015). In general, the detection limit is the concentration in which the device signal has a significant difference from the background signal. To calculate the detection limit, equation (1) is used (Ali Dini, Ali Alizadeh Spring 2018. .), where S_b is the standard deviation for the control sample and m is the slope of the calibration curve. To calculate the detection limit, the sample was injected into the

device 12 times and the standard deviation was calculated. The detection limit for Phosalone in optimal conditions was 1.412 ppm.

$$LOD = 3/3\left(\frac{0/00621}{0/0222}\right) = 1/412$$

6- limit of quantification (LOQ)

The limit of quantification of a method is the smallest sample concentration that can be determined with an acceptable uncertainty. In fact, it is the limit in which the difference between two different values can be reasonably recognized. The reduction limit is obtained from relation (2). In equation (2), S_b is the standard deviation of the control sample, m is the calibration slope, and LOQ is the limit of determination. The detection limit is 3 times the standard deviation of the control sample and the quantification limit is 10 times the standard deviation of the control sample.

The minimum concentration that the analytical method can determine and measure with a certain certainty is calculated from the following equation and its value is obtained.

$$LOQ = \frac{10S_b}{m} \quad (2)$$

$$LOQ = 10\left(\frac{0/00621}{0/0132}\right) = 4/731$$

REFERENCES

1. Satterthwaite, D., G. McGranahan, and C. Tacoli, *Urbanization and its implications for food and farming*. Philosophical transactions of the royal society B: biological sciences, 2010. 365(1554): p. 2809-2820.
2. Conway, G., *One billion hungry: can we feed the world?* 2012: Cornell University Press.
3. Byrnes, B.H. and B.L. Bumb, *Population growth, food production and nutrient requirements*. Journal of crop production, 1998. 1(2): p. 1-27.
4. Pretty, J., *Agricultural sustainability: concepts, principles and evidence*. Philosophical Transactions of the Royal Society B: Biological Sciences, 2008. 363(1491): p. 447-465.
5. Godfray, H.C.J., et al., *Food security: the challenge of feeding 9 billion people*. science, 2010. 327(5967): p. 812-818.

6. Mahmood, I., et al., *Effects of pesticides on environment*. Plant, soil and microbes: volume 1: implications in crop science, 2016: p. 253-269.
7. Sundh, I. and M.S. Goettel, *Regulating biocontrol agents: a historical perspective and a critical examination comparing microbial and macrobial agents*. BioControl, 2013. 58: p. 575-593.
8. Ahmad, G., et al., *Biological control: a novel strategy for the control of the plant parasitic nematodes*. Antonie van Leeuwenhoek, 2021. 114(7): p. 885-912.
9. Hill, D.S., *Agricultural insect pests of the tropics and their control*. 1987: Cambridge University Press.
10. Tudi, M., et al., *Agriculture development, pesticide application and its impact on the environment*. International journal of environmental research and public health, 2021. 18(3): p. 1112.
11. Armenta, S., M. Alcala, and M. Blanco, *A review of recent, unconventional applications of ion mobility spectrometry (IMS)*. Analytica chimica acta, 2011. 703(2): p. 114-123.
12. Kaur-Atwal, G., et al., *Chemical standards for ion mobility spectrometry: a review*. International Journal for Ion Mobility Spectrometry, 2009. 12: p. 1-14.
13. Sadat, S.A.A., V. Ilbeigi, Y. Valadbeigi, and M. Soleimani, *Determination of pesticides phosalone and diazinon in pistachio using ion mobility spectrometry*. International Journal for Ion Mobility Spectrometry, 2020. 23: p. 127-131.
14. Tabrizchi, M. and V. ILbeigi, *Detection of explosives by positive corona discharge ion mobility spectrometry*. Journal of hazardous materials, 2010. 176(1-3): p. 692-696.
15. Muir, D. and E. Sverko, *Analytical methods for PCBs and organochlorine pesticides in environmental monitoring and surveillance: a critical appraisal*. Analytical and bioanalytical chemistry, 2006. 386: p. 769-789.
16. Lehotay, S.J. and J.M. Cook, *Sampling and sample processing in pesticide residue analysis*. Journal of agricultural and food chemistry, 2015. 63(18): p. 4395-4404.
17. Zhang, C., *Fundamentals of environmental sampling and analysis*. 2007: John Wiley & Sons.
18. Zhang, L., et al., *A review of sample preparation methods for the pesticide residue analysis in foods*. Central European Journal of Chemistry, 2012. 10: p. 900-925.
19. Nasiri, M., H. Ahmadzadeh, and A. Amiri, *Sample preparation and extraction methods for pesticides in aquatic environments: A review*. TrAC Trends in Analytical Chemistry, 2020. 123: p. 115772.
20. Szultka, M., P. Pomastowski, V. Railean-Plugaru, and B. Buszewski, *Microextraction sample preparation techniques in biomedical analysis*. Journal of separation science, 2014. 37(21): p. 3094-3105.
21. Khademi, S. and S. Mohammad, *Direct immersion-solid phase microextraction arrow-Corona discharge ion mobility spectrometry for determination of pesticides in environmental*

- samples*. Dissertation, Duisburg, Essen, Universität Duisburg-Essen, 2021.
22. Ilbeigi, V., Y. Valadbeigi, L.u. Slováková, and S. Matejcik, *Solid Phase Microextraction–Multicapillary Column–Ion Mobility Spectrometry (SPME–MCC–IMS) for Detection of Methyl Salicylate in Tomato Leaves*. Journal of Agricultural and Food Chemistry, 2022. 70(49): p. 15593-15601.
23. Valadbeigi, Y., V. Ilbeigi, W. Mamozai, and M. Soleimani, *Rapid and simple determination of gabapentin in urine by ion mobility spectrometry*. Journal of Pharmaceutical and Biomedical Analysis, 2021. 197: p. 113980.
24. Eiceman, G.A., Z. Karpas, and H.H. Hill Jr, *Ion mobility spectrometry*. 2013: CRC press.
25. Hill Jr, H.H., W.F. Siems, and R.H. St. Louis, *Ion mobility spectrometry*. Analytical Chemistry, 1990. 62(23): p. 1201A-1209A.
26. Vestal, M.L., *Methods of ion generation*. Chemical reviews, 2001. 101(2): p. 361-376.
27. Wittmer, D., Y.H. Chen, B.K. Luckenbill, and H.H. Hill, *Electrospray ionization ion mobility spectrometry*. Analytical Chemistry, 1994. 66(14): p. 2348-2355.
28. Gabelica, V. and E. Marklund, *Fundamentals of ion mobility spectrometry*. Current opinion in chemical biology, 2018. 42: p. 51-59.

PROBLEMS OF READING AND TRANSLATING TEXTS IN ENGLISH AT TECHNICAL UNIVERSITIES OF UZBEKISTAN

Guldora Salokhiddinovna Mustaeva

Associate Professor, Tashkent State Transport University

Yusup Khaytbayevich Kushakov

Senior teacher, Tashkent State Transport University

ABSTRACT

At present, it is often vitally important for technical specialists to have the ability to read and translate texts in English. This need is due to the fact that domestic enterprises use a large amount of foreign equipment that requires competent handling, maintenance and repair. In addition, Uzbek specialists quite often travel to foreign countries for training in order to improve their own professional qualifications, which requires proficiency in English. In this article, the authors have made an attempt to systematize the most promising technologies for teaching technical students to read and translate texts in English.

Keywords: English language, method, reading, students, technical specialties, teaching texts, translating texts, teaching technologies

INTRODUCTION

English is the Language of International Communication. “Although English is not the most spoken language in the world, it is the official language in 53 countries and is spoken as a first language by around 400 million people worldwide”[11]. But that's not all, it is also the most common second language in the world. Communication plays a vital role in an individual's success and career growth. Therefore, learning English can increase their opportunity of getting employed in multinational companies across the world, and it can be said that English makes you more desirable to employers. Many young Uzbeks strive to master the English language. At many universities across the capital, Tashkent, many Uzbek students enroll in English language courses. For many, the English language is a break from the past and represents a new future. For young men, English language is a natural step in their business endeavors. As one male student mentioned, “The English language will help me establish strong business connections and make my business wealthier.” [12] As we know teaching English is becoming very popular at most part of technical universities

of Uzbekistan. Technical texts do not use various stylistic features that impart expressive coloring or emotionality. The translation of such a text must be carried out in strict accordance with existing standards in order to maintain accuracy and not interfere with the clarity of the presentation of thoughts. Many scientists deliberately seek to use metaphors to enrich their research lexically and further impart theoretical significance to the information. In modern scientific and technical articles, more and more metaphorical terms are found, such as: “pillow block - bearing pillow, flywheel - flywheel, wing pump - blade pump, fatigue crack - fatigue cracking, necking behavior - deformation characteristic, worm gears - worm transmission, butterfly valve - a two-leaf valve, a blade root - the tail of a turbine blade, etc.[5]

METHODS AND LITERATURE ANALYSES

According to L.S. Barkhudarov “Literal translation is a translation carried out at a lower level than the one that is sufficient to convey an unchanged plan of content while observing the norms of the translating language.”. [1] According to the statements of A.D. Schweitzer, “translation must correspond to certain communicative conditions and tasks”. [9] It should be noted that, despite its stylistic distance from the spoken language, which is saturated with expressive means, the scientific and technical text uses phrases of a technical nature, as well as special terminology characteristic of a certain branch of knowledge: beyond design basis accident - “beyond design basis” accident, decay heat removal - removal of residual heat, pebble-bed reactor - bulk reactor, power response - power sensitivity, transient analysis - non-stationary analysis, etc. Minyar-Beloruhev R.K. believes that scientific texts contain many terms that can only be understood with appropriate training. For successful translation in the scientific field, knowledge and ability to operate with terminology are needed more than translation skills.[4] According to Retzker Ya.I “there are two sources and two types of literalism. The first, more primitive type, a kind of “childhood disease” of beginning translators, is rooted in the external similarity of foreign and Russian words, graphic and phonetic similarity”[6]. The main feature of a scientific text is its saturation with special terminology used in the technical and technological field in which the specialist translating the text works. The terminological base refers to certain terms that convey exact names or describe scientific concepts, phenomena or processes used in a particular branch of scientific knowledge.

RESULTS

We have got the following results. Terms make it possible to convey the content of a scientific text in the most concentrated and accurate manner, which ensures a correct understanding of the scientific phenomenon or process that is described in the text. In this connection, it is very important to have the ability to correctly interpret and translate terminology texts. For example, in the field of vacuum technology, terms such as positive displacement pump are used, roughing / backing pump, reciprocating compressor, isentropic efficiency. etc., which are understandable only to specialists in this field. [3] However, it should be noted that English scientific and technical texts are characterized by a certain complexity in terms of their grammatical and syntactic structure. The use of complex grammatical structures in scientific text, such as: The Absolute Participle Construction, Complex Subject, Complex Object, as well as Conditional Sentences and Subjunctive Mood causes great difficulties for students when translating professional texts, which sometimes leads to a misunderstanding of the content of the text being presented, and sometimes even to a distortion of the meaning of an entire sentence.[2] Thus, when learning to translate special texts from English into Uzbek at a technical universities, special attention should be paid to solid mastery students of the grammar of the target language and, in particular, those grammatical phenomena that which have no analogues in their native language. To do this, it is advisable to work out and consolidate this material using a system of carefully designed exercises.

DISCUSSION

Currently, teaching students of technical universities to translate scientific and technical texts in accordance with their specialty is one of the most important tasks of the educational process. According to the State Educational Standard for Higher Professional Education, a student must be proficient in one foreign language at the level of social and professional communication, have the knowledge, skills and abilities to use special vocabulary and professional terminology of the English language. Let us consider the currently used methods and technologies for teaching technical students to read and translate texts in English. We analyzed translations made by students of Tashkent State Transport University in various areas of their professional activities. In English lessons, senior students were asked to translate a text, paying special attention to the translation of specialized vocabulary in a certain field of knowledge, for example, in the field of audio and digital data transmission. Based on the analysis of student work, the following conclusions can be drawn: it is a mistake to give a

literal translation of such terms as, for example, “transmission of audio data”, which some students translated as “audio data transmission”, instead of “audio data transmission” or “audio compression techniques” - “audio compression technique” instead of “sound compression methods”. [10] The term “audio processing function” was translated as “audio processing function” instead of “sound processing function”, which is completely unacceptable in translation. [7] An authentic translation does not mean a literal translation. Such a translation must first of all comply with the norms of the Russian language, understandable to the reader, while observing the terminology used by specialists in this industry. This is etymological literalism. External similarity does not always mean identity or even closeness of meaning. Such words, similar in spelling or sound, are usually called “false friends of the translator (For example: specific heat - specific heat release, candidate material - promising material, revolution per minute - revolutions per minute, void fraction - volumetric vapor content, transient scenarios - transition modes, etc.). [8] Literal translation of words leads to a distortion of the meaning of the whole sentence. Therefore, the word graphically depicted on the letter is not a technical term. Similar words in English and Russian do not mean the same concept, i.e. have no general meaning. Authentic text has its own characteristics. First of all, this is an unadapted text and unprocessed by the teacher. There are no new words and phrases written before the text being studied, and grammatical structures that are difficult to translate are not understood, which is typical of an adapted text. A scientific text is full of information that can only be understood by a specialist in a certain field of science and technology. In translation theory, a distinction is made between the concepts of “equivalent” and “authentic” translation. Translation of scientific texts should be as close as possible to the original, i.e. authentic, and correctly convey not only the meaning expressed by the author, but also use the terminology accepted in this particular field of science. But the correspondence of the text to the original can be different; it is determined differently at different levels of language. In some cases, complete equivalence to the original is optional and sometimes undesirable. The concept of “equivalence” implies full reproduction of the text. However, according to Ya.I. Retzker, “in the theory and practice of translation there is a dual understanding of equivalent” [6]. Often, an equivalent means any correspondence to a word, or, in other words, any correctly found correspondence to a translation micro unit. An equivalent should be considered a constant equivalent correspondence, as a rule, independent of the context. Retzker Ya.I. notes that it is these units of translation, which have a constant correspondence in the native language, that first of all become clear in the mind of the translator and help him



understand the meaning of the context and the entire utterance as a whole, even containing words unfamiliar to him. But a translation using only equivalents is not always authentic. The adequacy of conveying the meaning of the text is the main criterion for translating a scientific text from English into Russian. An accurate rendering of the meaning of a text may have some degree of equivalence, but at the same time, an equivalent translation is not always authentic. According to the statements of A.D. Schweitzer, "translation must correspond to certain communicative conditions and tasks. Consequently, authentic translation requires not only a complete and accurate transmission of the meaning of the original, but also the correct transmission of the main communicative purpose, which leads to the formation of public consciousness and the exchange of scientific knowledge and information between people".[9]

CONCLUSION

English is the third most spoken native language in the world, after Standard Chinese and Spanish. It is the most widely learned second language and is either the official language or one of the official languages in almost 60 sovereign states. The role and influence of English in today are gaining a higher speed in the world as well as in Uzbekistan. The main factors for this phenomenon include expanding communication with the world after gaining the independence and increasing speed and scope of information exchange in the global village. The dominant position in the internet space by the language of the published content is firmly held by English, which is a strong motivation to learn English for those who wish to promote their global competences. "As it was mentioned since the declaration of independence the importance of the English language has been increasing in all aspects of Uzbek people's life"[12]. Teaching English at universities in Uzbekistan is strongly connected with teaching of reading and translation English texts, properly. In conclusion it should be noted that there are several tasks to implement the main directions improving reading and translating technical texts in English. Nowadays it's crucial that teachers need to revisit the factors which are expected to improve the standards of higher education of English, the modernization of the content and structure of higher education of English. The specialists need to work out new internal mechanisms, applying the elements of other systems, to implement the best practices and recommendations on innovative educational technologies, to assess primary standards, to refresh educational process by means of modernizing educational system personnel and developing



international cooperation in the sphere of higher and specialized education of English.

REFERENCES

1. Barkhudarov L.S. Levels of language hierarchy and translation. // Translator's notebooks. M., 1969. No. 6. P. 10.
2. Vishniauskienė D. and Lechitskaya Zh. The concept of developing translation competence when teaching the translation of technical literature // Studies about language, 2009. No. 15. P. 94-103.
3. Loseva O.M. Dead metaphor in modern scientific and technical text. // Philological sciences. Questions of theory and practice. Tambov: Certificate, 2015. No. 12. Part 3. P. 121.
4. Minyar-Beloruhev R.K. General theory of translation and oral translation. M. Publishing House "Military Publishing House", 1980. pp. 12-13.
5. Nosovich E.V., Milrud R.P. Parameters of an authentic educational text // Foreign language at school, 1999. No. 1. P. 11-18.
6. Retsker Ya.I. Translation theory and translation practice. // Essays on the linguistic theory of translation (Series "Our Heritage"): M. Publishing House R. Valent, 2010. P. 32-35.
7. Fufurina T.A. Learning a foreign language for professional purposes as a success for the future career of technical university students. // Science, technology and education, 2015. No. 2 (8). pp. 98-103.
8. Fufurina T.A. Lexical difficulties in translating "false friends of the translator" from English into Russian // Problems of pedagogy, 2015. No. 10 (11). pp. 66-72.
9. Schweitzer A.D. Translation theory: status, problems, aspects. M., 1988. S. 95-96.
10. Yen Pan Davis. Digital Audio Compression. Digital Technical Journal, 1993 Spring. Vol. 5. No. 2. P. 1-4.
11. <https://bluedomes.net/2020/04/02/the-growing-importance-of-english-in-uzbekistan/>
12. Турдиева Комила Усмонкуловна Рубрика: Педагогика в Молодой учёный №44 (230) ноябрь 2018 г, р.3.
13. Decree of the President of the Republic of Uzbekistan «On measures to further improve foreign language learning system» № 1875 from December 10, 2012.



KO‘CHA YO‘L TARMOG‘INING YORITILGANLIK XUSUSIYATINI HARAKAT XAVFSIZLIGIGA TA’SIRI.

A. G‘. Ikromov

Toshkent davlat transport universiteti, t.f.f.d dotsent

SH. I. Abruyev

Toshkent davlat transport universiteti, assistent

G. E. Hayitova

Toshkent davlat transport universiteti, talaba

ANNOTATSIYA

Ushbu maqolada bugungi kunda sodir bo‘layotgan yo‘l transport xodisalarining aksaryat qismi piyodalar o‘tish joylarining yoritilmaganligi sababli sodir bo‘layotgani va uning oldini olishga qaratilgan chora tadbirlar bayon etilgan.

Kalit so‘zlar: Gobo proyektori, yo‘l, yo‘l transport xodisalari, qatnov qism kengligi.

ABSTRACT

This article describes the fact that the majority of road traffic accidents occurring today are caused by the lack of lighting of pedestrian crossings, and measures to prevent it are described.

Keywords: Gobo projector, road, road traffic phenomena, roadway width.

KIRISH

Bugungi kunda yo‘l harakati xavfsizligini ta‘minlashda ko‘cha yo‘l tarmog‘ining yoritilganlik holati xam o‘z ta‘sirini ko‘rsatmoqda buni bugungi kunda sodir bo‘layotgan yo‘l transport xodisalarining salmog‘idan xam ko‘rishimiz mumkin deyarli 26.8 % foizi sutkaning 19⁰⁰ dan 24⁰⁰ gacha bo‘lgan vaqt oralig‘ida sodir bo‘lgan. Ya‘ni ushbu yo‘l transport xodisalarining aksaryati piyodalar o‘tish yo‘laklarining yaxshi yoritilmaganligi oqibatida kelib chiqmoqda birgina 2022 yilning o‘zida poytaxtda 1200 ta yo‘l-transport hodisasi sodir bo‘lgan. Hisobot davrida YTH oqibatida halok bo‘lganlar soni 136 nafarni tashkil etgan, 1463 nafari tan jarohati olgan. Yo‘l-transport hodisalarining 32,5 foizini piyodalar ishtirokidagi baxtsiz hodisalar tashkil etadi. Bolalar ishtirokida 169 ta YTH sodir bo‘lgan, buning oqibatida 56 nafar

voyaga yetmaganlar tan jarohati olgan, 17 nafari vafot etgan. Har bitta raqam ortida insonlar taqdiri yotibdi. Bitta insonning halok bo‘lishi – uning oila a‘zolari, yaqinlari va mamlakat uchun og‘ir judolik hisoblanadi.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

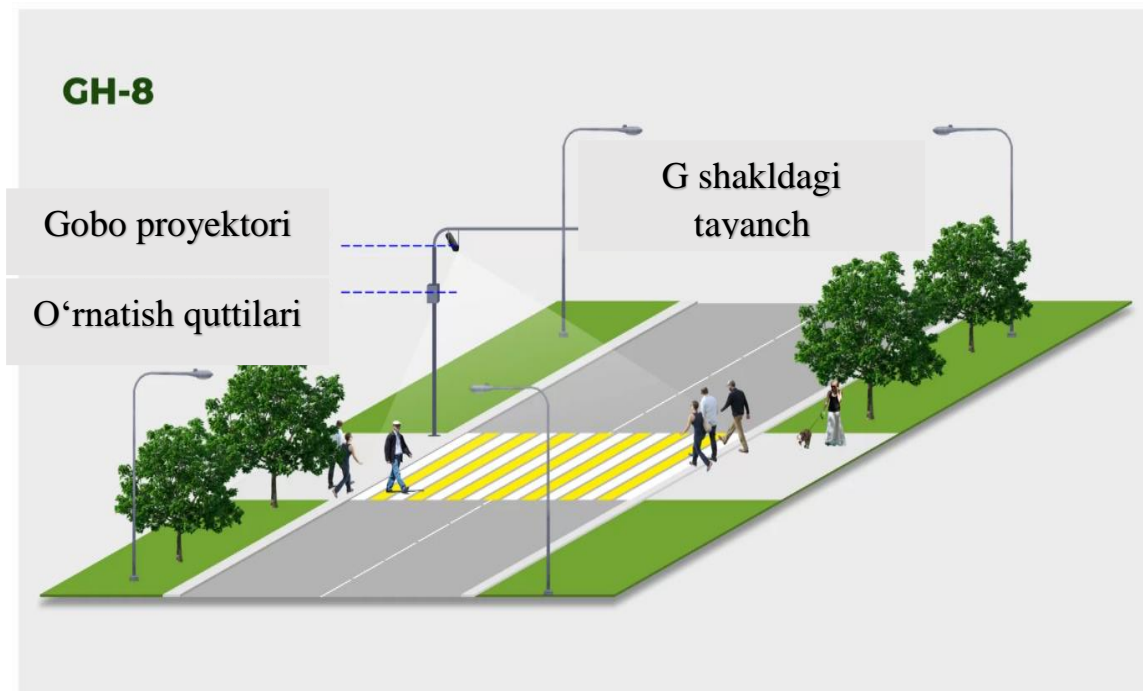
Bugungi kunda ushbu YTHlarni oldini olish maqsadida ko‘plab ishlar amalga oshirilmoqda va shu o‘rinda ta’kidlab o‘tishimiz kerakki O‘zbekiston Respublikasi Prezidentining 2022-yil 12-iyuldagi PQ-316-son qarori tasdiqlandi. Ushbu qarorda 2022 — 2026-yillar davomida amalga oshirilishi mo‘ljallangan “xavfsiz va ravon yo‘l” umummilliy dasturini tasdiqlash to‘g‘risida ya’ni Xavfsiz yo‘l infratuzilmasi yo‘l harakati xavfsizligi bo‘yicha (2) o‘n yillikning yana bir muhim maqsadi bo‘lib, yo‘l-transport hodisalari oqibatida kelib chiqadigan o‘lim va jarohlarning og‘irligi bilan chambarchas bog‘liq. Xavfsizlik tizimlari yondashuvida maqsad faqat yo‘l harakati qatnashchilariga xavfsizlik uchun asosiy ma’suliyatni yuklash emas, balki xavfsiz yo‘l infratuzilmasini yaratishdir. Ushbu qarorni ijrosini ta’minlash bo‘yicha xududlarda bir qator ishlar amalga oshirilmoqda. Avtomobil yo‘llarida harakatni boshqarish tizimini raqamlashtirish ,yo‘l harakati xavfsizligini ta’minlash bo‘yicha tashviqot ishlarini kuchaytirish, bolalarga yo‘l harakati qoidalarini amaliy o‘rgatishni yo‘lga qo‘yish va haydovchilarni tayyorlash va qayta tayyorlash tizimini takomillashtirish hamda transport vositalarining texnik holati ustidan nazoratni kuchaytirish vazifalari bo‘yicha samarali ishlar amalga oshirilmoqda. 2023-yilning 9 oyi ichida tartibga solinmagan piyodalar o‘tish joylarida qariyb 9,2 ming yotiq chiziqlar chizilgan, 417 svetofor obyektlari hamda piyodalar uchun 210 ta svetofor qurilgan. Proyeksiyali piyodalar o‘tish joyi (proyeksiyali zebra) gobo proyektori yordamida markalashning samarali turi hisoblanadi. Ushbu turdagi dastur mavjud belgini almashtirmaydi, lekin uni faqat kechqurun va tunda takrorlaydi. Bu texnologiya tufayli zebra 100-150 metr masofadan ko‘rinadi va o‘ziga e’tibor qaratadi. Piyodalar o‘tish joyi turiga qarab proyektorlar soni aniqlanadi. Qoida tariqasida, bu kamida 200 vatt quvvatga ega 1-2 gobo proyektorlari. (tanlash qatnov qismining kengligiga bog‘liq - qatnov qismining kengligi 8 metrdan ortiq bo‘lsa, 2 ta gobo proyektor ishlatiladi). Proyektor piyodalar o‘tish joyining tepasida yoki yaqinida o‘rnatiladi. Projektorda piyodalar o‘tish joyining tugagan tasviri bilan maxsus gobo linzalari o‘rnatilgan. Natijada yorqin, aniq, uzoqdan ko‘rinadigan "zebra" proyeksiyasi. Mavjud yo‘l belgilarini yilning istalgan vaqtida va istalgan ob-havoda takrorlash imkonini beradi, belgilar qorda ham ko‘rinadi. “Zebra” proyeksiyasi 150-200 metrgacha bo‘lgan masofada haydovchilarga ko‘proq ko‘rinadi, bu esa piyodani oldindan



ko'rish imkonini beradi. Asfaltga qo'llaniladigan bo'yoqdan farqli o'laroq, proyeksiya belgilari tashqi omillarga chidamli.

Gobo proektorining quyidagi turlari mavjud:

GH-8 proeksion kompleksi - bir yoki ikki qatorli qatnov qismidagi, kengligi 8 metrgacha bo'lgan proyeksiyali piyodalar o'tish joyi.



1.1 rasm GH-8 proeksion kompleksi umumiy ko'rinishi.

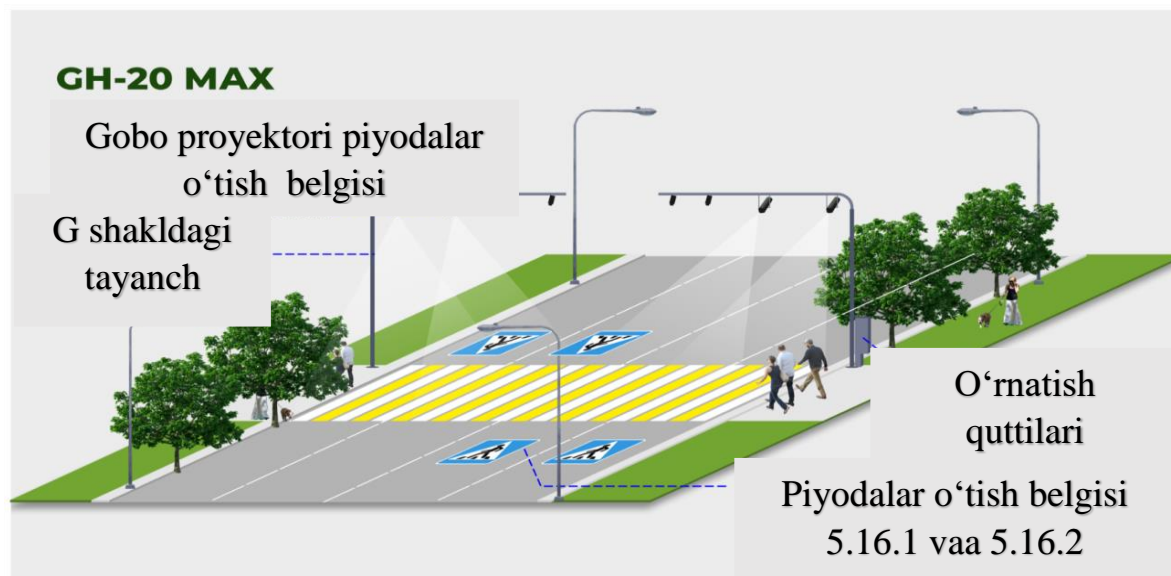
2 GH 16 - proeksion piyodalar o'tish joyi ikki qatorli qatnov qismida, kengligi 16 metrgacha.

3 GH 20 - proyeksiyali piyodalar o'tish joyi 4 yoki undan ortiq bo'lakli, kengligi 20 metrgacha.

4 GH -8 MAX - proyeksiyali piyodalar o'tish joyi bir yoki ikki qatorli qatnov qismida, kengligi 8 metrgacha bo'lgan qo'shimcha belgilar proyeksiyasi bilan.

5 GH -16 MAX - piyodalar o'tish joyi ikki qatorli qatnov qismida, kengligi 16 metrgacha bo'lgan qo'shimcha belgilar proyeksiyasi.

6 GH -20 MAX - proyeksiyali piyodalar o'tish joyi 4 yoki undan ortiq bo'lakli, kengligi 20 metrgacha bo'lgan qatnov qismi.



1.2 rasm GH -20 MAX - proyeksiyali piyodalar o'tish joyi umumiy ko'rinishi.

Bir so'z bilan aytganda, har bir haydovchi transport vositasini boshqarayotganda nafaqat o'zi, balki yo'lovchilar va piyodalarning hayotiga ma'suliyat bilan qarashlari lozim. Piyodalar esa yo'l harakati ishtirokchisi ekanligini unutmasligi va o'rnatilgan qoidalarga rioya etishlari kerak.

REFERENCES

1. <https://uzreport.news/society/2022-yilda-toshkent-shahrida-1200-ta-yo-l-transport-hodisasi-sodir-bo-lgan-unda-136-nafar->
2. <http://www.yhxx.uz/>
3. Abruyev SH.I, Ikromov A.G', O'taganov S.Q., Yo'L transport hodisalari va ularning kelib chiqish sabablari tahlili (Toshkent Shahri Misolida)
4. <https://lex.uz/ru/docs/-6106551>

THE IMPACT OF SOCIAL MEDIA ON STUDENT COMMUNICATION IN THE DIGITAL AGE: A COMPREHENSIVE ANALYSIS

Aburaykhon Kholikulovich Juraev
Karshi Engineering Economics Institute
aburayxonjurayev75@gmail.com

ABSTRACT

Social media has revolutionized communication, but how does its widespread use affect students? This in-depth analysis examines both opportunities and challenges, incorporating diverse perspectives. Through case studies, recommendations aim to maximize benefits and address equity issues so all students can thrive in an increasingly digital world.

Keywords: social media, students, communication, digital technology, advantages, disadvantages.

INTRODUCTION

Social media's rise over the past two decades has been meteoric. With over 4.2 billion active users worldwide, these platforms now represent a primary mode of interaction. For students, social networks are also integral to daily life, shaping how they learn, share information and build communities. However, with such profound influence comes responsibilities that demand consideration. This comprehensive analysis aims to explore social media's multifaceted impact on student communication through an equity lens. By incorporating diverse viewpoints, it examines advantages while addressing challenges and risks, particularly for marginalized demographics. Presenting balanced, evidence-based perspectives and recommendations, the goal is to further understanding and foster responsible digital citizenship among students.

LITERATURE ANALYSIS AND METHODOLOGY

One benefit is access to a global audience. For students, unprecedented connectivity through platforms like Facebook, Instagram and Snapchat has opened new avenues for interaction and collaboration regardless of location. Students can now easily connect with peers worldwide to exchange ideas, seek academic help and build communities of shared interests. A survey of 1,500 undergraduates found 68% use Facebook to network with alumni and find internships or jobs. Educators have also leveraged



platforms to conduct remote classes during crises like COVID-19, providing continuity when traditional schooling was disrupted. However, not all students can participate meaningfully. Those from low-income families or remote areas often lack devices/connectivity for collaborative projects requiring extensive data sharing. During COVID-19 lockdowns, an estimated 15-16 million US students lacked internet/devices, worsening the "homework gap". Educators struggled to engage marginalized learners remotely as effectively [1, 2].

Social media offers a public space for self-expression, creativity and identity exploration. Platforms like YouTube, Instagram and TikTok have become breeding grounds for student multimedia art, writing, photography and more. By engaging in content creation, students discover interests and talents. Additionally, the ability to connect with global audiences cultivates confidence and gives introverted students a louder voice. However, curating the "perfect" online image also raises self-esteem issues. Comparisons to unrealistic ideals promoted on platforms have been linked to poor body image and depression in teens. Furthermore, constant connectivity blurs lines between personal/academic lives online. This pressures some students to constantly update profiles seeking validation, creating anxiety. Educators must therefore empower students to engage online in healthy, balanced ways [3, 4].

RESULTS

As communication becomes increasingly digitized, social media proficiency has emerged as an essential employability skill. By actively engaging platforms, students enhance multimedia curation, search optimization, coding and website design competencies valued by employers. Regular interactions through networks also expose students to diverse career paths and opportunities. Research shows social media use from a young age helps develop an online professional identity and network, giving students a head start. However, not all have equal access to technology shaping future careers. Policymakers must address digital inequities [5].

While offering advantages, overuse of recreational features on platforms introduces risks. Constant notifications and alerts fragment attention, especially when combined with other devices like smartphones. Excessive multitasking also overloads the brain's ability to focus and process information. A survey of 1,000 undergraduates found social media checking to be the #1 classroom distraction. This impacts concentration, comprehension and test scores. Students most prone to distraction tend to be high achievers putting pressure on themselves. Educators must therefore help all students practice self-regulation.



Social media's always-on culture raises concerns about wellness impacts. Comparisons to unrealistic ideals promoted online have been linked to poor body image, depression, anxiety and eating disorders in youth. Additionally, constant connectivity blurs lines between personal/academic lives online. This pressures some seeking validation through constant profile updates, creating anxiety. The potential for unchecked cyberbullying, rumors and trolling on platforms also negatively impacts student mental health and safety [6, 7]. School counselors report rises in social anxiety, loneliness and obsession over peers' lives correlated to heavy social media use. Educators play a key role in empowering students to engage platforms in balanced, responsible ways protective of well-being.

DISCUSSION

The vast amounts of personal data harvested on social platforms for ad targeting raises privacy issues, especially for underage students. Additionally, public posts can impact future opportunities like careers or college admissions in unforeseen ways. While platforms aim to secure accounts, many students are unaware or apathetic about privacy settings, leaving them vulnerable. Security breaches are also common, exposing private information. This impacts marginalized groups facing discrimination disproportionately. Comprehensive digital literacy education is needed.

When leveraged judiciously under guidance, social media holds immense potential to enrich learning for students worldwide. A blended model incorporating strategic in-person interactions alongside technology is most impactful. Educators play a key role in empowering students with digital literacy, media discernment, privacy awareness and self-regulation to engage platforms in healthy, balanced ways. Policymakers must prioritize addressing inequities to ensure all students can access opportunities in an increasingly digital world. With thoughtful support systems, social networks hold promise to cultivate responsible digital citizens who can thrive in interconnected careers and communities. An evidence-based, balanced perspective optimizes benefits while mitigating harms for students [8, 9].

CONCLUSION

In conclusion, social media's rise presents opportunities and challenges when it comes to student communication. While opening new frontiers, its overuse introduces distractions requiring mitigation. A comprehensive, nuanced view acknowledging diverse needs is imperative. With guidance, social networks can enrich learning when leveraged



judiciously under a blended model. Educators and policymakers must work collaboratively to foster digital equity and well-being for all students.

REFERENCES

1. Балашов М.В. Понимание роли цифровых технологий в образовании: сборник трудов конференции. / М.В. Балашов, Е.А. Полякова, В.А. Спажакина // Актуальные вопросы гуманитарных и социальных наук: от теории к практике : материалы Всерос. науч.-практ. конф. с междунар. участ. (Чебоксары, 19 янв. 2023 г.) / редкол.: Ж.В. Мурзина [и др.] – Чебоксары: ИД «Среда», 2023. – С. 86-88. – ISBN 978-5-907688-07-0.
2. Juraev, A. K., Jurayev, F. D., Eshkobilov, S. B., Ibragimov, B. S., & Norboev, O. N. (2023). Nonlinear control object identification problems: Methods and approaches. In E3S Web of Conferences (Vol. 392, p. 02043). EDP Sciences.
3. Xoliqulovich, J. A., Ashurqulovich, O. M., & Islomnur, I. (2022). DEVELOPED IN THE MODERNIZATION OF THE HIGHER EDUCATION SYSTEM THE ROLE OF EXTRACTIVE INDUSTRIES. World scientific research journal, 3(2), 62-66.
4. Терентьева Н.Ю. Некоторые аспекты цифровизации образования в условиях вуза: сборник трудов конференции. // Педагогика, психология, общество: от теории к практике : материалы II Всерос. науч.-практ. конф. с междунар. участием (Чебоксары, 18 июля 2023 г.) / редкол.: Ж.В. Мурзина [и др.] – Чебоксары: ИД «Среда», 2023. – С. 83-86. – ISBN 978-5-907688-50-6.
5. Xurramov, A. J., Kh, B. A., & Jurayev, A. X. (2020). Educational technologies and their quality assessment. European Journal of Research and Reflection in Educational Sciences, 8(12), 162-166.
6. ЖУРАЕВ, А. (2020). Таълим тизимида педагогик дастурий воситаларни жорий этиш афзалликлари. UNIVERSITETI XAVARLARI, 1(1).
7. Жураев, А. Х., & Тожибоев, С. Ж. Ў. (2022). СИМУЛЯТОР ДАСТУРЛАРИДАН ТАЪЛИМ ЖАРАЁНИДА ФОЙДАЛАНИШ. Oriental renaissance: Innovative, educational, natural and social sciences, 2(5), 557-565.
8. Маллаев, А. Р., & Жураев, А. Х. (2021). Техника фанларини ўқитишда замонавий ахборот технологияларни ўрни. Academic research in educational sciences, 2(5), 87-96.
9. Jurayev, A. K., & Tojiboyev, S. J. U. (2023). POSSIBILITIES OF USING DIGITAL TECHNOLOGIES IN CONTROL AND MANAGEMENT OF HYDRAULIC FACILITIES. Academic research in educational sciences, 4(2), 89-92.



РОЛЬ CISCO PACKET TRACER В МОДЕЛИРОВАНИИ И АНАЛИЗЕ СЕРВЕРНЫХ УСЛУГ В КЛИЕНТ-СЕРВЕРНЫХ СЕТЯХ

М. А. Очиллов

Доцент Каршинского инженерно-экономического института

АННОТАЦИЯ

В архитектуре клиент-сервер сервер предназначен для предоставления различных услуг, функций и ресурсов для обслуживания запросов своих клиентов через компьютерную сеть. Для понимания и освоения этой концепции критически необходимо провести множество упражнений. Целью является улучшение практических навыков учащихся, а также расширение их знаний. Однако реальная клиентская-серверная сеть с представительными серверами и сетевыми устройствами стоит дорого. Иногда она недоступна для экспериментов и испытаний. В таком случае сетевой симулятор может быть разумной заменой. В данном исследовании используется Cisco Packet Tracer для моделирования различных серверных служб, таких как DHCP, HTTP, DNS, FTP, Email, NTP, Firewall и IoT Registration Server.

Статья рассматривает значимость и роль программного обеспечения Cisco Packet Tracer в моделировании серверных служб в клиент-серверной компьютерной сети. Packet Tracer предоставляет инструменты для симуляции сетевых конфигураций, включая серверные службы, и способствует пониманию основных аспектов сетевых технологий. В статье рассматриваются возможности и преимущества использования Cisco Packet Tracer при моделировании серверных служб, а также обсуждаются ключевые примеры применения данного программного средства для создания и анализа клиент-серверных сетевых сценариев.

Ключевые слова: Cisco Packet Tracer, серверные службы, моделирование, клиент-серверная сеть, симуляция сетевых конфигураций.

ВВЕДЕНИЕ

В современном информационном мире сетевые технологии играют ключевую роль в обеспечении связности, доступности и безопасности информации. Клиент-серверные сети, основанные на архитектуре, где сервер предоставляет ресурсы для клиентских устройств, являются основой множества информационных систем. Важно иметь инструменты для моделирования и анализа таких сетей,

чтобы предвидеть и оценивать их работу в различных сценариях.

Компьютерные сети в настоящее время стали важным элементом деловой деятельности любых корпораций по всему миру. Это фундаментальная инфраструктура для обмена данными и автоматизации [1,2]. Многие современные приложения требуют таких структур для своей работы. Это создает растущий спрос на специалистов в области компьютерных сетей, что приводит к увеличению популярности данной области. Поскольку данная область требует навыков, необходимо много практики [3]. Тем не менее, часто бывает сложно обеспечить реальные сетевые устройства для экспериментов. Отсутствие этих устройств делает сетевой симулятор разумной альтернативой [4]. Используя симулятор, можно избежать сбоев устройств. Это более безопасно и экономически эффективно [5]. В данном исследовании для изучения серверных служб используется Cisco Packet Tracer 7.2 из-за широкого использования данного симулятора, который предоставляет множество обновленных функций, таких как IoT и WebSocket.

Эффективность использования Packet Tracer в качестве учебного инструмента была изучена в работе [6]. Они провели исследование протоколов маршрутизации для обеспечения того, что все студенты завершат обучение с достаточной компетентностью в сетевой сфере. Возможность Cisco Packet Tracer сравнивать различные протоколы маршрутизации показывает, что данный симулятор эффективен как учебный инструмент для компьютерных сетей [6]. Роль Cisco Packet Tracer в изучении беспроводных сетей и устройств IoT была изучена в работе [7]. Они обсудили важность Интернета вещей (IoT), Интернета всего (IoE) и умного дома в современной жизни. Более конкретное исследование IoT с использованием Cisco Packet Tracer - это симуляция интернет-надзора, который связан с различными средствами безопасности и датчиками, проведенное в работе [8]. Существует много других исследований, использующих Packet Tracer. Тем не менее, остается место для исследования, которое заключается в симуляции различных серверных служб с различными типами клиентов и сценариями.

При проектировании компьютерной сети обычно требуются выделенные серверы, например, в дизайне умного кампуса, проведенном в работах [9] и [10]. Серверы могут использоваться для различных целей, в основном для хранения данных, обмена ресурсами и выполнения запросов клиентов при их поступлении. Серверы также могут создавать уровень безопасности для клиентов, чтобы сервера обслуживали только те запросы клиентов, которые имеют авторизацию.

Поскольку серверы играют важную роль в компьютерной сети, данная работа будет сосредоточена на симуляции доступных серверных служб в Packet Tracers, таких как DHCP, HTTP, DNS, FTP, Email, NTP, Firewall и сервера регистрации IoT. Будет исследовано, как они настраиваются, какие параметры требуются, как тестируются и есть ли взаимосвязь между службами в учебных целях. Для выполнения этих задач будет предложен мини-проект симуляции клиент-сервера, охватывающий различные типы серверов и клиентов.

Исходя из вышесказанного, целью данной статьи является исследование роли Packet Tracer как широко используемого симулятора в моделировании серверных служб в клиентско-серверной компьютерной сети. Ожидается, что путем практики и освоения предложенной мини-проектной симуляции учащиеся смогут (1) понять концепцию серверных служб и их реализацию, (2) осуществлять правильную настройку, подключение, именование и адресацию, и (3) проводить соответствующее тестирование, отслеживание и устранение неполадок.

МАТЕРИАЛЫ И МЕТОДЫ

Этот раздел описывает предлагаемую клиентско-серверную топологию, использованную в данной работе, изображенную на рисунке 1. Затем приводится методика эксперимента. Предлагаемая сеть разделена на четыре сегмента в соответствии с их функциональностью. Первый сегмент представляет беспроводных клиентов, включающих ноутбуки, планшеты и смартфоны. Им назначен Net-ID 192.168.1.0, и они подключены беспроводным способом к точке доступа. Второй сегмент - проводные клиенты, состоящие из настольных компьютеров и принтера. Их Net-ID составляет 192.168.2.0, и они подключены к коммутатору с помощью UTP-кабеля. Третий сегмент представляет собой устройства IoT для умного дома. Подобно беспроводным клиентам, они также подключены беспроводным способом к точке доступа с Net-ID 192.168.3.0. Все эти три клиента предназначены для доступа и тестирования всех услуг серверов.

Четвёртый сегмент представляет серверную сторону с Net-ID 192.168.0.0, где каждая служба настроена на различных выделенных компьютерных серверах. Это направлено на более четкое наблюдение за настройкой и работой каждой службы, даже если все эти службы могут быть размещены на одном компьютере. Здесь рассматриваются серверные службы DHCP, Firewall, Email, FTP, HTTP, DNS, NTP и сервера регистрации IoT. Для соединения сегментов используются два маршрутизатора. С

помощью этих маршрутизаторов Net-ID каждого сегмента можно разделить.

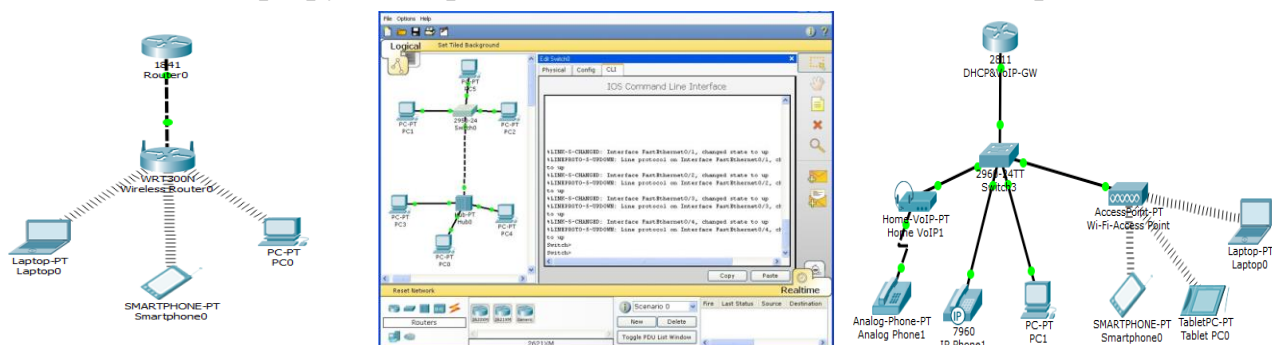


Рисунок 1. Мини-проект (а) беспроводные клиенты, (б) проводные клиенты, (в) IoT-клиенты

Для начала эксперимента каждая связанная служба должна быть активирована на сервере в соответствии с ее функциональностью. Затем необходимо назначить правильные настройки и параметры, после чего провести тестирование службы с клиентов. Это позволит убедиться, работает ли служба должным образом. Среди прочего, DHCP-сервер должен быть настроен первым, поскольку он будет автоматически предоставлять IP-адрес для каждого компьютера. Адрес помощника IP и протокол маршрутизации должны быть установлены в обоих маршрутизаторах, чтобы они могли соединить разные Net-ID клиентов. Как только все компьютеры будут подключены, можно последовательно применять другие службы

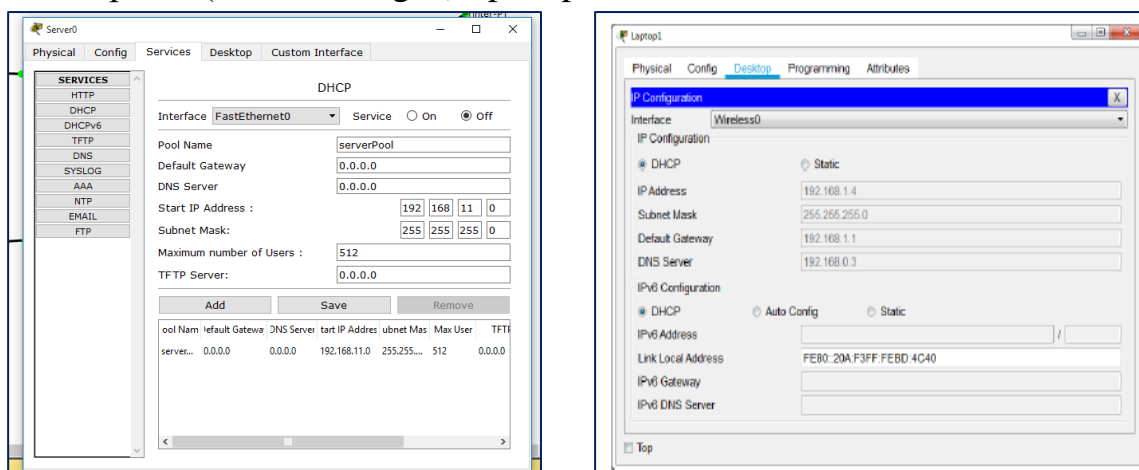
РЕЗУЛЬТАТЫ И ОБСУЖДЕНИЕ

В данном разделе представлены настройки и параметры серверных служб, а затем обсуждаются их функциональность и значимость результатов. Пример визуализации тестирования каждой службы представлен со стороны клиента.

3.1. Сервер DHCP (Протокол динамической конфигурации хоста)

На рисунке 2 (а) показаны четыре имена пула, созданные для каждого сегмента сети. Это соответственно serverPool для серверной стороны (192.168.0.0), VLAN1 для беспроводных клиентов (192.168.1.0), VLAN2 для проводных клиентов (192.168.2.0) и VLAN3 для клиентов IoT (192.168.3.0). Шлюз по умолчанию - это IP-адрес интерфейса маршрутизатора, который подключен к каждому LAN-сегменту, а маска подсети равна 255.255.255.0 (стандартный класс C), а DNS-сервер установлен на 192.168.0.3. Поскольку DHCP-сервер установлен на 192.168.0.2, то IP-помощник в маршрутизаторе установлен с помощью команды в

командной строке: (router-config-if)#ip helper-address 192.168.0.2.



(a)

(б)

Рисунок 2. (а) Настройка DHCP-сервера, (б) Результат IP-адреса в Ноутбуке1 на основе DHCP

На стороне клиента, запрос DHCP можно выполнить в разделе "Desktop Tab > IP Configuration", как показано на Рисунке 2 (б). Выбрав опцию DHCP, клиенты отправляют запрос и должны динамически получить IP-адрес, маску подсети, шлюз по умолчанию и DNS-сервер. В этом случае их IP-адрес должен быть в диапазоне их пула адресов. Система DHCP сокращает необходимость вручную назначать сетевые параметры всем устройствам сети с использованием концепции аренды. Это полезно для управления большой сетью с множеством временных соединений, поскольку IP-адреса могут быть повторно выделены.

3.2. Система брандмауэра

Брандмауэр направлен на предотвращение несанкционированного доступа к частной сети или из нее, где в Packet Tracer он разработан на основе входящего правила. Для протоколов IP, ICMP, TCP и UDP предусмотрены два действия: разрешить и запретить. Как показано на Рисунке 3 (а), запрет действия для удаленного IP адреса приведет к невозможности подключения этого компьютера к серверу. В этом случае получим ответ "Request Time Out" как при использовании команды ping, так и tracer, см. Рисунок 3 (б). Напротив, для действия "разрешить" будет получен ответ, см. Рисунок 3 (в). Для протокола TCP, запрет удаленного порта 80 приведет к тому, что клиент не сможет просматривать веб-сайты.

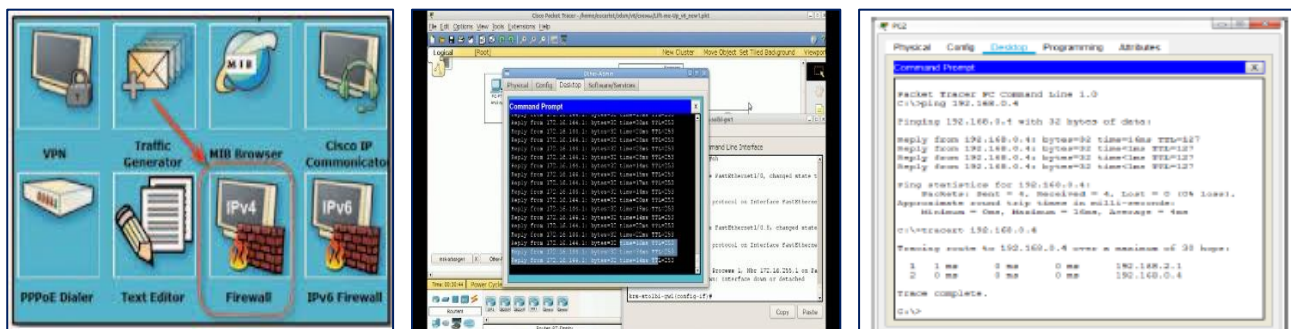


Рисунок 3. (а) Настройки брандмауэра, (б) пинг RTO и трассировка (запретить) и (в) Ответный пинг и трассировка (разрешить)

3.3. Сервер электронной почты

Электронная почта (или Email) представляет собой важную часть коммуникаций в современном мире. В контексте Cisco Packet Tracer, данное программное обеспечение предоставляет возможность создания, отправки и получения электронных сообщений через моделирование сервера электронной почты.

Для начала использования этой функции в Packet Tracer необходимо включить службу SMTP (Simple Mail Transfer Protocol) для отправки электронной почты и POP3 (Post Office Protocol version 3) для приема и хранения электронной почты. SMTP отвечает за отправление электронной почты, а POP3 - за получение и хранение сообщений на клиентской стороне.

Для симуляции работы сервера электронной почты в Packet Tracer необходимо создать доменное имя, например, `elrnb.ac.id`, и установить учетные записи пользователей с соответствующими адресами электронной почты и паролями. На стороне клиента также необходимо настроить электронную почту для конкретной учетной записи. Например, настроить учетную запись пользователя 2 на Laptop2, указав входящий и исходящий почтовые серверы на `el-rnb.ac.id`. Это возможно после добавления `elrnb.ac.id` в DNS-сервер или, при отсутствии DNS-сервера, настроить сервер электронной почты напрямую с использованием его IP-адреса.

Cisco Packet Tracer предоставляет службу электронной почты для создания, отправки и получения электронных сообщений. Для начала необходимо включить службу SMTP (простой протокол передачи почты) и POP3 (протокол почтового отделения 3). SMTP - это протокол для отправки электронной почты, в то время как POP3 - протокол для приема и хранения электронной почты. Затем должно быть создано доменное имя, например, `elrnb.ac.id`, после чего создается учетная

запись пользователя и пароль. На стороне клиента также необходимо настроить электронную почту для учетной записи. Например, пользователь2 настраивается на Laptop2, в то время как входящий и исходящий почтовые серверы устанавливаются на el-pnb.ac.id. Это можно сделать только в том случае, если el-pnb.ac.id был добавлен в DNS-сервер. В противном случае это можно установить, используя адрес сервера электронной почты. Для использования электронной почты браузер предоставляет функции создания, ответа, приема и удаления электронной почты. Можно заметить, что симуляция почтового сервера в Packet Tracer покрывает практически все этапы, требования и функции реального почтового сервера удобным образом. Поскольку электронная почта является неотъемлемой частью большинства организаций сегодня, этот сценарий симуляции почтового сервера может быть использован как хорошая практика, особенно для тех, кто хочет улучшить свои навыки администрирования сети в управлении всеми аспектами электронной почты.

3.4. Сервер FTP (Протокол передачи файлов)

В контексте Cisco Packet Tracer, для использования функционала FTP необходимо сначала включить соответствующую службу. Это позволяет эмулировать работу сервера FTP в виртуальной сетевой среде Cisco Packet Tracer.

FTP предоставляет удобный способ обмена файлами между различными устройствами в сети. Он может использоваться для загрузки файлов на сервер, скачивания файлов с сервера, удаления или изменения файлов на удаленном сервере. Кроме того, FTP может быть полезным для резервного копирования и восстановления конфигураций устройств, таких как маршрутизаторы.

При использовании FTP в Packet Tracer важно настроить как серверную, так и клиентскую стороны. Серверная сторона должна быть настроена для предоставления доступа к нужным файлам, а клиентская сторона должна быть настроена для загрузки или скачивания файлов с сервера.

Использование FTP в Packet Tracer может помочь пользователям изучать основы передачи файлов в сети, понимать работу протокола FTP и применять его в различных сценариях сетевой работы, таких как обмен файлами, обеспечение доступа к необходимым ресурсам и выполнение резервного копирования данных.

Для использования FTP в Packet Tracer его служба должна быть сначала включена. Затем необходимо создать имя пользователя, пароль и установить разрешения (запись, чтение, переименование, удаление и просмотр списка файлов), см.

Рисунок 5 (а). Для тестирования данной службы можно воспользоваться командной строкой клиентского компьютера, доступ к FTP осуществляется с помощью команды ftp и IP-адреса сервера FTP, например, c:\ftp 192.168.0.3, или с использованием зарегистрированного имени в DNS-сервере. Затем необходимо предоставить имя пользователя и пароль, см. Рисунок 5 (б). После установления соединения можно выполнять команды FTP, такие как put, get, rename, dir и delete, для операций с файлами. Они будут выполняться в соответствии с предоставленными разрешениями для данного имени пользователя. В реальном мире для обеспечения безопасной передачи часто используется защищенный протокол передачи файлов по SSH (SFTP), чтобы защитить имя пользователя и пароль, а также зашифровать содержимое файла.

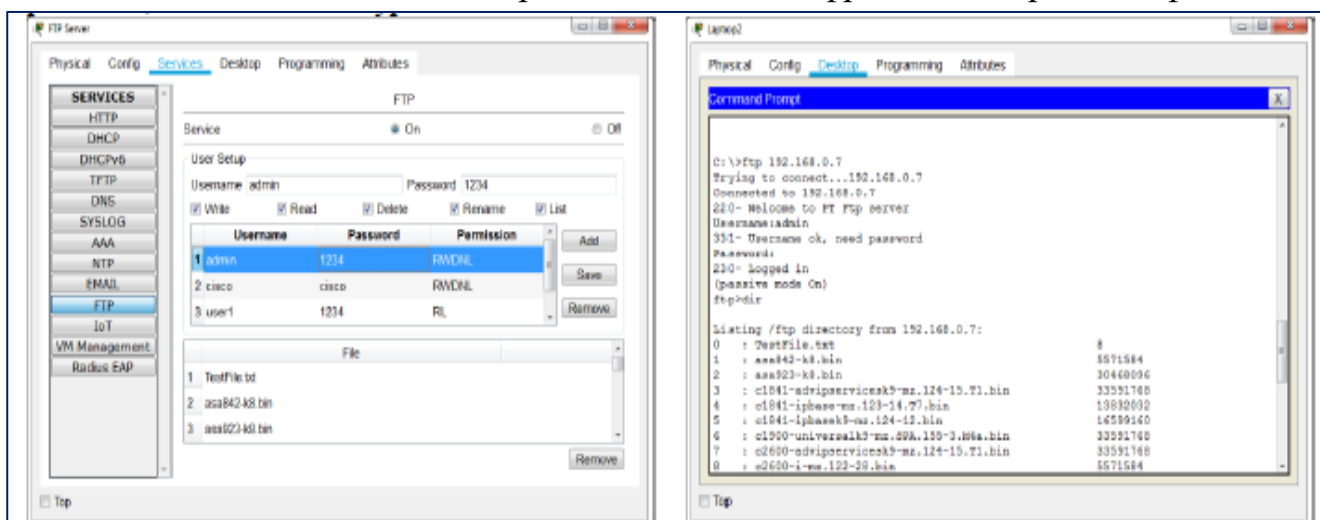


Рисунок 4. (а) Настройка учетной записи FTP-сервера, (б) Результат FTP-доступа на стороне клиента

3.5. Сервер HTTP (протокол передачи гипертекста) и DNS (сервис доменных имен)

Веб-сервер может быть программным, аппаратным устройством или и тем и другим, которые работают вместе для обработки входящих запросов пользователей на доступ к размещенным файлам. Эти запросы обрабатываются веб-сервером по протоколу HTTP и другим связанным протоколам. HTTP-сервер в Packet Tracer будет хранить, обрабатывать и доставлять веб-страницы клиентам, которые чаще всего представлены в виде HTML-документов. Компоненты веб-сайта, такие как изображения, таблицы стилей и скрипты, могут быть включены в HTML-файлы, помимо текстового содержимого, см. Рисунок 6 (а). Здесь имя файла по умолчанию для домашней страницы веб-сайта - index.html, который может ссылаться на любое количество других страниц, см. Рисунок 6 (б).

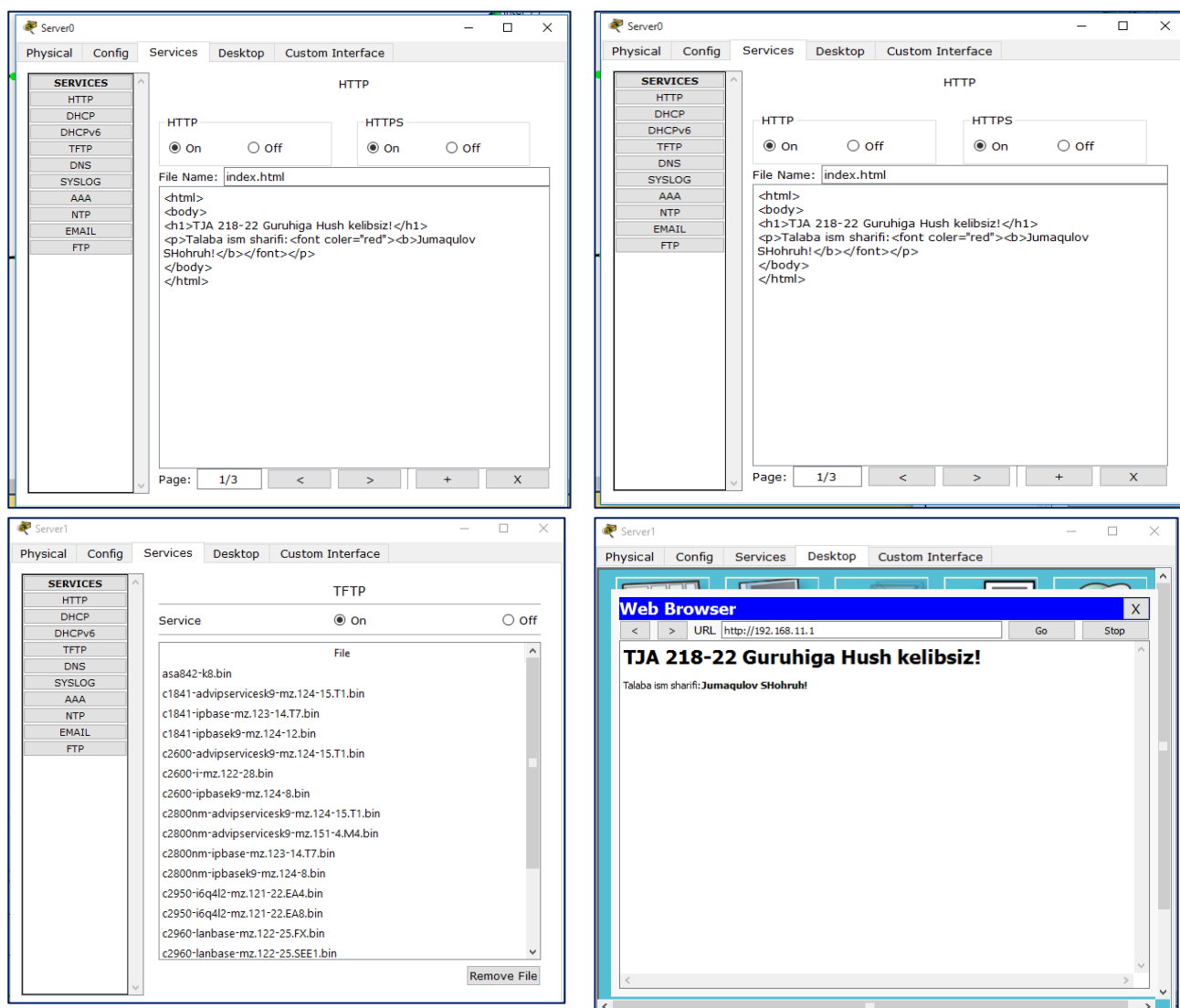


Рисунок. 5. (а) Настройка IoT smart Things, (б) Вход в IoT-сервер и (в) Результаты мониторинга IoT-устройств

3.6. Ключевые моменты по серверным службам

Большинство распространенных серверов, используемых в реальном мире, были смоделированы в данной работе на основе предложенного мини-проекта на Рисунке 1. Для работы с предложенным сценарием требуется базовое понимание IP-адресов, интерфейсов и проводки, так как большинство настроек сервера связаны с установкой IP-адреса на соответствующем сетевом интерфейсе. Кроме того, базовое понимание командной строки (CLI) также будет полезно, особенно для тестирования задуманных служб на клиентах или в командной строке маршрутизаторов. Для каждой общей серверной службы можно выделить некоторые ключевые моменты, как это представлено в таблице 1.

Таблица 1. Сводка параметров и ключевых моментов серверных служб

№	Серверные службы	Выделенные параметры и ключевые моменты
1	DHCP	Имя пула, шлюз по умолчанию, DNS-сервер, начальный IP-адрес, максимальное количество пользователей
2	Брандмауэр	Действие разрешения, действие запрета, протокол, удаленный IP, порт, ICMP, TCP, UDP, RTO
3	Электронная почта	SMTP, POP3, доменное имя, имя пользователя, настройка учетной записи, создание, отправка, получение
4	FTP	Разрешения пользователя (запись, чтение, удаление, переименование, список), команды (put, get, dir, pwd, пассивный)
5	HTTP	Хранение, обработка, доставка HTML-документов, веб-страница, World Wide Web (WWW)
6	DNS	Система именования, преобразование IP в имя, веб-браузер
7	NTP	Серверное время, синхронизация времени, команда "do sh clock"
8	Регистрация IoT	Умные устройства, компоненты (датчики, исполнительные механизмы), удаленный сервер, домашний шлюз, контроллер микропроцессора (MCU)

Эти ключевые моменты помогут понять, какие параметры и функции каждой из перечисленных серверных служб являются важными для настройки и тестирования в контексте данной симуляции в Cisco Packet Tracer.

ЗАКЛЮЧЕНИЕ

В данной работе была проведена исследовательская работа по роли Cisco Packet Tracer в симуляции серверных служб в клиент-серверной компьютерной сети. Представленный мини-проект демонстрирует возможность всесторонней симуляции серверных служб, позволяя визуализировать их отдельно, исходя из их функциональности. Различные сценарии, такие как работа серверов DHCP, FTP, HTTP, DNS, электронной почты, брандмауэра, сервера NTP и регистрации IoT, успешно и полностью смоделированы удобным способом.

Этот мини-проект позволяет изучать широкий спектр возможностей Cisco Packet Tracer, особенно в контексте понимания концепций и реализации серверных служб. Гибкость этого проекта способствует более эффективному и доступному обучению,



обеспечивая возможность работы с сетевыми сценариями без необходимости доступа к дорогостоящему реальному оборудованию.

Студентам предоставляется обширное количество повторяющихся практических упражнений с использованием этого мини-проекта, что способствует улучшению их уверенности в работе с реальными сетями. В качестве дальнейших исследований, данный проект будет протестирован в другом широко используемом симуляторе сетей, таком как GNS-3 (Graphical Network Simulator 3). Проведение сравнительного анализа с Cisco Packet Tracer позволит выявить их преимущества и недостатки на основе комплексного исследования [11]. Полученные результаты с обоих симуляторов будут важным вкладом для понимания их взаимодополнения и возможных областей применения.

REFERENCES

- [1] Таркаа Н.С., Ианнах П.И. и Ибер И.Т. Дизайн и моделирование локальной сети с использованием Cisco Packet Tracer 2017. Международный журнал инженерии и науки, том 6 (10), с. 63-77.
- [2] Хонни и Андри Ж.Ф. Дизайн и моделирование VLAN с использованием Cisco Packet Tracer: кейс-стади 2016. Международный семинар по математике, науке и образованию в области компьютеров, с. 66-72.
- [3] Джавид С.Р. Роль Packet Tracer в изучении компьютерных сетей 2014. Международный журнал передовых исследований в области компьютерной и коммуникационной инженерии, том 3 (5), с. 6508-6511.
- [4] Чжан Й., Лянг Р. и Ма Х. Инновации в преподавании курса компьютерных сетей для студентов бакалавриата с использованием Packet Tracer 2012. Международная конференция по будущему компьютерной образовательной поддержки.
- [5] Айри П. и Андерсен П.К. Cisco Packet Tracer как инструмент обучения компьютерным сетям в DWU 2017. Современные исследования Папуа-Новой Гвинеи: Журнал исследований DWU, том 26, с. 88-108.
- [6] Нур Н.М.М., Яяо Н. и Сулайман С. Эффективность использования Cisco Packet Tracer в качестве учебного инструмента: кейс-стади по протоколу маршрутизации 2018. Международный журнал информационных технологий и образования, том 8 (1), с. 11-16.
- [7] Флифел Р.К. Роль Packet Tracer в изучении беспроводных сетей и управлении устройствами IoT 2019. Международный



журнал информационной безопасности ISC, том 11 (3), с. 35-38.

[8] Дипа Т.П. Моделирование интернет-наблюдения с использованием Packet Tracer 2018. Международный журнал научных исследований в области компьютерных наук, инженерии и информационных технологий, том 3 (3), с. 1288-1295.

[9] Шемси И. Улучшение проектирования сети кампуса с помощью Cisco Packet Tracer 2017. Международный журнал инновационных наук и технологий, том 2 (11), с. 43–54.

[10] Абди А. Проектирование умного кампуса с использованием Интернета вещей 2018. Международный журнал тенденций и технологий в области компьютерных наук, том 6 (3), с. 109-116.

[11] Сари Л.М.И., Хатта П., Вихидаят Э.С. и Сяо Ф. Сравнение использования Cisco Packet Tracer и Graphical Network Simulator 3 в качестве учебных средств по достижению студентов 2018. Журнал педагогики технического и профессионального образования, том 14 (1), с. 132-136.

[12] Cisco. (2021). Packet Tracer. [online] Available at: <https://www.netacad.com/courses/packet-tracer> [Accessed 1 Dec. 2021].

[13] Cisco Networking Academy. (2020). Packet Tracer Mobile 3.0 FAQ. [online] Available at: <https://www.netacad.com/campaign/ptmobile-3-faq> [Accessed 1 Dec. 2021].

[14]Rakhimov, A. N., & Ochilov, M. A. (2021). Assessment Of Transmission Development Of Transport Services To The Population Of Kashkadarya Region On The Basis Of Trend Models. The American Journal of Applied sciences, 3(04), 343-353.

[15]Jo'rayev, F. D. S., & Ochilov, M. A. (2023). Algorithms for multi-factory polynomial modeling of technological processes. Chemical Technology, Control and Management, 2023(1), 59-67.

[16]Juraev, A. K., Jurayev, F. D., Eshkobilov, S. B., Ibragimov, B. S., & Norboev, O. N. (2023). Nonlinear control object identification problems: Methods and approaches. In E3S Web of Conferences (Vol. 392, p. 02043). EDP Sciences.

[17]Xoliqulovich, J. A., Ashurqulovich, O. M., & Islomnur, I. (2022). DEVELOPED IN THE MODERNIZATION OF THE HIGHER EDUCATION SYSTEM THE ROLE OF EXTRACTIVE INDUSTRIES. World scientific research journal, 3(2), 62-66.

[18]ЖУРАЕВ, А. (2020). Таълим тизимида педагогик дастурий воситаларни жорий этиш афзалликлари. UNIVERSITETI XABARLARI, 1(1).



ФРАГМЕНТАЦИЯ РАСТИТЕЛЬНОГО ПОКРОВА НА ПРИМЕРЕ РЕСПУБЛИКИ КАРАКАЛПАКСТАН

И. М. Сулайманов, Т. Х. Эримбетов, Б. Е. Абдикаиров

АННОТАЦИЯ

В статье анализируется динамика фрагментации лесного покрова Республики Каракалпакстан по данным цифровых карт лесного покрова за 2015 и 2022 гг. на основе источников Sentinel-2. Для этого были проанализированы периоды процесса пространственно-временного распределения лесного покрова за 2015-2022 гг. с использованием программного обеспечения FRAGSTATS (версия 4.2) и ArcGIS Pro. С целью получения детальных карт на 8 тематических классов изображения Landsat были последовательно классифицированы методом пошаговой неуправляемой и управляемой классификации. Основное внимание было уделено сравнительной оценке ландшафтных индексов, которые описывают фрагментированность структуры лесного покрова, таким как лесистость, плотность лесных участков и их средний размер, индекс формы, интегрированный индекс и связанность лесных участков. Анализ ландшафтных индексов показал, что на территории Каракалпакстана за 2015-2022 гг. наблюдалась тенденция к увеличению фрагментации лесного покрова. Полученные результаты исследования могут быть использованы для выявления степени уязвимости лесных экосистем в Республике Каракалпакстана. Оценка фрагментации лесного покрова к внешним воздействиям антропогенного и природного характера, как и во всем мире, является одной из существующих проблем в Центрально-Азиатском регионе и, в частности, в Каракалпакии и Узбекистане. Фактически, в последние годы в Каракалпакстане не проводилось серьезных исследований по состоянию лесных ресурсов республики. Только 11 мая 2017 г. было принято постановление № 2966 об организации деятельности Государственного комитета Республики Узбекистан по лесному хозяйству. После этого правительство приняло ряд решений. И 16 апреля 2018 года внесены изменения и дополнения в Закон Республики Каракалпакстан «О лесе». Так как за последние годы 20 века в Республике Каракалпакстан осталось нереализованным очень многое в сфере лесного хозяйства, поэтому остаются актуальными и требуют решений и исследования многие вопросы. Необходим анализ множества факторов, позволяющих оценить состояние лесных экосистем в



комплексе, учитывая физико-географические и почвенно-климатические и социо экономические факторы. Одним из таких факторов является оценка фрагментации лесного покрова. Для проведения анализа фрагментации лесного покрова Каракалпакстана необходимо оценить пространственно-временную динамику лесного покрова за 2015–2022 гг.

Ключевые слова: Лесные экосистемы, фрагментация, Landsat, ГИС, тематические слои, индексы.

ВВЕДЕНИЕ

Одним из негативных последствий влияния климатических изменений и антропогенного воздействия, ведущей к уменьшению биоразнообразия экосистем на территории Каракалпакстана, является чрезмерная фрагментация лесов, которая приводит к уменьшению устойчивости лесных экосистем. Фрагментация леса со временем влияет на качество естественной среды обитания животного мира, состав и строение лесных фитоценозов, биоразнообразие экосистемы, снижение площади коренных лесов и в конечном итоге может привести к снижению потенциала леса.

Большое количество исследований посвящены оценке фрагментации лесного покрова, с целью понимания пространственных закономерностей на уровне ландшафтов, анализу происходящих изменений и взаимодействия между элементами ландшафта с течением времени. Таким образом, фрагментация лесных насаждений— это один из главных признаков, подлежащих изучению при оценке лесных ландшафтов в различных масштабах, а также его структуры, функций и динамики. Кроме того, определение степени фрагментированности территории с помощью международных индексных показателей, одобренных ФАО, позволяет оценить уровень устойчивости лесных экосистем к внешним воздействиям.

Целью исследования является проведение комплексной оценки динамики фрагментации лесов Республики Каракалпакстан по спутниковым данным.

Для достижения данной цели были решены следующие задачи:

1. Получены цифровые карты лесного покрова за 2015 и 2022 гг. на основе данных Sentinel-2.
2. Проведен анализ динамики фрагментации лесного покрова на территории исследования с использованием международных ландшафтных индексов фрагментации.

Представленная методика с использованием международных критериев оценки фрагментации растительного покрова и результаты исследования могут быть использованы в системе мониторинга и контроля устойчивости лесного покрова республики Каракалпакстан к негативным природным и антропогенным воздействиям.

Кроме того, полученные картографические данные могут послужить вспомогательным материалом для создания геоинформационной базы данных растительного покрова Каракалпакстана с возможностью учета полученной информации при принятии плановых решений в области проектирования и ведения лесохозяйственной деятельности на территории республики.

Ниже рассмотрен ряд методик и подходов, по оценке фрагментации лесного покрова.

Так ученые Университета Северной Британской Колумбии, (Канада), провели оценку изменения и фрагментации лесного покрова на северо-востоке Британской Колумбии. Потеря и фрагментация лесного покрова увеличились в последние годы из-за увеличения антропогенного землепользования. В то время как предыдущие исследования в основном были сосредоточены на изменении лесного покрова в результате других нарушений. Оценка была проведена с использованием методов классификации изображений Landsat 1985, 2000 и 2015 годов с использованием алгоритма «RandomForests» (Случайный лес). Авторы обнаружили, что период с меньшей степенью фрагментации имеет меньшую степень потери хвойного лесного покрова и наоборот. Авторы отмечают, что хвойный лесной покров с большей вероятностью восстановится на бесплодной земле. Кроме того, они пришли к выводу, что скорость восстановления лесов из антропогенно-индуцированных категорий земель, вероятно, объясняет степень фрагментации леса (Appiah, 2017). Сотрудники агентства по охране окружающей среды США Северной Королины, сравнили показатели фрагментации леса, полученные на основе данных высокого разрешения (2 м), с теми же показателями, полученными на основе широко используемых (30 м) данных на основе Landsat. Они применили масштабирование плотности площади к бинарным картам (лес; нелес) для обоих источников, с целью получения данных по лесам: преобладающего (плотность $\geq 60\%$), внутреннего ($\geq 90\%$) и нетронутого (100%) леса. В целом, данные снимков с высоким разрешением обнаружили больше леса, который был более четко распределен даже в больших пространственных масштабах. Ожидается, что улучшения в пространственном разрешении продуктов дистанционного зондирования

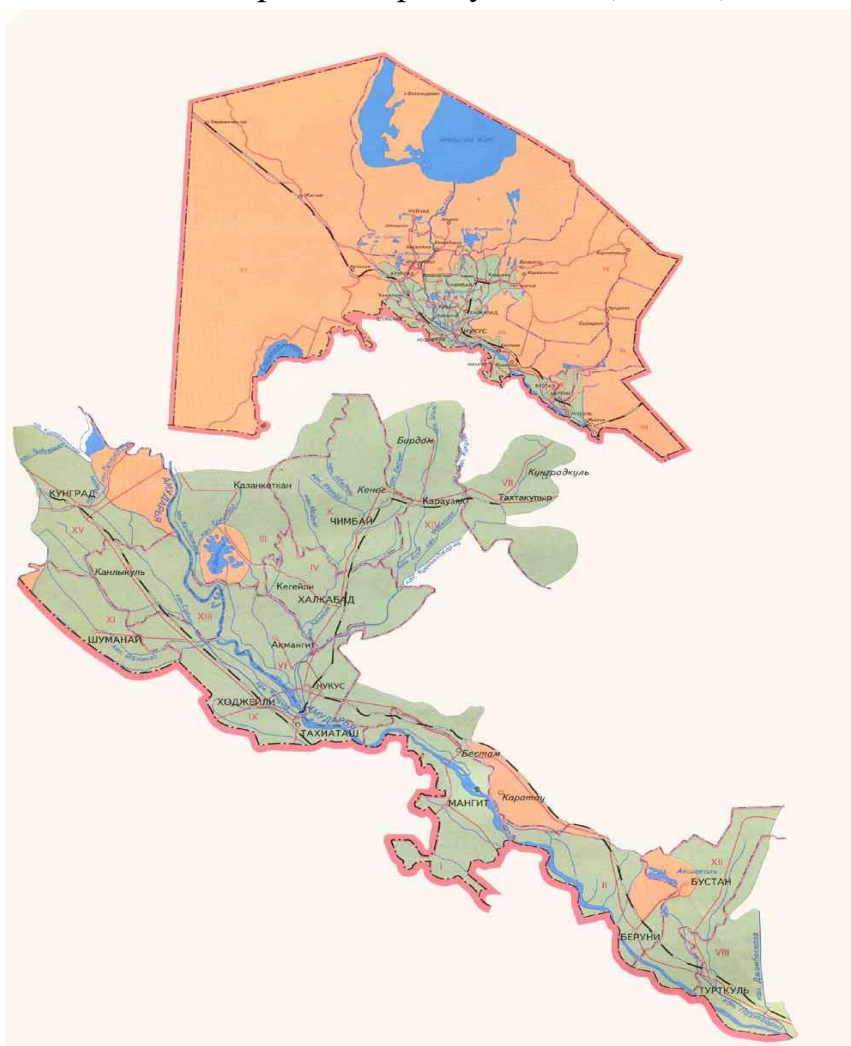
земного покрова будут способствовать развитию ландшафтной экологии за счет повторной интерпретации закономерностей и масштабирования, стимулирования новых измерений ландшафтных закономерностей и проверки новых гипотез о пространственных закономерностях и экологических процессах (Wickham, 2019).

Научная группа Школы географии и экотуризма (SGE) и Юго-Западный университет лесного хозяйства (SWFU), Куньмин (Китай) провели оценку фрагментации леса на уровне небольших площадей с использованием анализа морфологических пространственных моделей в Цюйцзине, провинция Юньнань. В этом исследовании пространственная форма лесного ландшафта и режимы фрагментации леса городов были изучены в городе Цюйцзин, провинция Юньнань, Китай, за 2006 и 2016 годы, в значительной степени опираясь на анализ морфологических пространственных моделей (MSPA) и алгоритм кластеризации «К-средних». Результаты 2016 г. показали, что морфологию лесного ландшафта провинции Цюйцзин можно разделить на семь классов: сердцевина, перфорация, островок, мост, опушка, ветвь и кольцо (площади в процентном соотношении составили: 41,94%, 1,22%, 7,04%, 11,12%, 23,26%, 11,74% и 3,68%) и сравнить с ландшафтными площадями этих же характеристик в 2006 году (т.е. распределение по площади в 2006 г. составило: 1,71%, -0,02%, 0,30%, -1,65%, -0,20 %, -0,19% и 0,05%, соответственно). Авторы отмечают, что расширение земель под застройку и сельскохозяйственных угодий усиливает фрагментацию лесов; однако рукотворная планомерная экологическая реставрация может значительно улучшить лесной покров и улучшить пространственную форму городского лесного ландшафта (Хяо-уан, 2021). Учеными Университетской школы экологического менеджмента, Университета Гуру Гобинд Сингха Индрапрастхи, Дварка, Нью-Дели, Индия, была проведена оценка землепользования, растительного покрова и фрагментации лесов в традиционном ландшафте в Манипуре, Северо-Восточная Индия. Используя геопространственные технологии, они оценили пространственно-временные изменения LULC, чистую скорость обезлесения и фрагментацию леса в традиционном ландшафте Манипура, Северо-Восточная Индия, с 1999 по 2019 год. Разновременные спутниковые данные Landsat 5 Thematic Mapper и Landsat 8 Operational Land Imager использовались для классификации различных классов LULC. Инструмент фрагментации ландшафта LFT v2.0 использовался для классификации различных категорий фрагментации леса. В период обучения, было установлено,

что на изучаемой территории преобладал класс леса, за которым следовали пахотные земли и сменная посевная площадь. Индексы ландшафта на уровне классов были рассчитаны с использованием программного обеспечения для пространственного анализа под названием Fragstats. Результаты показали, что антропогенная и естественная деятельность являются основными причинами изменений LULC, обезлесения и фрагментации лесов (Devi, 2021).

Объекты исследования

Объектом исследования явился лесной покров территории Республики Каракалпакстан, включающий хвойные, смешанные и широколиственные насаждения, расположенный в границах республики. (Рис. 1.)



***Рис. 1. Регион исследования Республики Каракалпакстан
Методика исследования***

В исследовании, для оценки фрагментации растительного (лесного) покрова Каракалпакстана, были использованы данные инвентаризации лесов Узбекистана,

данные полевых исследований, тематические карты ресурса Dynamic World V1, готовые спутниковые данные Sentinel-2 на ГИС-интернет платформе Google Earth Engine, интернет ресурсы Google Map и Yandex Map.

Для согласования тематических карт по данным ГИС Dynamic Word1 и данных ДЗЗ, были проведены полевые исследования в рамках преддипломной практики. Во время проведения полевых работ оценивались тестовые участки на лесных землях в пределах границ территории исследования. В первую очередь определялся породный состав насаждений и далее определялись таксационные показатели древостоев. Затем проводился сравнительный анализ структуры объектов наземного покрова с данными ДЗЗ высокого разрешения. Всего было сформировано 16 тестовых участков (Рис. 2.).



Рис. 2. Набор тестовых участков (векторный слой), б) ТУ№5 Тугайный лес (район течения р. Амударья) координаты (42.772207, 59.307250)

Порядок оценки фрагментации лесных экосистем Каракалпакстана Получение тематических карт.

Для получения картографического материала по пространственному распределению лесного покрова на территории республики и ввиду не полной первичной информации об объекте исследований (данные лесо инвентаризации и данные полевых исследований) были использованы готовые продукты в виде тематических карт электронного ресурса Dynamic Word1 (Рис 3.).

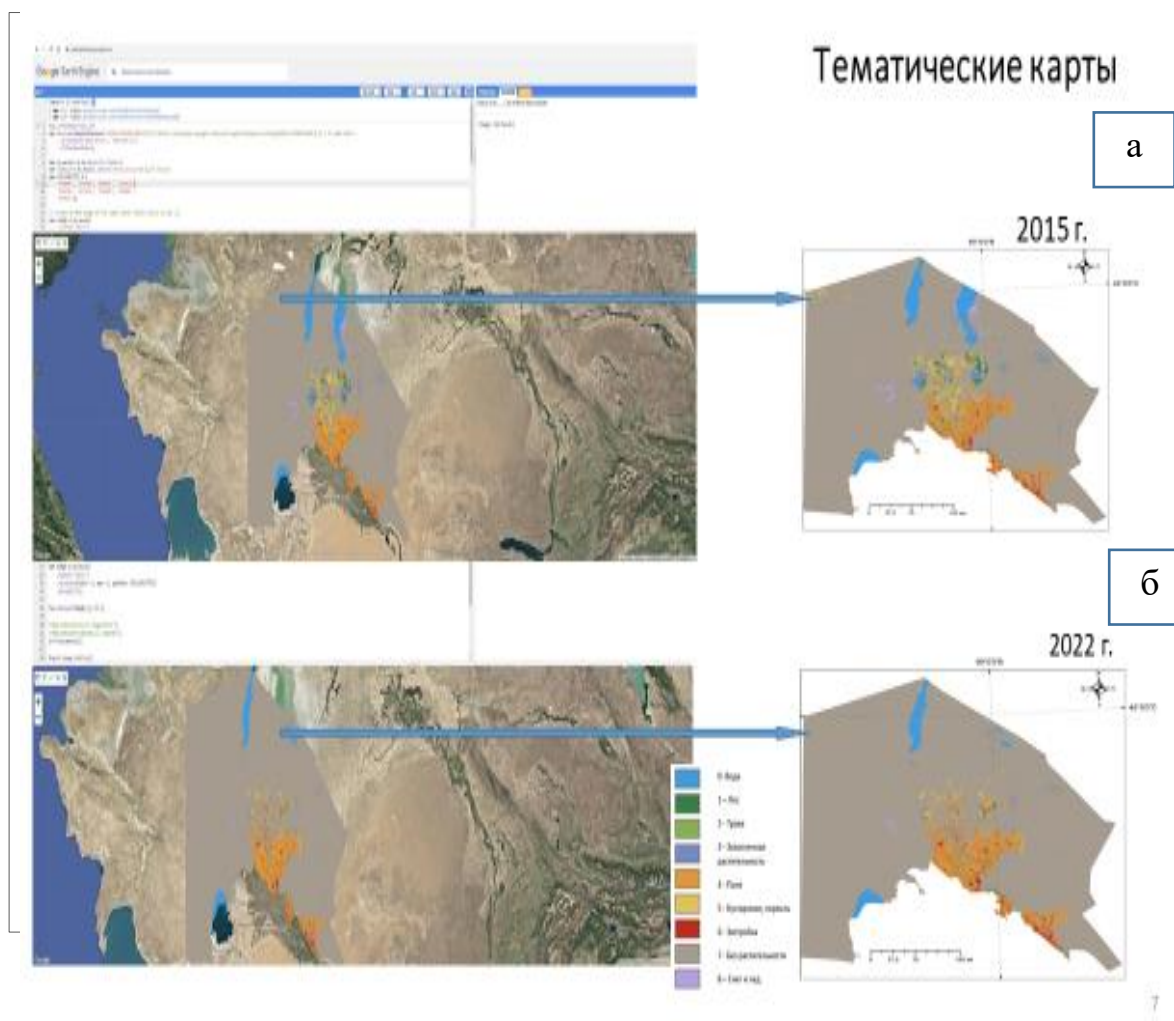


Рис. 3. Электронный ресурс «Dynamic Word1»

В результате, исходными данными для оценки фрагментации послужили тематические карты Dynamic Word1 с последующей загрузкой и обработкой этих карт на электронной ГИС платформе – «Google Earth Engine», позволяющей обрабатывать крупные мозаики спутниковых (растровых и векторных данных).

Продукты в виде тематических карт 2015 и 2022 гг., отграниченные границами Республики Каракалпакстан, были получены на основе данных Sentinel-2, с ресурса Dynamic Word1 и визуализированы для последующей обработки и оценке в «Google Earth Engine» (Рис. 4.)

Рис. 4. Загрузка тематических карт по границам республики Каракалпакстан на электронную платформу Google earth engine а) 2015 г., б) 2022 г

Проведенный экспертный анализ позволил провести выборку основных классов по их тематической направленности. В результате, переклассификации классов в «Google Earth Engine», исходные классы анализируемых тематических карт 2015 и 2022 гг., представляющие объекты, включающие древесно-кустарниковую растительность (Лес, затопленная растительность и кустарники) были объединены в один класс (древесная растительность) в проекте, представленный как - «Лесная растительность». Все остальные классы были объединены в другой общий класс. т.е. получены бинарные карты «Лес» и «Не лес» (Рис. 5.)

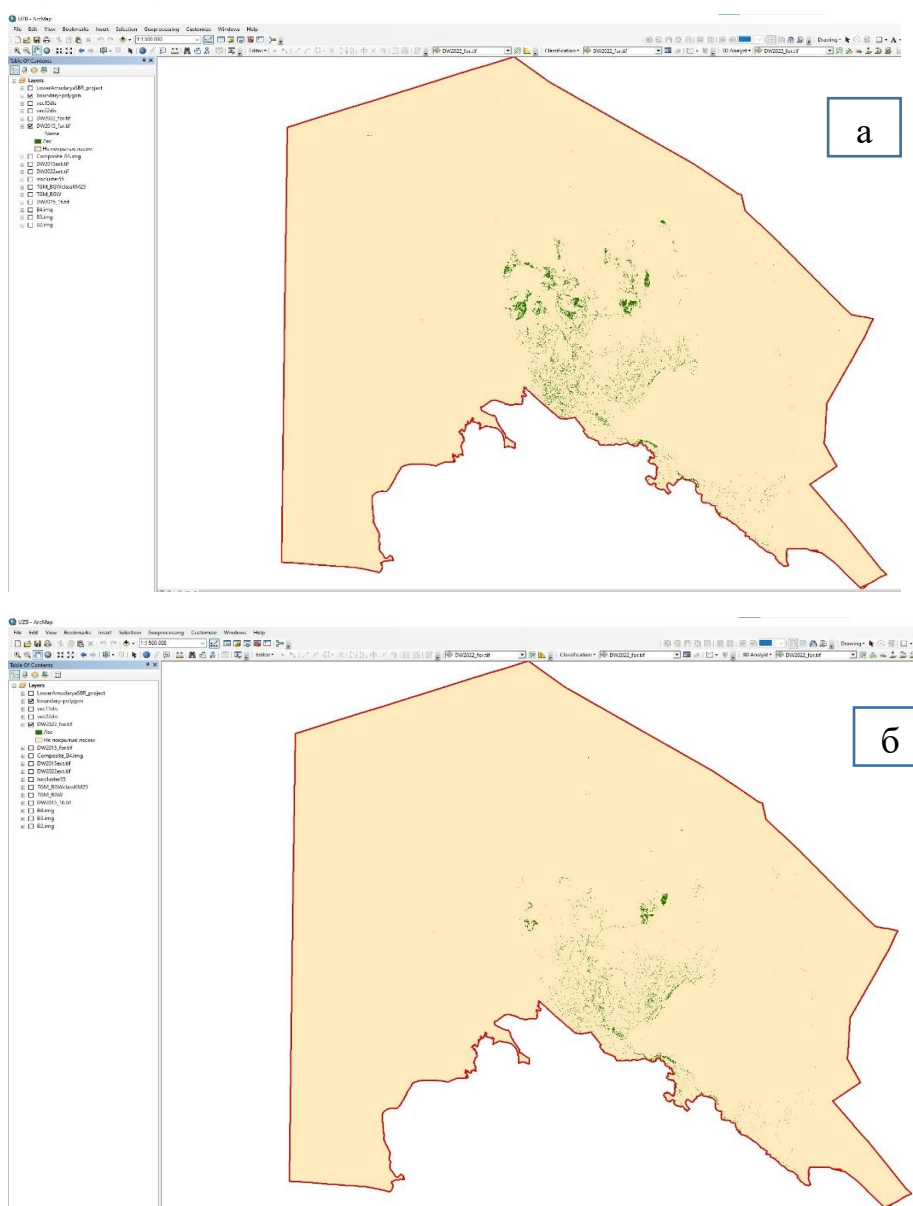


Рис. 5. Бинарные карты 2015 и 2022 гг. по классам: а) «Лес», б) «Не лес»

Шаг 3. Из бинарных карт, для оценки, были выделены только векторные слои «Лес» и «Не лес» с проведением процедуры генерализации в среде ГИС ArcGisi удалением участков леса менее 0,3 га (Рис. 6.)

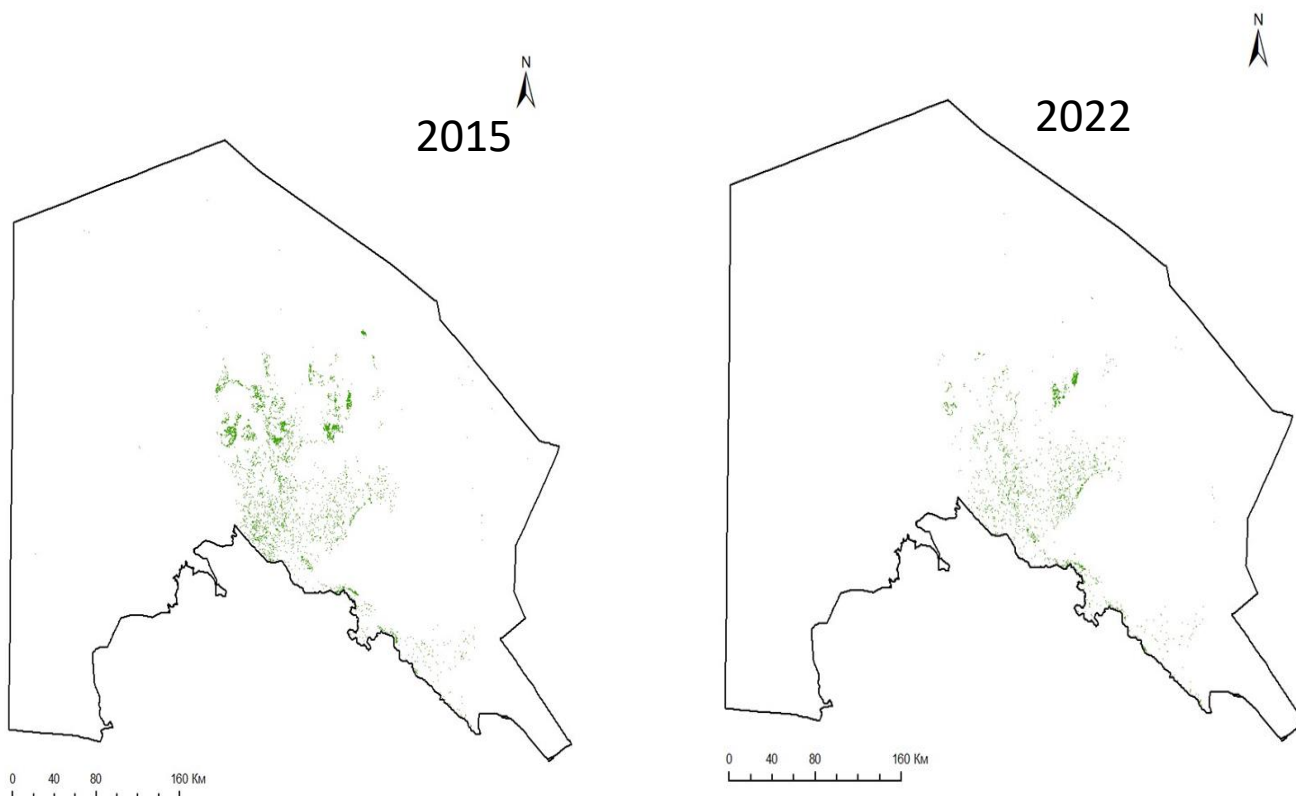


Рис. 6. Векторный слой «Лес» (зеленый цвет) а). 2015 г., б). 2022 г.

Таким образом для оценки динамики фрагментации были подготовлены два векторных слоя «Лесная растительность» за 2015 и 2022 гг.

Для оценки степени фрагментации лесного покрова в работе использовались ландшафтные индексов (табл. 2) (McGarigal, Marks, 1995). Оценка проводилась с использованием программы FRAGSTATS, версия 4.2 (Рис. 7). Индексы определялись в растровом формате для каждой карты за 2015 и 2022 гг. Fragstats вычисляет широкий спектр ландшафтных индексов для категориальных шаблонов карт, (Таб. 1.)

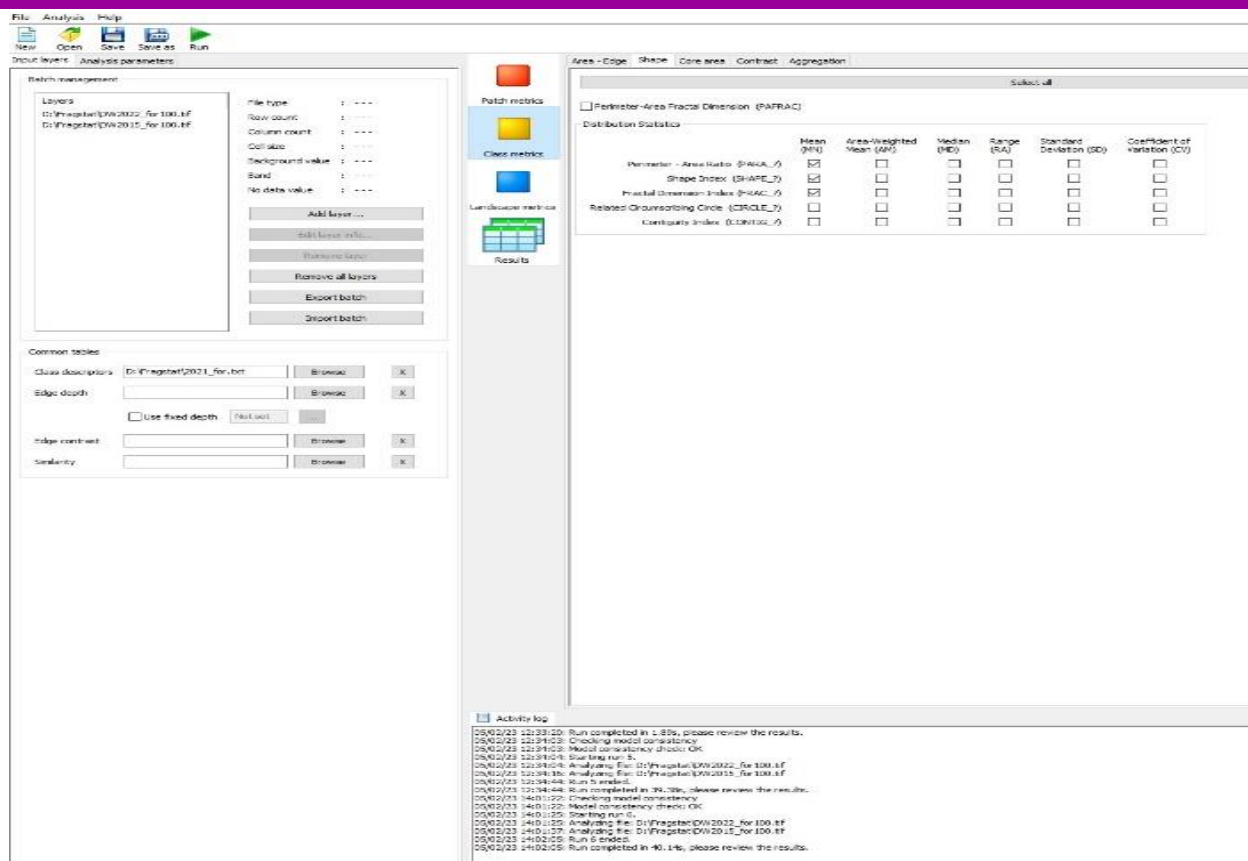


Рис. 7. Интерфейс программы FRAGSTAT

Таблица 1. Международные индексы оценки фрагментации лесных территории

Индекс	Уравнение	Интервал оценки	Описание
Процент лесистости (англ. Percentage of landscape, PLAND), %	$PLAND = \frac{\sum_{j=1}^n a_{ij}}{A} \times 100$	$0 < PLAND < 100$	Процент лесистости определяется отношением покрытой лесом площади (англ. Forest area, FA) к общей площади исследуемого района (англ. Total area, A)
Количество групп лесных участков (англ. Number of patches, NP), шт.	$NP = n$	$NP > 1$	Число лесных участков в исследовании. Чем их больше, тем леса считаются более фрагментированными
Плотность лесных участков (англ. Patch density, PD), шт/100 га	$PD = \frac{n_i}{A} \times 10000 \times 100$	$PD > 0$	Количество лесных участков на 100 га
Относительная длина лесных участков (англ. Edge density, ED), м/га	$ED = \frac{\sum_{k=1}^n e_{ik}}{A} \times 10000$	$ED \geq 0$	Общая длина границ лесных участков с поправкой на долю от общей площади лесов
Средний размер лесного участка (англ. Mean patch size, AREA_MN), м ²	$AREA_MN = \frac{\sum_{j=1}^n a_{ij} \times 10000^{-1}}{n_i}$	$AREA_MN > 0$	Среднее арифметическое площадей лесных участков: a — площадь лесного участка; n_i — количество лесных участков
Индекс формы (англ. Mean shape index, SHAPE_MN), безразмерный	$SHAPE = \frac{0,25 p_{ij}}{\sqrt{a_{ij}}}$	$SHAPE_MN > 1$	SHAPE_MN равняется среднему индексу формы по всем участкам ландшафта (p_{ij} — периметр лесного участка, a_{ij} — площадь лесного участка (в м ²))
Расстояние до ближайшего соседнего участка (англ. Euclidean nearest neighbor distance, ENN_MN), м	$ENN_MN = \frac{\sum_{j=1}^n h_{ij}}{n_i}$	$ENN_MN > 0$	ENN_MN равно среднему расстоянию между всеми фрагментами ландшафта h_{ij} на основе кратчайшего расстояния между центрами участков. ENN_MN приближается к 0 по мере уменьшения расстояния до ближайшего соседнего участка
Фрактальный индекс (англ. Fractal index distribution, FRAC), безразмерный	$FRAC = \frac{2 \ln(0,25 p_{ij})}{\ln a_{ij}}$	$1 < FRAC \leq 2$	В формуле p_{ij} — периметр лесного участка; a_{ij} — площадь лесного участка (в м ²). Фрактальный индекс приближается к 1 для форм участков с простыми периметрами и близок к 2 для сложных форм

Для оценки фрагментации в программе FRAGSTAT, полученные векторные слои «Лес» 1992 и 2022 гг. были переведены в растровый формат.



Фрагментированность лесного покрова происходит в том случае, если происходят следующие изменения ландшафтных индексов: увеличение количества лесных участков (NP), увеличение плотности участков (PD) и также уменьшение их среднего размера (AREA_MN). Если наблюдается обратный порядок динамики, то это говорит о процессе слияния лесных ландшафтов.

Для более полного понимания картины динамики фрагментации лесного покрова также проводится оценка индекса относительной длины лесных участков (ED), который непосредственно связан с вышеперечисленными показателями (Воробьев. О.Н, 2022).

РЕЗУЛЬТАТЫ ИССЛЕДОВАНИЯ.

Количественный анализ полученных результатов по индексным показателям позволил оценить тенденции в динамике фрагментации лесного покрова Каракалпакии (Табл. 2).

Таблица 2. Значения динамики ландшафтных индексов лесного покрова Каракалпакии

№	Индексы	Год		Динами фрагментации в целом за (2015-2022)	
		2015	2022		(2015-2022) результат фрагментации
1	Процент лесистости (PLAND)	1,0199	0,5036	↓	Значение уменьшилось, F* -увеличивается
2	Количество групп лесных участков (NP)	21278, шт.	16564	↓	Значение уменьшилось, F-увеличивается
3	Плотность лесных участков (PD)	0,1282	0,0998	↓	Значение уменьшилось, F-увеличивается
4	Относительная длина лесных участков (ED)	27451200	16471000	↓	Значение уменьшилось, F-увеличивается
5	Средний размер лесных участков (AREA_MN)	7,955, га	5,0455	↓	значение уменьшилось, F-увеличилось
6	Индекс формы (SHAPE)	1,1814	1,1392	↓	Значение уменьшилось, F-увеличивается
7	Среднее расстояние между центрами лесных участков (ENN_MN)	412,4 м	373,1	↓	Значение уменьшилось, F-увеличивается
8	Фрактальный индекс (FRAC)	1,02	1,02		Без изменений, F-без изменений

*F-фрагментация

Процент лесистости PLAND за первый исследуемый период (2015–2022) уменьшился более чем в половину на 0,5%. Стоит отметить крайнюю неравномерность распределения лесных площадей на территории исследования. Максимум таких участков находится в центральной части Каракалпакии. Лесные территории, в основном, сосредоточены в границах ООПТ, таких как Бадайтугай, Южный Устюрт, Белтов, Окпетки, Междуречье Акдарья-Казакдарья.

По результатам исследования выявлено, что с 2015 по 2022 гг. количество лесных участков (NP) уменьшилось с 21278 до 16564. В первую очередь это связано с существенным ухудшением ситуации по осадкам. Нехватка влаги приводит к усыханию растительного покрова на больших площадях. Как следствие уменьшилась и плотность лесных участков (PD) с 0,12 единиц в 2015 до 0,09 в 2022 г. Оценка средней площади лесных участков (AREA_MN) также выступает одним из индексов, по которому количественно определяют фрагментированность лесных ландшафтов. С 2015 г. средняя площадь лесных участков уменьшилась на 7,9 га до 5,04 га, а также уменьшился показатель индекса формы (см. табл. 3). Это свидетельствует о существенном увеличении раздельности участков леса за оцениваемый период, что можно объяснить, климатическими факторами и увеличением антропогенной нагрузки (увеличение земель сельхозугодий и вырубка топливной древесины). Отрицательная динамика относительной длины границ лесных участков (ED), с 27451200 м в 2015 г. до 16471000 м в 2022 г. является следствием всех вышеперечисленных тенденций.

ЗАКЛЮЧЕНИЕ

В работе проведена оценка динамики и степени фрагментации лесного покрова на территории Каракалпакистана за период с 2015 по 2022 г., лесистость территории которой представлена неравномерно. Анализ фрагментации лесного покрова за прошедшие 7 лет позволил проследить процесс пространственного распределения лесов Каракалпакистана. Лесной ландшафт территории можно охарактеризовать как умеренно фрагментированный с тенденцией к агрегированию (объединению) лесных участков, иначе говоря, к снижению фрагментации.

По результатам исследования выявлено, что с 2015 по 2022 фрагментированность лесных земель на территории Каракалпакии существенно увеличилась, что существенно уменьшает уровень устойчивости лесных экосистем к

внешним воздействиям. Причинами данной ситуации является как природные так и антропогенные факторы: ухудшение климатических условий (рост температуры, сокращение осадков, увеличение воздействия суховейв), общий дефицит водных ресурсов, увеличение процесса урбанизации, существенное развитие транспортной инфраструктуры, увеличение рубки леса в зимний период в дальних поселках и населенных пунктах, деградации почв.

РЕКОМЕНДАЦИИ

В дальнейшем, во избежание увеличения фрагментации лесного покрова на территории исследования Республики Каракалпакстан, возможно применение следующих мер:

- разработка и осуществление мероприятий по предотвращению деградации лесов;
- усиление мер по защитному лесоразведению в республике,
- создание противоэрозионных насаждений на горных склонах, в оврагах и на бросовых землях;
- предотвращение песчаных заносов и их закреплению, путем осуществления мероприятий по высаживанию деревьев и кустарников против опустынивания;
- улучшить состояние озелененных территорий, включая лесопосадки, выполняющих функции по регулированию климата, санитарно-гигиенические, оздоровительные и иные защитные функции;
- разработка проектов по созданию защитных лесных насаждений на территории сельскохозяйственных предприятий;
- применение современных методов мониторинга растительного (лесного) покрова на основе использование разнообразных спутниковых данных.

REFERENCES

1. A.DeviR., ShimrahT. Assessment of land use and land cover and forest fragmentation in traditional landscape in Manipur, Northeast India / *International Journal of Environmental Science and Technology*. - 2021. – p. 10291-10306; <https://link.springer.com/article/10.1007/s13762-021-03712-5>
2. KayirangaA., KurbanA. Monitoring Forest Cover Change and Fragmentation Using Remote Sensing and Landscape Metrics in Nyungwe-Kibira Park / *Journal of Geoscience and Environment Protection*. – 2016. – vol. - № - 11. – P. 1-18; [10.4236/gep.2016.411003](https://doi.org/10.4236/gep.2016.411003).



3. AdamsB., J Pontius, GalfordG., Gudex-CrossD. Simulating forest cover change in the northeastern U.S. decreasing forest area and increasing fragmentation// *Landscape Ecol.* – 2019. – P. – 2401-2419; <https://link.springer.com/article/10.1007/s10980-019-00896-7>
4. AdilovB., Shomurodov H, LianlianF. Transformation of vegetative cover on the Ustyurt Plateau of Central Asia as a consequence of the Aral Sea shrinkage / *Journal of Arid Land.* – 2021. - P. - 71–87; <https://link.springer.com/article/10.1007/s40333-020-0077-7>
5. BeraB., SahaS., BhattacharjeeS. Estimation of Forest Canopy Cover and Forest Fragmentation Mapping Using Landsat Satellite Data of Silabati River Basin (India)// *Journal of Cartography and Geographic Information.* - 2020. – P. – 181-197; <https://doi.org/10.1007/s42489-020-00060-1>
6. AdamsB., PontiusJ. Simulating forest cover change in the northeastern U.S. decreasing forest area and increasing fragmentation// *Landscape Ecol.* – 2019. – P. - 2401-2419; <https://link.springer.com/article/10.1007/s10980-019-00896-7>
7. ReddyC. S., PashaS. V. Quantifying nationwide land cover and historical changes in forests of Nepal (1930–2014): implications on forest fragmentation// *Biodivers Conserv.* - 2018. - №27. – P. – 91-107; <https://link.springer.com/article/10.1007/s10531-017-1423-8>
8. SungC., ParkC., KimJ. Politics of forest fragmentation: a multiscale analysis on the change in the structure of forest landscape in the North and South Korean border region/ *Regional Environmental Change.* - 2018. – P. – 197-147; <https://doi.org/10.1007/s10113-018-1394-7>

CYTOTAXONOMIC STUDY OF SIX POPULATION FROM GENUS ASTRAGALUS SECTION MICROPHISA IN IRAN

Nazifullah Qurbani

Assistant Professor of Biology Department, Education Faculty, Baghlan University,
Afghanistan

Narges Teimoory

Assistant Professor of Biology Department, Education Faculty, Baghlan University,
Afghanistan

Mohammad Hassan Jafari

Assistant Professor of Biology Department, Education Faculty, Baghlan University,
Afghanistan

ABSTRACT

The genus *Astragalus* is the largest vascular plant on earth, which includes annual and perennial species and has 245 sections. In this study, the *Astragalus* genus from the Fabaceae family was studied in terms of the behavior of the chromosomes during meiosis, the chromosomal base number and the ploidy level in the stages of meiosis. The results show the presence of chromosomal abnormalities such as chromosomal separation or adhesion, and cytotoxicity. By studying 6 populations of *Microphisa* species *A. fragiferus* Bung, *A. callistachys* Buhse, *A. lurorum* Bornm, *A. cephalanthus* DC, *A. reuterianus* Boiss and *A. submitis* Boiss & Hohen, the results show all are diploid ($2n=2x=16$) and their basic chromosomal number is $x=8$.

Keywords: Genus *Astragalus*. L, chromosome number, ploidy, abnormality

INTRODUCTION

Genus *Astragalus* L. is one of the largest genera of flowering plants with 2500 to 3000 species (Roofgar et al., 2019) and a wide global distribution, nearly 1000 of which are distributed in the Iranica flora (Ranjber et al., 2011). The habitat of this plant in Iran can be seen from an average height of 1100 meters in the Iranian plateau and lowlands and at lower altitudes in the mountains, and it is specific to the steppe, semi-arid and dry mountainous regions of Iran (Mahmodian et al., 2011). This genus belongs to the Fabaceae family, which is placed together with 19 other genera in the Galegeae Bronn Torrey & Gray genus (Qharamani et al., 2000). In all floras written based on the

monograph (Singh, G. 2001), and Flora Sharq (1872), who have assigned subgenus divisions for this genus, some changes have been made in this subgenus and they have been reduced from 8 or 9 numbers to two numbers (Guldin et al., 1987). But based on molecular studies on new world *Astragalus* species (Wojciechowski et al., 2003) and also the achievements of molecular research on many species belonging to the ancient world (Kazimpoor et al., 2003) it does not approve any subgenus divisions in the genus and considers it artificial (massuomi. 2002). Iran, having about 750 species of this genus, of which 400 species are exclusive, is considered one of the important centers of speciation and species diversity (Ranjbar et al., 2014).

In racial research, cytogenetic studies are one of the primary measures. Knowing the chromosome number is effective in choosing racial methods. Determination of the ploidy level is also obtained from chromosomal number. It has a significant role in crossbreeding, identification and classification of plants in the new system as part of new taxonomy. A great diversity in chromosomes, the constant number of chromosomes in individuals of the same species are the useful indicators for taxonomic purposes. On the other hand, the study of chromosomal structure and their behavior is important in phylogeny and genus architecture.

In case of chromosomal number in *Astragalus* species, the available sources confirm the chromosomal number of some species (Javadi et al., 2006). Studies show that the basic chromosomal number in all populations of *Astragalus* L. are equal to 8 and the populations are placed in two ploidy levels including diploid $2n=2x=16$ and tetraploid $2n=4x=32$. The types of chromosomes among populations are metacentric and submetacentric. *A. pseudocyclopyllus*, *A. ebenoides*, *A. stevenianus* and *A. jodostachys* species were tetraploid, respectively and other populations were diploid (Ghulamzadah et al., 2019). All studied species, like most species of *Astragalus* genus, show the basic chromosome number of $x=8$, which were three ploidy levels ($4x$, $2x$, and $6x$), and 16, 32, and 48 chromosomes, respectively. Therefore, there is a big difference between the number of chromosomes in *Hymenostegis*, *Astragalus* and *Oxytropis* sections in terms of ploidy level (Bagheri et al., 2022). The diversity of these plants in the Mediterranean region and West Asia includes annual or perennial plants, mostly flowering plants, and rarely thorny shrubs with simple long hairs, which are cultivated as fodder. Also, there is the report of chromosomal numbers $x=7$ and $x=8$ and three ploidy levels $2n=2x=14$, $2n=4x=28$, $2n=8x=56$ and $2n=2x=16$, $2n=4x=32$ in this genus (Ranjbar et al., 2010). Cytological data and chromosomal numbers based on the base number $x=8$ are found in most of the studied species, a diploid number of $2n=2x=16$ is recorded in most species, while a tetraploid number of $2n=4x=32$ is only

recorded in one sample of *A. vegetus*99. The chromosomal number of $x=8$, has been reported in the vast majority of the genus *Astragalus* (Ranjbar et al., 2013). Chromosome number of 6 exclusive and rare species of *Astragalus* genus also shows the basic chromosomal number of $x=8$ for all species which *A. assadabadensis*, *A. cardochrom*, *A. kurrindicus*, *A. nervistipulus* species were diploid and *A. trachyacanthos* was tetraploid. The basic chromosomal number report of these species is from *Rhacophorus* section (Jalilian et al., 2022). Variations and genome size showed that the genome size values among the studied species are slightly different at the ploidy level and most of the species and close groups are almost constant. Among the species related to *Astragalus* genus, there is a relatively strong correlation between the genome and the number of chromosomes. In the *Hymenostegis* section, the difference and the size of the genome seems to be very small (Bagheri et al., 2022).

This study aims to find the behavior of the chromosomes during meiosis, the chromosomal base number and the ploidy level in the stages of meiosis in six populations of genus *Astragalus* sect. *Microphisa* in Iran.

RESEARCH METHODOLOGY

In this research, collected samples from natural habitats and herbarium samples were examined.

Collecting the studied species for the study of meiosis

Meiosis is a major evolutionary event that culminates in the reduction of the number of chromosomes. The coordinated and normal course of meiosis causes gametes with viability. Cytological events of gametogenesis are controlled by a wide range of genes. Mutation in these genes causes abnormality with adverse effects on fertility (Pagliarini, M. 2000). Meiosis in higher plants includes two stages of specialized cell division that is necessary for the production of gametes or gamete-producing cells. Pairing of homologous chromosomes in the meiosis stage ensures chromosome separation in the next stage (which causes the genome to be haploid). Synapsis of homologous chromosomes and meiotic recombination takes place during meiotic prophase (the first division of meiosis) and reduction division is a prerequisite (Bass et al., 2003).

Study process

In order to study chromosomes, buds were collected from different species of *Astragalus* genus in different regions. In order to achieve all stages of meiosis, sampling was done from different buds in different sizes and at different times. In this study, pollen mother

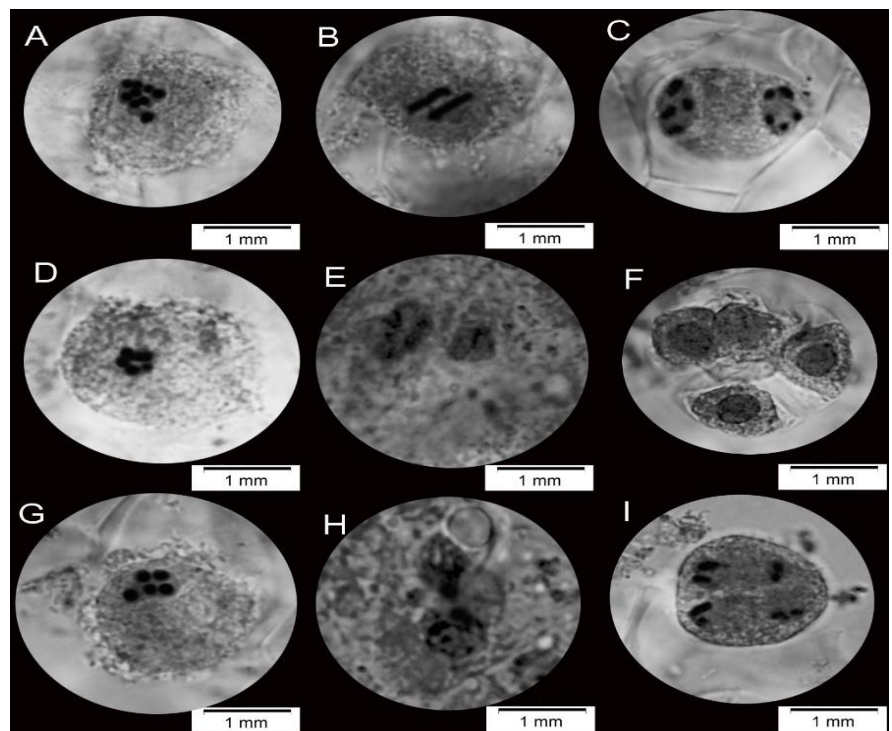
cells were used in the anthers of the stamens. Chromosomes were stained by standard Stokarman method. Before staining, the following steps were performed on cytological materials (unripe flowers). The young buds were placed for 24-48 hours in Pinar's fixative solution which consists of 6 volumes of pure ethyl alcohol, 3 volumes of chloroform and 2 volumes of propionic acid. Cells are killed and fixed in this solution. After 24-48 hours, the buds were removed from the fixing solution and washed with distilled water in order to eliminate the effects of Pinar. Then the buds were placed in 70% ethanol solution. Due to the smallness of the buds, a loop was used to separate the anthers. After separating the anthers and placing them on the slide, 1-2 drops of Stokarman's dye were poured on them and they were completely beaten with an aluminum rod in order to release the pollen mother cells. A coverslip was placed on the sample and then it was gently heated on the alcohol lamp (by alternately heating the coverslip, the nuclei of the cells are better stained). Then the slide was placed between several layers of drying paper and by applying pressure on the paper and the slide, the excess color was removed, and the microsporocytes were spread evenly. Thus, it became possible to observe the chromosomes in different stages of meiosis. Since most of the microsporocytes obtained from one flower often show one stage of meiotic division, if a slide is prepared from the anthers of several flowers, different stages of division can be observed. Finally, the divided cells were examined by an Olympus BX-51 optical microscope with a 100x magnification lens, and the obtained images were photographed by an Olympus DP25 digital camera. To prepare the color, 45 ml of pure acetic acid was heated in an Erlenmeyer flask to boiling point, then the container was removed from the heat and 2 grams of Carmen powder was slowly added to it. While boiling the solution again, the powder was completely dissolved in the acid using a magnetic stirrer. After cooling the solution to 50°C, 55 ml of distilled water was added to it and the stirring continued for one hour. After cooling, the dye was filtered and stored in a dark glass container in the refrigerator. On one side of the prepared slide, 2-3 drops of Venetian turpentine glue were placed and on the other side, 1-2 drops of Stokarman paint were placed. Then by placing a folded sheet of tissue paper in the place of the paint, the paint was gradually removed from under the slide and the glue was replaced. After the glue was completely replaced, the permanent slide was dried for two days and then its excess glue was removed by the paper smeared with xylol.



RESULTS

Astragalus fragiferus Bunge species

Chromosome study on population of *Astragalus fragiferus* Bunge species showed that this population is diploid ($2n=2x=16$) and its chromosomal number is $x=8$. Different stages of meiotic division and chromosomal behavior were observed in this population, including different degrees of diakinesis, metaphase I, metaphase II, metaphase I, telophase I, telophase II, cytomixy and the end of metaphase I (Figure 1). Cytomixy is the migration of chromatin components between adjacent meiotic cells through cytoplasmic junctions originating from the plasmodesmata pre-structures in the anther tissue is called cytomixy. Plasmodesmata are normally completely blocked by callose deposition, but in some cases they remain during meiosis and enlarge to form connections between meiotic cells or cytomeric channels that allow chromosomes to pass through. It seems that cytomixy is of little evolutionary importance, but this phenomenon leads



to the creation of aneuploid plants or unreduced gametes (in terms of chromosome number) (Shaidaye et al., 2007). Cytomixy has been reported in different plants

and mostly in the pollen mother cells, but the available information shows that cytomixy occurs in the meristem cells of the root tip, stem, Hodgdon's wall cells and other cells as well which this is not specific to pollen mother cells (Shaidaye et al., 2001). Sometimes chromosome migration may be done by dissolving the cell wall between adjacent cells, which in this case forms a syncytium (Shaidaye et al., 2003).

Figure 1- Stages of meiosis in the population of *Astragalus fragiferus* (234731).

A. diakinase, B. metaphase I, C. metaphase II, D. metaphase I, E. telophase I, F. telophase II, G. diakinase, H. cytomixy, I. end of metaphase I.

and mostly in the pollen mother cells, but the available information shows that cytomixy occurs in the meristem cells of the root tip, stem, Hodgdon's wall cells and other cells as well which this is not specific to pollen mother cells (Shaidaye et al., 2001). Sometimes chromosome migration may be done by dissolving the cell wall between adjacent cells, which in this case forms a syncytium (Shaidaye et al., 2003).

***Astragalus callistachys* Buhse species**

The chromosomal study on *Astragalus callistachys* Buhse species population showed different stages of meiosis including diakinesis, metaphase II, anaphase I, telophase I, telophase II, and the end of anaphase I. Chromosomal abnormalities including chromosomal adhesion and separation were observed in this species. The adhesion of

chromosomes to each other is caused by the formation of sticky ends between two or more chromosomes and the formation of sticky bridges in anaphase (Eraj et al., 2003). Genetic and environmental factors are considered as the cause of chromosome adhesion. Due to the difference in cells that show adhesion, it is suggested that genome-environment interaction is the main cause of this phenomenon (Shaidaye et al., 2007). This species is diploid $2n=2x=16$ and its chromosomal number is $x=8$ (Figure 2).

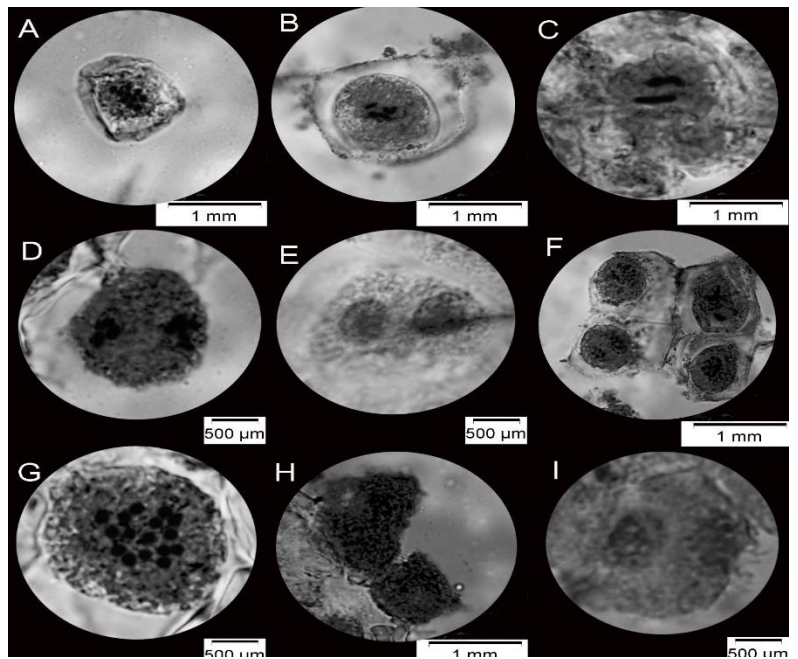


Figure 2- Stages of meiosis in the population of *Astragalus callistachys* Buhse (43934).

A. Diakinesis, B. Metaphase II, C. Anaphase I, D. Chromosome adhesion, E. Telophase I, F. Telophase II, G. Separation, H. Cytomixy, I. Anaphase II.

***Astragalus lurorum* Bornm species**

Chromosome study on this population showed that this population is diploid ($2n=2x=16$) and its chromosomal number is $x=8$. Different stages of meiosis division in this population including different degrees of diakinesis, metaphase I, Lagarde in metaphase I, telophase I, telophase II and chromosomal abnormalities including chromosomal adhesion, leading chromosome in metaphase I, and cytomixy were observed in this species (Figure 3).

***Astragalus reuterianus* Boiss species**

Chromosome study on this population showed that this population is diploid ($2n=2x=16$) and its chromosome number is $x=8$. Different stages of meiosis including different degrees of diakinesis, metaphase I, metaphase II, anaphase II, telophase I, telophase II, and chromosomal abnormalities including chromosomal separation and cytomyxy were observed (Figure 4).

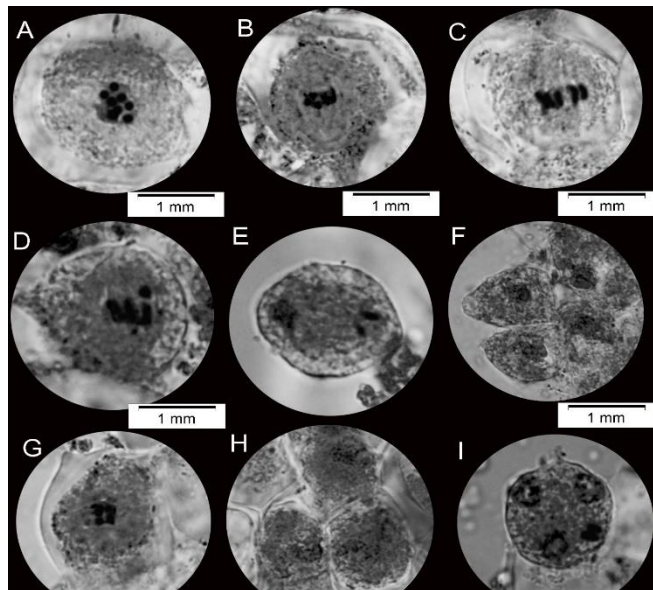


Figure 3- Stages of meiosis in the population of *Astragalus lurorum* Bornm (43935)

A. Diakinase, B. Metaphase I, C. Lagarde in Metaphase I, D. Chromosome leading in Metaphase I, E. Anaphase I, F. Telophase II, G. Chromosome adhesion, H. Cytomyxy, I. Telophase II.

***Astragalus cephalanthus* DC species**

Chromosome study on this population showed that this population is diploid ($2n=2x=16$) and its chromosome number is $x=8$. Different stages of meiosis including different degrees of diakinesis, metaphase I, metaphase I, telophase I, telophase II, anaphase II and chromosomal abnormalities including chromosomal adhesion, and cytomyxy were observed (Figure 5).

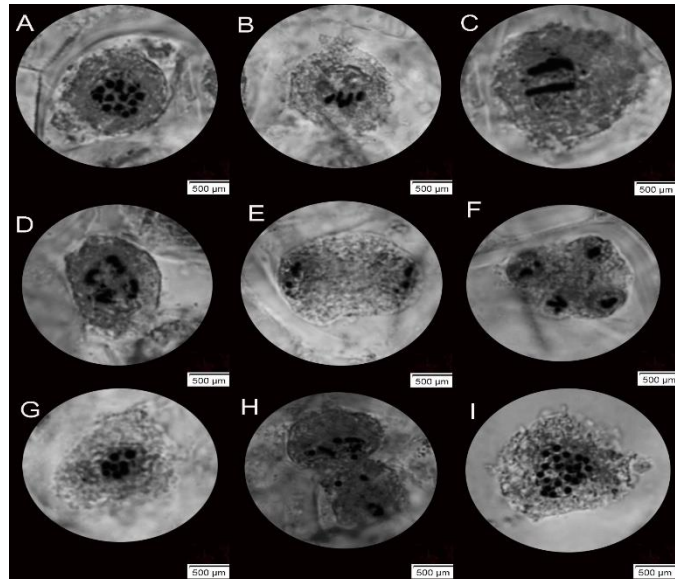


Figure 4- Stages of meiosis in the species population *A. reuterianus* Boiss (22979)

A. diakinesis, B. metaphase I, C. metaphase II, D. anaphase II, E. telophase I, F. telophase II, G. separation, H. cytomyxy, I. diakinesis.

***A. submitis* Boiss. & Hohen Species**

B.

Chromosome study on this population showed that this population is diploid ($2n=2x=16$) and its chromosome number is $x=8$. Different stages of meiosis including different degrees of diakinesis, metaphase I, telophase I, telophase II and anaphase II and chromosomal abnormalities

including chromosomal adhesion, leading chromosome in metaphase I, chromosomal separation and cytomyxy were observed (Figure 6).

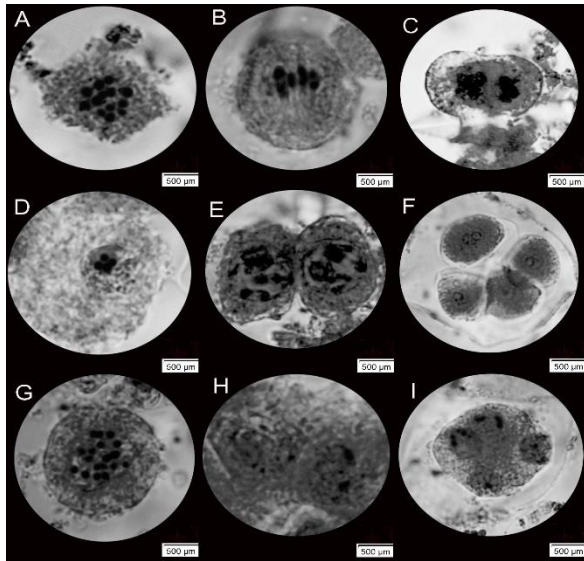


Figure 5- Phases of meiosis in *Astragalus cephalanthus* DC (2397) population

A. diakinesis, B. metaphase I, C. telophase I, D. adhesion in diakinesis, E. telophase I, F. telophase II, G. diakinase, H. cytomixy, I. anaphase I.

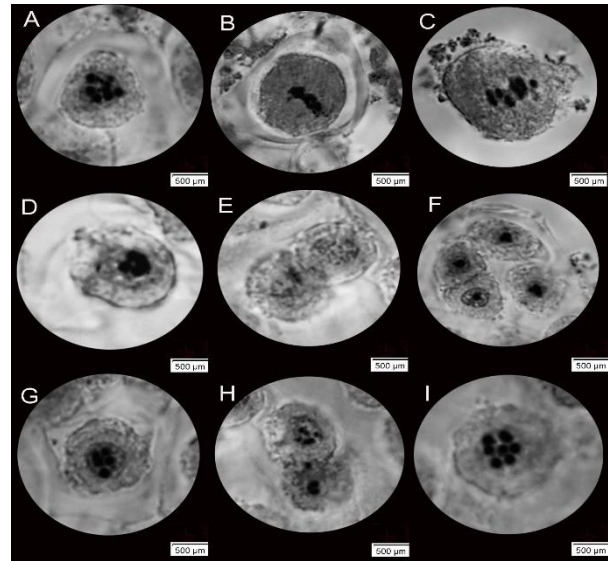


Figure 6- Phases of meiosis in the population of *Astragalus submitis* Boiss. & Hohen (21560).

A. Diakinesis, B. Metaphase I, C. Chromosome advancing in Metaphase I, D. Adhesion in Diakinesis, E. Telophase I, F. Telophase II, G. Separation in Diakinesis, H. Cytomixy, I. Diakinesis.

DISCUSSION AND CONCLUSION

This study is conducted on 6 populations of *A. fragiferus* Bunge, *A. chllistachys* Buhse, *A. lurorum* Bornum, *A. reuterianuss* Boiss, *A. cephalanthus* DC, and *A. submitis* Boiss. & Hohen in Iran. The findings showed that they are diploid ($2n=2x=16$) and their chromosome number is $x=8$. Most of the cytological studies in this genus are focused on counting the chromosome number. This species has a base chromosome number of $x=8$ with two ploidy levels of $2n=4x=32$ and $2n=2x=16$ (Ranjbar et al., 2010) which are the same with this study. Meiosis study on different populations of *A. macrostachys* showed that three populations of *A. macrostachys*, *A. macrostachys* and *A. macrostachys* have chromosomal number of $2n=16$ and they are diploid, while the only population *A. macrostachys* is tetraploid (Karamian et al., 2012). The results of the chromosomal study of *A. aznabjurtieus*, *A. cancellatus* and *A. elegans* species by Javadi et al. (2019) showed that all three species had a basic chromosomal number of $x=8$ and showed a tetraploid state of $2n=4x=32$. Also, two pairs of satellite chromosomes were identified in all three species. This study showed the different behavior of 6 populations of *Astragalus* L. genus in meiosis. Also, the findings showed some abnormalities such as cytomixy, chromosomal adhesion and separation. Study of chromosomal number in all these 6 populations are reported for the first time in Iran.

REFERENCES

1. Bagheri, A., Roofigar, A., Nemati, Z., and Blattner, F. (2022). Genome Size and Chromosome Number Evaluation of *Astragalus* L. sect. *Hymenostegis* Bunge (Fabaceae). Basel, Switzerland.
2. Bass, H. W., Brodoli, S. J. and Foss, E. M. (2003). The desynaotic (dsy) and desynaotica 1(dsy1) mutations in maize (*Zea mays* L.) cause distinct telomere – misplacement phenotypes during meiotic prophase. *Journal of Experimental Botany* 54: 39-46.
3. Eraj, S. (2003). Biosystematic study of *Glycyrrhiza* genus in Iran. Master monograph Bu- Ali Sina University Hamaadan.
4. Ghulamzadah, Z., Javadi, H., Pezhma, M., and Hatami, M. (2019). Caryologic Study of Some Species of *Astragalus* spp. (in Different Habitat s of Iran. *Plant Genetic Researches*, Vol. 7, No. 1.
5. Gaulden, M. E. (1987). Hypothesis: some mutagens directly alter specific chromosomal proteins (DNA topoisomerase II and peripheral proteins) to produce chromosome stickiness, which causes chromosome aberrations. *Mutagenesis* 2: 357-365.
6. Jawadi, H., Haqiqi, A., Hejazi, S. M. (2006). Karyotypic study of three different species (*Astragalus*) research and development in natural resources.
7. Jalilian, N., Sadeghian, S., Safari, H., Jalili, A., and Asadi – Corom, F., (2022). CHROMOSOME COUNTS REPORT OF SIX *ASTRAGALUS* L. (FABACEAE) SPECIES FROM IRAN. *IRANIAN JOURNAL OF BOTANY* 28 (1).
8. Javadi, H., Salehi Shanjani, P. & Safavi, S.R. (2019). Chromosome counts and karyomorphology of some species of *Astragalus* (Fabaceae) from Iran. - *Chromosome Science*. 22 (1-4): 3-12.
9. Karamian, R., Ranjbar, M., and Hadadi, A. (2012). Chromosome number reports in five *Onobrychis* species (*O.* sect. *Onobrychis*, Fabaceae) in Iran. *Journal of Cell and Molecular Research* (2), 81-92.
10. Mahmodian, H., B. (2011). Systematic study of some species of *Malacothrix* and its close relatives from the genus *Astragalus* L. in Iran. Master monograph Bu- Ali Sina University Hamaadan.
11. Pagliarini, M. (2000). Meiotic behavior of economically important plant species: the relationship between fertility and male sterility. *Genetics and Molecular Biology* 23 (4): 997-1002.
12. Qahraman, A. (2000). Chromophytes of Iran (plant systematics). The second volume. second edition. Publications of Tehran Academic Publishing Center.

13. Ranjbar. M., Karamian. R., and Enayati. A. (2010). Systematic study of simple leaf genera from Incani DC section. in Iran.
14. Ranjbar, M., Karamian, R., and Hajmoradi, F. (2010). Chromosome number and meiotic behaviour of two populations of *Onobrychis chorassanica* Bunge (O. sect. *Hymenobrychis*) in Iran. *Journal of Cell and Molecular Research* 2 (1), 49-55.
15. Ranjbar, M., Hadidchi, A. and Riahi, H. (2014). Chromosome number reports in *Astragalus* sect. *Onobrychoidei* (Fabaceae) from Iran. *Taxonomy and Biosystematics*, 6th Year, No. 21, Winter 2014, Pages 71-82.
16. Ranjbar, M., and Samane, J. (2013). Cytotaxonomic Study of *Astragalus* Sect. *Megalocystis* (Fabaceae) in Iran. *The Japan Mendel Society Cytologia* 78(2): 181–193.
17. Roofigar, A., Bagheri, A., and. Maassoumi, A. (2019). Taxonomy of the Genus *Astragalus* L. (Fabaceae) in Isfahan Province. *Taxonomy and Biosystematics*, Document Type: Research Paper, Vol. 11, Issue 2, No.39.
18. Ranjbar, M., Karamian, R. And. Nouri, S. (2011). Diploidtetraploid mixoploidy in a new species of *Astragalus* (Fabaceae) from Iran. -*Ann. Bot. Fennici*. 48: 343-351.
19. Singh, G. (2001). *Plant systematics*. second Edition, Science Publish, Inc., Enfield, N. H, USA
20. Shaidaye, M. (2001). *Sytogenetic*. First edition, Adena Publications.
21. Sheidaye, M., Koobaz, B. & Zehzad, B. 2003. Meiotic studies of some *Avena* species and populations in Iran. *Journal of Sciences* 14(2): 121-131.
22. Sheidai, M., Attaei, S. & Khosravi-Reineh, M. (2007). Cytology of some Iranian *Stipa* (Poaceae) species and populations. *Acta Bot. Croat.* 65(1): 1-11.
23. Wojciechowski, M. F. (2003). Reconstructing the phylogeny of Legumes (Leguminosae): an early 21st century perspective. *Advances in Legume Systematics*, part 10. Arizona 85287 USA., pp 5-35.

ORONIMIYA VA GIDRONIMIYADA METAFORA HODISASINING NAMOYON BO‘LISH XUSUSIYATLARI (JANUBIY O‘ZBEKISTON MATERIALLARI ASOSIDA)

Odil To‘xtamishovich Begimov

Qarshi muhandislik-iqtisodiyot instituti O‘zbek tili va adabiyoti kafedrasini mudiri,
filologiya fanlari doktori
begimovodil@mail.ru

ANNOTATSIYA

Toponimika sohasida amalga oshirilgan tadqiqotlarning ko‘rsatishicha, toponimiyaning barcha turlarida ham metafora hodisasi bir xil darajada uchramaydi. Bu hodisa ko‘proq toponimiyaning gidronimiya va oronimiya sohasida sodir bo‘ladi. Maqolada oronimiya va gidronimiyada metafora hodisasining namoyon bo‘lish xususiyatlari Janubiy O‘zbekiston materiallari asosida tadqiq etilgan.

Kalit so‘zlar: toponimika, oronimiya, gidronimiya, metafora, termin-metafora, orografik obyekt, gidrografik obyekt.

ABSTRACT

Studies in the field of toponymy show that the phenomenon of metaphor does not occur in all types of toponymy at the same level. This phenomenon occurs mostly in the field of hydronymy and oronymy of toponymy. In the article, the characteristics of the manifestation of the phenomenon of metaphor in oronymy and hydronymy are studied on the basis of the materials of South Uzbekistan.

The article uses materials from Southern Uzbekistan to study the features of the manifestation of the phenomenon of metaphor in oronymy and hydronymy.

Keywords: toponymy, oronymy, hydronymy, metaphor, term-metaphor, orographic object, hydrographic object.

KIRISH

Toponimiya sohasida olib borilgan kuzatishlar geografik obyektlarning nomlanishida metafora hodisasi ko‘proq gidronimiya va oronimiya sohasida namoyon bo‘lishini ko‘rsatdi. Ma‘lumki, metafora bu obyektlarning o‘xshashligi yoki individual xususiyatlari, joylashuvi va boshqalar asosida nomni bir obyektidan boshqasiga o‘tishidir.

Toponimik nominatsiyada metaforalashuv jarayoni apellyativning onimga o‘tishidan iborat. Tilshunoslikning boshqa

sohalarida bo'lgani kabi, onomastika sohasidagi metafora "ko'p jihatdan til egalarining dunyo manzarasi tasviri, ya'ni xalq ramziyligi va so'zning konnotatsiyalarini tashkil etuvchi voqelik, belgilar, harakatlar haqidagi mavjud g'oyalari bilan belgilanadi" [1].

Toponimik nomlar uchun mavjud lingvistik metaforaning uchta, ya'ni nominativ, kognitiv, obrazli turidan obrazli metafora eng xarakterli bo'lib, u "narsa-hodisalar ma'nosining belgi ifodalovchi so'zlarning semantik kategoriyasiga o'tishi" bilan tavsiflanadi. Masalan, Dastortosh (Dehqonobod tuman, balandlik), Zingirak (Shahrisabz tuman, cho'qqi), Kelintosh (Dehqonobod tuman, balandlik) oronimlari denotatning shaklini bildiradi, ya'ni bu nomlar obyektning shakliga ko'ra dastor (tojikcha salla)ga, zingirak (tojikcha otning egari)ga, tazim qilayotgan kelinga o'xshatilishidan kelib chiqqan bo'lishi mumkin.

Shunday qilib, toponimik metaforalashuv geografik obyektning barqaror o'xshashligini, doimiy belgisini ifodalaydi va nominativ funktsiyadan tashqari, shaxs tomonidan nominatsiya paytida subyektiv tushunishdan o'tgan ma'lum bir geografik obyektning ham tavsiflaydi.

Shu nuqtayi nazardan, nazarimizda, tabiiy-geografik jihatdan o'ziga xos ahamiyatga ega bo'lgan Janubiy O'zbekiston oronimiyasi va gidronimiyasida metaforik hodisalarni kuzatish dolzarblik kasb etadi. Metaforik nomlar toponimning har bir turida ham u yoki bu nisbatda uchraydi. Bunday nomlar o'zlarining g'ayrioddiylik, emotsional-ekspressivlik bo'yoqdorlikka egaligi bilan ko'proq kishilar e'tiborni tortadi. Biz bu kuzatishlarimizda o'rganilayotgan hudud materiallari asosida toponimika sohasida mazmuni, tuzilishi, obraz turlari va boshqalar jihatidan metaforalashuv hodisasini tahlil qilishga harakat qilamiz.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Toponimika sohasida amalga oshirilgan tadqiqotlarning ko'rsatishicha, toponimiyaning barcha turlarida ham metafora hodisasi bir xil darajada uchramaydi. Bu hodisa ko'proq toponimiyaning gidronimiya va oronimiya sohasida sodir bo'ladi. Buning o'ziga xos sabablari bor, albatta. Bu sabablarning birinchisi, relief shakllari va suv havzalarining nomlari aholi punktlariga qaraganda qadimiyroq ekanligidadir. Ikkinchi sababi shundaki, gidronimlar va oronimlar boshqa turdagi obyektlar nomlariga qaraganda nisbatan kam o'zgarishga uchraydi. Chunki ular o'zlarining tabiiy-geografik xususiyatiga ko'ra, o'zgarish yoki yuqolishga moyilroq bo'lgan oykonimlar (aholi punktlari nomlari)ga qaraganda, barqarordir. Uchinchidan, tog'lar, tog'tizmalari, cho'qqilar, vodiylar, daryolar, ko'llarning tashqi belgilari inson his-tuyg'ularining real dunyo

hodisalari va dunyoni tushunishi bilan bogʻlanib ketadi. Oykonimlarda esa ular asosida obyektning geografik xususiyatlarini solishtirish mumkin boʻlgan belgilar mavjud emas[3]

Tadqiqot metodologiyasi tilshunoslikda kuzatilgan ma'lum bir tarixiy-ijtimoiy jarayondagi barcha hodisalar tarixiy va ijtimoiy hodisalardan ajratmasdan talqin qilishga asoslanadi.

Tadqiqotning ilmiy-nazariy asoslarini zamonaviy tilshunoslikning onomosologiya sohasida qoʻllaniladigan ilmiy fikrlarni tahlil qilish usullari tashkil etadi.

Shuningdek, toponimlarning lingvistik tadqiqida jamoa va xususiylik, mohiyat va hodisa, shakl va mazmun bilan uygʻunlashgan dialektik qonuniyatlarga asoslanadi.

Asosiy tadqiqot usuli sifatida qiyosiy-tarixiy, qayta tiklash, tuzilish va shakllanishiga koʻra tahlil qilish, til faktlarini solishtirishdan foydalanilgan.

NATIJALAR VA MUHOKAMA

Kuzatiladiki, Janubiy Oʻzbekiston oronimiyasi va gidronimiyasi insonning real borliqdagi obyektlar bilan assotsiatsiyasiga asoslangan turli xil ma'lumotlarni oʻz ichiga oladi. Bunday toponimlar obyektlarning shakli, hajmi, ularning makonga munosabati va boshqalarni namoyon etadi. Masalan, oronimiyada: Beshiktepa, Xumdonak, Yalpoqtepa, Oʻtovtosh, Tobatosh va boshqalar; gidronimiyada: Damariq, Boʻzariq, Shoʻrjoʻy, Shakarbuloq, Oqsuvva b.

Janubiy Oʻzbekiston toponimiyasini oʻrganish metaforalar asosidagi obrazlar va belgilarning juda xilma-xilligini koʻrsatadi. Ularning quyidagi turlarini ajratish mumkin:

1. Orografik va gidrografik obyektlarning rang-tusi boʻyicha oʻzaro oʻxshashligi asosida nomlanishi: Qizilshiram (Dehqonobod, balandlik), Qizilgaza (Qamashi, tog dovoni). Sariqtepa (Barcha tumanlarda tepa), Sariqtuz (Shahrisabz, togʻ), Oqdovon (Qamashi, togʻ tizmasi), Oqjar (Chiroqchi, jar), Kuhisafed (Boysun, togʻ), Koʻkjar (Boysun, jar), Koʻkkamar (Boysun, togʻ), Koʻkkoʻtal (Boysun, dovon) va b.; Qizilsuv (daryo), Oqsuv (daryo), Qorasuv (soy) va b.

2. Orografik va gidrografik obyektlarning shakli va hajm belgilarining oʻzaro oʻxshashligiga asosida nomlanishi: Kichikdapsan (Chiroqchi, tepa), Kichiktarpi (Chiroqchi, balandlik), Kattatarpi (Chiroqchi, balandlik), Kattataxta (Dehqonobod, balandlik), Kattataqir (Dehqonobod, balandlik); Kattaariq Shahrisabz, ariq, Kattasoy (Shahrisabz, soy), Egrisuv (Qamashi, soy) va b.

3. Geografik obyektlarning insonga xos xususiyatlar va holatlarga oʻxshatish asosida nomlanishi: Koʻrdara (Dehqonobod,

dara), Ko‘rqapchig‘ay (Qamashi, dara), Yetimoq (Dehqonobod, balandlik), Yetimtaxta (Dehqonobod, tog‘) va b.

4. Orografik obyektlarning hayvonlarga nisbat berish asosida nomlanishi: Tuyaboshi (Kitob, balandlik), Tuyabo‘yin (Qamashi, balandlik), Tuyasingir (Chiroqchi, balandlik), Tuyatosh (Shahrisabz, adir), Tuyashoti (Dehqonobod, balandlik) va b.

Shunday qilib, geografik obyektlarning nomlari asosidagi obraz va belgilarni tahlil qilish natijasida biz metaforik toponimlarning ma‘lum bir assotsiativ informativlikka egaligini e‘tirof etishimiz mumkin. Bu esa nomlangan obyektning boshqa o‘xshash obyektlardan ajratib turadigan xarakterli belgilarini ko‘rsatadi.

Aksariyat toponimlar ko‘plab miqdordagi metafora asosida hosil bo‘lgan geografik atamalardan tarkib topgan bo‘ladi. E.M. Murzayevning fikricha, "ma'nolarning ko‘chirilishi ma'lum bir qonuniyatga bo‘ysunadi", "metafora atamaları o‘xshash turkumlarga kiritilgan, ularda inson va hayvon tanasining qismlarni bildiruvchi so‘zlarni geografik terminlarda aniq ko‘rsatadigan universal qobiliyat mavjud..." [10]. Janubiy O‘zbekiston toponimiyasida odam yoki hayvon tanasining qismlarini ifodalovchi so‘zlardan kelib chiqqan quyidagi metaforik terminlar mavjudligi kuzatiladi: bag‘ir//bovir, bel, bosh, burun, tumshuq, bo‘yin, kindik, og‘iz//oviz, sar, etak, qangshar//qanshar, qovoq, qosh, qo‘l, shox//shax, barmoq, panja.

Bu metaforik terminlar o‘rni bilan oronimlar va gidronimlar tarkibida indikator vazifasida keladi. Janubiy O‘zbekiston hududida oronimlarning asosini tashkil etuvchi anatomik xarakterdagi ko‘plab termin-metaforalar mavjud bo‘lib, biz ulardan ba‘zilariga to‘xtalib o‘tamiz.

Bel orografik termin metafora sifatida tog‘larda uncha baland bo‘lmagan keng dovon; uzun cho‘zilgan, qirralari sezilmaydigan do‘nglik ma‘nosida qo‘llanadi [5].

O‘zbek tilining izohli lug‘atida ham uning geografiyaga oid so‘z sifatida terminlik ma‘nosiga egaligi qayd etilgan: «Bel geogr. Tog‘ va tepaliklarning egarsimon eng baland joyi» [7]. Janubiy O‘zbekiston hududida Olabel (Dehqonobod, balandlik), Qorabel (Shahrisabz, tog‘ tizmasi) oronimlari uchraydi.

Burun orografik termini metafora sifatida tog‘ burni, bo‘rtib chiqqan do‘nglik, yirik balandlikning qirrali tomoni, quruqlikning okean, dengiz, ko‘llarga eng ko‘p turtib kirgan uchli qismi kabi tushunchalarni ifodalaydi. Tog‘ burni birikmasi Maxmud Koshg‘ariy lug‘atida ham *tog‘ burni* ma‘nosida izohlangan [8].

Tumshuq – tog‘ tizmasi yoki yirik balandliklar, cho‘ziq qirlar bag‘rida turtib chiqqan, bo‘rtib turgan do‘nglik [5]. Janubiy O‘zbekiston toponimiyasida bu atamalardan yasalgan Tumshuq

(G‘uzor, Chiroqchi, Boysun, balandlik), Aylanatumshuq (Kitob), O‘rtatumshuq (Shahrisabz), Qiziltumshuq (Qamashi, Boysun, Sherobod), Kichiktumshuq, Mergantumshuq (Dehqonobod, balandliklar), Tumshuqtog‘ (Boysun,tog‘), Oqtumshuq (Sho‘rchi).

Bo‘yin oronimiyada metaforik termin sifatida uzunasiga cho‘zilgan do‘nglik, qir, usti yassi balandlik kabi orografik obyektlarni ifodalaydi. Shu so‘z asosida oronimiyada bo‘ynoq atamasi ham kelib chiqqan. Maxmud Koshg‘ariy lug‘atida buynaq – “tog‘ bo‘yni” deb izohlangan [8]. Uning shu ma'nolari asosida oronimlar hosil qilingan: Tuyabo‘yin (Qamashi, balandlik), Tuyabo‘yin (Shahrisabz, balandlik).

Kindik so‘z o‘zbek tilida inson qornining o‘rta qismi ma'nosidagi anatomik tushuncha ifodalaydi. Shu xususiyati asosida oronimiyada metaforik termin sifatida tepalik, balandlik joylarning o‘rta qismini bildiradi: Kindiktepa (Chiroqchi, Shahrisabz, tepa).

Og‘iz//oviz orografik termini metafora sifatida *og‘iz > oviz > ovuz* – daralarga, tog‘ning ichki qismlariga o‘tish mumkin bo‘lgan so‘qmoq, guzar [5]. Janubiy O‘zbekiston oronimiyasida bu indikatoridan yasalgan Birovuzli (Qamashi, dara), Birog‘iz (Yakkabog‘, dara) kabi oro-gidronimlar uchraydi.

Etak termini metafora sifatida daryo quyi oqimidagi yerlar (daryo etagi), shahar, qishloq yoki biror joyning pastki yoki chekka qismi, tog‘ etagi tushunchasini ifodalaydi [5]. Bu atamaning fors-tojikcha shakli *doman, domana* – har bir narsaning quyi qismi, etagi, tagi, tog‘ etagi. Tarixiy yodgorliklarda, masalan, «Boburnoma»da *domana* tog‘ yonbag‘ri, tog‘ etagi ma'nosida qo‘llanilgan [4]. Janubiy O‘zbekiston toponimiyasida Etak (Sherobod, Koson, qishloq), Etakovul (Chiroqchi, Koson, qishloq) kabi nomlar uchraydi.

Qovoq metaforik termin sifatida gidrografik obyektlar, ya'ni daryo va ko‘llarning baland qirg‘og‘i; orografik obyektlar, ya'ni jarlik, daralarning cheti, tegrasi; ust qismi yassi tarzda bo‘lib, ko‘rinishi inson qovog‘iga o‘xshash shaklga ega bo‘lgan qavariq joy, balandliklarni ifodalaydi [5].

Demak, *qavoq* so‘zi orografik termin sifatida balandlikning bir turini bildiradi. Janubiy O‘zbekiston tog‘li hudud aholisi nutqida bu termin usti yassi, old tomoni tik tushgan balandlik tushunchasini ifodalaydi. *Qavoq* tushunchasini ifodalaydigan balandliklardan yaylov sifatida foydalaniladi. Shuning uchun bu so‘z yaylov so‘zi bilan ma'nodoshlik xususiyatini namoyon etadi. Bu metaforik termin Husanqovoq, Kattaqovoq, Toshqavoq, Archaliqovoq (Dehqonobod, balandlik), Mo‘ngqavoq (Boysun,balandlik), Yakkaqavoq (Sarosiyo, balandlik) kabi oronimlar tarkibida indikator sifatida qo‘llanilgan.

XULOSA

Xulosa sifatida shuni aytish mumkinki, A.B. Superanskaya ta'kidlaganidek, "nominatsiya odatda turli xil assotsiatsiyalar bo'yicha ba'zan tushunib bo'lmaydigan va faqat ism qo'yganlar uchun tushunarli nutq vaziyatida sodir bo'ladi" [11]. Xalq fantaziyasiga ko'ra yaratilgan obrazlar bilan assotsiatsiyalar obyektning mo'jizakot shakli, g'ayrioddiy rangi, kutilmagan joylashuvi va boshqa o'ziga xos xususiyatlariga ega bo'lgan hollarda paydo bo'ladi. Oronimiya va gidronimiyada metaforik ko'chishning namoyon bo'lish xususiyatlari murakkab va kam o'rganilgan hodisadir. Har bir tarixiy davrda nom ijodkorlari bo'lgan mahalliy aholi uchun u yoki bu obyektning nomlashning o'ziga xos motivlari bo'lgan. Metafora yo'li bilan hosil qilingan nomlar obyektning nomlanish motivi haqida aniq tasavvur beradi.

REFERENCES

1. Arutyunova N.D. Metafora // Russkiy yozik. Entsiklopediya / Pod red. F.P. Filina. — M., 1979. —S. 140 — 141.
2. Ataniyazov S.A. Turkmenistanning geografik atlarining dushundirishli so'zlugi. — Ashxabad, 1980. —B.87.
3. Metafora oronimlarning shakllanishida muhim motivatsiya vositasi sifatida (Janubiy O'zbekiston oronimlari misolida)// QarDU xabarlar, 2022, 6/2 (56). —B.150.
4. Bobur. Boburnoma. — T.: Fan, - 1960. —B. 51.
5. Geografik terminlar va tushunchalar izohli lug'ati (tuzuvchilar: Qorayev S., G'ulomov P., Rahimbekov R.). T., 1979. —B. 150.
6. Konkobaev K. Toponimiya Yujnoy Kirgizii. Frunze, 1980. —S.94.
7. Koshgariy M. Devonu lug'atit turk. Toshkent: Fan, T. I, 1960. —B. 341.
8. Koshg'ariy M. Devonu lug'atit turk. Toshkent: Fan, T. III , 1963. —B. 190.
9. Malov S. Ye. Pamyatnike drevnetyurkskoy pis'minnosti. M. — L., 1951. —S.412.
10. Murzaev E.M. Ocherki toponimiki. — M., 1974. —382 s.
11. Superanskaya A.V. Obshaya teoriya imeni sobstvennogo. M., 1973.

BOSHLANG'ICH SINFLARDA O'QUVCHILARNI CHET TILIDA BAHOLASHNING ZAMONAVIY VA O'ZIGA XOS YONDASHUVLARI

Umida Erkin qizi To'xtayeva

Chirchiq davlat pedagogika universiteti

Turizm fakulteti, 2-bosqich talabasi

umidakhon2004@gmail.com

Saida Turgunovna Gaziyeva

Chirchiq davlat pedagogika universiteti

Ingliz tili nazariyasi va amaliyoti kafedrası

saykagaziyeva@gmail.com

ANNOTATSIYA

Mazkur maqola boshlang'ich sinflarda bolalarga ingliz tili tez oson o'qitishda yordam beradigan baholash va ularni rag'batlantirish haqida atroflicha yoritilgan.

Kalit so'zlar: boshlang'ich sinf, ingliz tili, bolalar, *motivatsiya*, *me'yor*, mezon, til material, nutq mavzusi, nutq faoliyat turlari, fikrni shakillantirish, fikr ifodalash, ichki plan, tashqi plan

KIRISH

Boshlang'ich sinf yoshidagi o'quvchilar o'quv jarayoni davomidagi yutuqlari bilan yon-atrofdagilarda ajoyib taassurot qoldirishga moyil bo'lishadi. Bu kabi va shunga o'xshash moyillik cho'qqiga erishish ishtiyoqini yanada oshiradi. Muvaffaqiyat va g'alaba qozonish boshlang'ich sinf o'quvchilarining fanga nisbatan qiziqish va uni o'rganishga motivatsiyasini oshirishda juda muhim rol o'ynaydi.

TADQIQOT MATERIALLARI VA METODOLOGIYASI

Ma'lumki chet tildan bilim, malaka va ko'nikmalarni egallanganligini aniqlashning me'yorlarga va mezonlarga asoslanadigan yondashuvlari mavjud. Me'yoriy yondashadigan bo'lsak o'quvchining bilimi va o'zlashtirish darjasi dasturiy talablar asosida yoki sinfnig o'quvchilar o'rtasidagi o'rtacha ko'rsatkichiga qarab baholanadi. Ammo bu kabi baholash metodidan foydalanilganda o'quvchining shaxsiy ko'rsatkichlari inobatga olinmaydi. Misol uchun, chorak yoki yil boshida bir daqiqada 15 ta so'z o'qiy olish tezligiga ega bo'lgan o'quvchi chorak yakunida bir daqiqada 20 ta so'z o'qish

tezligini ko'rsatdi. Uning o'zlashtirish ko'rsatkichi o'rtachaga yetmagan bo'lsada ma'lum darajada yuqoriladi. Lekin chorak boshida bir daqiqada 20 ta so'z o'qish tezligiga ega o'quvchi chorak yakunida bir daqiqada 22 ta so'z natija ko'rsatdi. Bunda birinchi o'quvchi 5 (koifitsentda) pog'ona yuqorilgan bo'lsa, ikkinchi o'quvchi 2 (koifitsent) pog'ona yuqoriladi. Ya'ni, natija baland bo'lmasa-da birinchi o'quvchi o'rtacha daraja ko'rsatkichiga erishish uchun ikkinchi o'quvchiga qaraganda ko'proq intildi. Sohaga oid adabiyotlarda (S.Halliwell – 1993; A.Pinter - 2006) o'quvchilarning individual ko'rsatkichlarini inobatga oladigan, raqobatchilik kayfiyatidan xoli va motivatsiyasini oshiradigan bola parvar baholash (child friendly assessment) mezonlari tavsiya etilmoqda. Kichik maktab yoshidagi o'quvchi o'zining baholarga nisbatan o'ta ta'sirchan bo'ladi va "sen buni yomon bajarding" kabi tanbehni "sen yomonsan" deb o'ylashadi va shunday qabul qilishadi. Shu sababdan ham o'quvchilar bilimni baholashda birinchi o'zlashtirish ko'rsatkichi bilan qayd etilgan natija orasidagi farq hisobga olinishi darkor. O'quvchining eng kichik yutug'i ham "Balli, sen bugun avvalgidan tezroq o'qiyapsan", "Sen chiroyli gapiryapsan, muvofaqqiyatingdan xursandman" tarzida e'tirof etilishi kerak. Shu kabi tashakkur o'quvchini ilhomlantiradi va ruhlantiradi shu bilan birga fanga nisbatan qiziqishini oshiradi.

TADQIQOT NATIJALARI VA MUHOKAMA

O'qituvchi qayerda bo'shliq borligini, qaysi til materialining qiyin yoki oson o'zlashtirilayotganligini, nutq mavzusi yuzasidan lingvistik, sotsiolingvistik va pragmatik kompetensiyalarning har bir o'quvchi tomonidan egallanganligini aniqlay oladigan bo'ladi. Shunga o'xshash ma'lumotlar amaliy mashg'ulotlarni sifatli va samarador o'tish darajasini oshiradi. Misol qilib aytadigan bo'lsak, o'qituvchi til va nutq materialining o'zlashtirilishi uchun vazifalar sonini uning qiyinlik darajasiga qarab aniqlash, yoki kompetensiyalarning egallanishiga xizmat qiluvchi mashqlar ratsionini ularning ta'lim vazifasi yoki vositasi sifatidagi maqomidan kelib chiqib belgilash yuzasidan metodik kompetensiyani o'rnini egallaydi. Kichik sinf yoshidagi o'quvchilarni baholash dolzarb muammolardan sanaladi. Boshlang'ich sinf o'quvchilarining ingliz tilida kommunikativ kompetensiyani A1 darajada egallaganliklarini ob'yektiv aniqlashda murakkab vaziyatlarga duch kelinishi mumkin. Afsuski, ko'p hollarda boshlang'ich sinf o'quvchilarining so'zlar, iboralar, qo'shiq va she'rlar, sahna ko'rinishidagi rollarini yod olishlari til o'rganilganligi va nutqni rivojlanganligi haqidagi yolg'on tasavvurga sabab bo'ladi. O'quvchilarda o'z-o'zini baholash ko'nikmalarini shakllantirishning «language portfolio» metodi ham mutaxassislar



(Popham -1999, Chen & Martin – 2000, Stiggins – 2001, A.Pinter – 2006, McMillan - 2007) tomonidan ijobiy baholanmoqda. Yosh davrining o'ziga xos xususiyatidan kelib chiqib o'zlashtirish ko'rsatkichlarini baholashda a) o'quvchiga shaxs sifatida xayrixoh munosabatda bo'lish; b) sezilarli natija qayd etilmasada o'quvchining topshiriqni bajarishga yo'naltirilgan intilishlariga ijobiy munosabatda bo'lish; d) topshiriqning qiynlik darajasidan kelib chiqib yo'l qo'yilgan xatolarni aniq tahlil qilish; e) erishilgan natijani yaxshilash bo'yicha aniq topshiriqlar berish tavsiya etiladi. Ya'ni a'lo baho olish uchun, nonushtaga, o'bedga va tushlik uchun nimalar iste'mol qilish to'g'risida gapirib berishi zarurligi haqidagi o'qituvchi bahosi o'quvchini o'z ustida ishlashga undaydi.

XULOSA

Kichik maktab yoshidagi ta'lim olayotganlar uchun chet tildan muloqot vositasi sifatida foydalanishga bo'lgan ehtiyojni vujudga keltiradigan shaxsiy sabablarni (maktab xududida belgi, ko'rsatkich, e'lon va shiorlarni ikki tilda o'rnatish, o'zaro chet tilda yozishmalar tashkil etish, o'rganilayotgan chet tildagi multfilm va badiiy filmlar namoyish etish) tashkil etish va o'quvchilarning ingliz tili o'rganishga bo'lgan ishtiyoqini oshiradigan tadbirlar (o'rganilayotgan chet tilda shaxsning kommunikativ faoliyatga yo'naltirilgan rolli o'yinlar, sahna ko'rinishlari va tanlovlar) o'tkazish maqsadga muvofiqdir.

REFERENCES

1. Cambridge English Language Assessment: Young Learners, Handbook for teachers Starters Movers Flyers. - Cambridge University Press, 2018. – 70 p.
2. —Chet tillarni o'rganish tizimini yanada takomillashtirish chora –tadbirlari to'g'risida(PQ-1875-son)||Xalq so'zi gazetasi. 2012yil. 12-dekabr
3. Pinter A. Children learning second languages. Research and practice in Applied Linguistics. – UK.: Palgrave & Macmillan, 2011. – 308 p.
4. Pinter A. Teaching Young Language learners. – UK.: Palgrave & Macmillan, 2006. – 205 p
5. Gazieva S. T. READING IS THE RECEPTIVE SIDE OF WRITING //Academic research in educational sciences. – 2021. – T. 2. – №. 5. – C. 1564-1570.
6. DYSLEXIA AND WAYS TO OVERCOME IT IN TEACHING ENGLISH. Saida Turgunovna, Gazieva Chirchik state pedagogical institute, faculty of Tourism, English language department, ASIA PACIFIC JOURNAL OF MARKETING & MANAGEMENT REVIEW ISSN: 2319-2836 IMPACT FACTOR: 7.603 Vol 11, Issue 06, 2022.



QURIGAN OROL DENGIZI TUBIDA YASHIL QOPLAMALAR BARPO ETISHDA SAKSOVUL O‘SIMLIGINING AHAMIYATI

Nagmetulla Begdulla uli Xojamuratov

Qoraqalpog‘iston qishloq xo‘jaligi va agrotexnologiyalar instituti

ANNOTATSIYA

So‘ngi yillarda qurigan Orol dengizi tubida yashil qoplamalar barpo etish ishlari jadallik bilan olib borilmoqda. Bu ishlarga Qoraqalpog‘iston Respublikasi barcha o‘rmon xo‘jaliklari va viloyatlar o‘rmon xo‘jaliklari ishchi guruhlari jalb qilinmoqda.

Ushbu maqolada Saksovul o‘simligi turlari va ahamiyatli xususiyatlari haqida ma‘lumotlar keltirilgan. Ko‘pgina ilmiy izlanishlar natijasida yashil qoplamalar barpo etishda asosiy dominant tur Saksovul o‘simligi ekanligi aniqlangan va tahlil etilgan.

Kalit so‘zlar: Saksovul turlari, o‘shish, xususiyati, ahamiyati, yashil qoplama, qurigan Orol dengizi.

KIRISH

Saksovul o‘simligi – qumli hududlarda o‘sovchi daraxt ko‘rinishidagi buta o‘simligi. Saksovellarning asosiy xususiyati – sahro tuprog‘ini shamollardan pana qilib, eroziya tarqalishini oldini oladi. Bu esa hududlar cho‘llashuvini oldini oladi hamda sahro ekosistemasini saqlanib qolishini ta‘minlaydi. [1].

Ma‘lumotlarga ko‘ra Orol dengizining qurigan tubidan ko‘tarilgan zaharli chang va tuzlar qo‘shni respublikalarida, ayrim ma‘lumotlarga ko‘ra dunyoning eng yuqori Everest cho‘qqisida borligi aniqlangan.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Orol dengizining qurigan tubidan har yili atmosferaga shamol oqimi bilan birga 72 mln. tonnagacha qum va chang ko‘tarilayapti, bu esa Orolbo‘yi mintaqasida ekologik tanglik vujudga keltirmoqda. Qishloq xo‘jaligi bilan band bo‘lgan 1 ga er bir yilda 520 kg tuz tushmoqda. Orol dengizini qurishi sababli Orolbo‘yida sho‘rlanish jarayoni keskin kuchaydi, bu esa havoda tuz va chang paydo bo‘lishiga olib keldi, ekologik tanglik kuchaytirdi, mahalliy aholi ichida og‘ir kasalliklar tarqalishi ko‘paydi. Qishloq xo‘jalik ekinlarining hosildorligi pasaydi, cho‘llanish jarayoni rivojlana boshladi.

Yuqorida keltirilgan muammolar echimini topishda bir qator olimlar tarafidan ilmiy tadqiqot ishlari olib borilgan va

qurigan Orol dengizi tubida asosiy dominant o'simlik turi deb saksovul o'simligi tan olingan. Ushbu maqolada saksovul turkumiga mansub turlarining bioekologiyasi, selektsiyasi va xalq xo'jaligidagi ahamiyati haqida ma'lumotlar keltirilgan [2].

Saksovul-cho'l o'simligidir. Uning o'sish areali cho'llar va yarimcho'llar chegarasi bilan bog'liq. Markaziy Osiyo va Qozog'istonda saksovul o'rmonlarining umumiy maydoni 20 mln gektarga etadi. Shu maydonlarning deyarli yarmi Qozog'istonga, Turkmaniston va O'zbekistonga esa har biriga chorak qismidan to'g'ri keladi. Turkmanistonda saksovulzor o'rmonlar o'rmon bilan qoplangan maydonlarni 94,1% egallaydi, O'zbekistonda esa 64% ga teng. Yog'och zahiralari bo'yicha saksovulzorlar archazorlardan keyingi o'rinda turadi. O'simliklar ichida saksovul qumlarni yaxshi mustahkamlashda tengi yo'q o'simlik hisoblanadi. Kuchli rivojlangan ildiz tarmoqlari bilan saksovul qum massalarini ushlab qolib, yo'nalishini to'xtatadi, bu joyda esa boshqa o'simliklar va butalar o'sib rivojlanadi. Cho'llardan tashqarida o'sgan daraxt va butazorlardagi saksovul o'sishiga ko'ra sahrolardagi ekotiplaridan farq qiladi (1-rasm). Oq saksovul poyalarida bo'ladigan tikanli qobiqchalarni hisobga olmaganda, ularda barglar bo'lmaydi. Shu sababdan, o'simlikdagi organik moddalar yangi o'sgan novdalarida to'planadi (ba'zi cho'l o'simliklari singari).

NATIJALAR VA MUHOKAMA

O'simlik tepasining o'sishi o'zgacha bo'ladi. Saksovul kambiy to'qimasi poyani aylana halqalar bo'yicha qoplamasdan, bog'lamlarga yig'iladi, shuning uchun yillik halqa qatlami paydo bo'lmaydi. Poyaning ko'ngdalang kesimidagi yillik halqachaga o'xshagan chiziqlar aslida uzuq-uzuq spiralga xosdir. Bir yil davomida 5-8 ta va undan ham ko'proq halqachalar paydo bo'lishi mumkin. Bu narsa saksovul tanasining indivudial xususiyati hamda tuproq-iqlim sharoitiga bog'liq. Shu sababdan, saksovul yoshini yillik halqachalar sonidan aniqlab bo'lmaydi.

Saksovul yog'ochi nafaqat o'zining tuzilishi, balki boshqa ko'plab xususiyatlari bilan farqlanadi. U og'ir, solishtirma og'irligi 1,02 ga teng, suvda cho'kadi, nihoyatda qattiq va shu bilan birga juda mo'rt. Yog'ochining mo'rtligi tolalari kaltaligi va xujayralarining mineral tuzlar bilan to'yinganligi sababdir. Saksovul yog'ochini arralash, chopish qiyin, lekin sindirish oson. Saksovul yog'ochi qurilishlarda kam ishlatiladi, chunki poyalari qiyshiq, qattiq, mo'rt, foydali yog'och chiqishi juda kam. Lekin issiqlik berish xususiyatiga ko'ra saksovul eng yaxshi yog'och yonilg'i sanaladi, nafaqat o'tin, balki yog'och ko'mir sifatida ham ishlatiladi.



1-rasm. Tabiiy o'sayotgan qora saksovul ko'chati

Saksovul mart-aprel` oylarida 5-7 kun davomida gullaydi. Gullab bo'lganidan keyingi jazirama yoz issig'ida meva tugunchalari xosil bo'lmaydi, faqat sentyabr oyiga kelib mevalar shakllanadi. Sentyabr oxirida saksovulda ko'plab mevalar hosil bo'ladi. Mevalari-qanotchalar, havorang, gulni eslatadi. Oktyabrda mevalari etilib, to'kilib tushadi, faqat ayrimlaridagina ba'zi shoxchalarida qolgan mevalari keyingi bahorgacha turadi.

Mevalari shamol yordamida tarqaladi. Har yili mevalari hosil bo'ladi, lekin 2 yil oralatib, 3-yilga qarab mo'l hosil beradi. Urug'larini unuvchanligi tez yo'qoladi, bir yil saqlanganida atigi 10% unuvchanlikka ega urug'lar saqlanib qoladi. O'simlik yangilanishi faqat urug'lardan emas, balki vegetativ qismlari-to'nka ildiz bachkilaridan ham amalga oshadi.

Qora yoki sho'rxok saksovuli (*Haloxylon aphyllum*) Taqir cho'llarda, sariq-sho'rxoq tuproqlarda, sho'rlangan qumli va bo'z tuproqlarda o'sadi. Tuproqni himoyalash, qumlarni to'xtatish, yaylovlarni saqlash kabi cho'ldagi muhim meliorativ vazifalarni bajaradi. Bundan tashqari, qora saksovulzorlar katta xo'jalik ahamiyatiga ega. Chunki Markaziy Osiyo mamlakatlari uchun ular mayda qurilish materiali hamda asosiy yonilg'i manbasi bo'lib xizmat qiladi.

Qora saksovul 12 metr balandlikkacha o'sadigan daraxt yoki buta sifatida uchraydi. Qumlik o'simliklari ichida bular eng ulkanlaridir [3].

Yosh va etuk paytida shox-shabbasi sharsimon (dumaloq) shaklda (2-rasm) yoki to'psimon, yoshi o'tgan sari o'zgaradi, balandligiga o'smaydi, aksincha eniga kengayadi, chunki o'sish jarayoni susaygan sari shoxlari o'tirishib yon tomonga qiyshayib o'sadi.

Poyalari bo‘lmali, mo‘rt, suvli, to‘q yashil, sho‘rxoq - nordon ta‘mli, osilib turuvchi bo‘lib, mayda g‘adir –budir o‘simtalari bor.



2-rasm. Orol dengizi kurgan tubida tabiiy o‘sgan 2-3 yillik Qora saksovulning umumiy holati

Barglari bo‘lmaydi, kurtaklari fevralda ochila boshlaydi. Gullari mayda 2 mm och-sariq rangli, ikki jinsli, besh qo‘rg‘onli. Mevalari qanotchalar, meva chetlari bukilgan, atrofida qanotchallari bor, gul og‘zi bargchalaridan paydo bo‘ladi. Urug‘larida spiralsimon murtagi bor. 5-6 yoshidan ba‘zida undan ham oldinroq mevaga kiradi.

Ildiz tizimi o‘q ildizli, tuproqning nam qatlamlarida yoyilib o‘sadi. Mustahkam va pishiq tolalar bilan qoplangan, mayda ildizchalarning qurib qolishidan himoya vositasi bo‘lib xizmat qaladi.

Yog‘ochining o‘zagi to‘qroq rangda va zichroq bo‘lib, po‘stloq ostidagi qatlamidan farq qiladi. Yosh paytida tez o‘sadi. Urug‘ ko‘chati birinchi yilda-25-30 (120) sm gacha, to‘nka o‘simtalari 1 metrgacha; 6-10 yillik paytida –balandligi 5-7 metr, yog‘och tanasining yo‘g‘onligi 25-30 sm; 25-30 yillik qora saksovul esa 8-11 m balandlikkacha, yog‘ochining yo‘g‘onligi 40-50 sm gacha etadi.

Oq yoki qum saksovuli (*Haloxylon persicum*) Oq saksovul tarqalgan (o‘sadigan) xududlar - bu qum barxanlarining nishablik va qiyaliklari, baland bo‘lmagan tepaliklar va ayrim joylarda o‘rasimon chuqurlik va qator orasidagi past joylardir. Bu erlardagi tuproq turi asosan oddiy, qumloq, kulrang-bo‘z, kam gumusli, deyarli sho‘rlanmagan yoki kam sho‘rlangan.

XULOSA

Oq saksovul massivlari qumliklar chegarasidan chiqmaydi. Qalin ekinzorlarni tashkil etmasdan, balki orasi ochiq holda to‘p-to‘p bo‘lib bir gektar erda 30-50 ta butalar o‘sadi. Oq saksovul qora saksovulga nisbatan ko‘p tarqalgan. Buta yoki 2-3 metr (ba’zida 5-6 m) bo‘yli kichik daraxtcha bo‘lib o‘sadi, shoxlanishi poya asosidan boshlanadi. Tanasining po‘sti oqish yoki och kulrang tusda. Shoxlari bo‘laksimon, quruq, ko‘kish yashil rangda. Kuzda och-kulrang tusga kiradi, sovuq urganida esa sariq rangga o‘zgaradi. Ya’ni o‘sgan novdalari odatda, achchiq ta’mlı, mayda, po‘stsimon, shaffof qirrali bargchalari poyalariga zich taqalgan. Kalta novdalarida gullari ayrim joylashgan, och-sariq rangda. Mevalari-yassi qanotchalar bo‘lib, diametri 1 sm gacha, 5 ta yarim shaffof elpig‘ichsimon qanotchalar bor, oktyabr oyida etiladi.

Ildiz tizimi sizot suvlariga bog‘liq emas. Qattiq to‘qima bilan qoplangan ildizlarining asosiy qismi 2,5 metr chuqurlikda joylashadi, asosiy ildizi esa 6 metrgacha etadi. Oq saksovul butalari o‘zi yashaydigan atrof-muhitni o‘zgartiradi. Kuchli rivojlangan ildiz tizimi yordamida qumni ushlab qoladi. Yozning jazirama issiqlarida yosh (assimilyatsion) novdalari (50% gacha) tushib ketadi, bu holat o‘simliklar (butalar) ostidagi qumlarning zichlanishini ta’minlaydi.

REFERENCES

1. Ablav S.M., Yuldashov Ya.X. Madaniy o‘rmonlar. Toshkent, 2008 yil.
2. Aleksandrovskiy E.S., Nikolyan L.V. Djonlarskaya forma saksaula chernogo dlya lesorazvedeniya v Buxarskoy oblasti. Tashkent. 1998 g.
3. Qayimov.A.K., Hamroev.H.F. Ihotazorlarning yaylov o‘simliklari o‘shishiga ta’siri. Materialı konferentsii molodıx uchene TashGAU. 2008 g.

ЎЗБЕКИСТОН ФАЛСАФА ТАРИХИ РИВОЖИДА НАЖМИДДИН КОМИЛОВ ТАСАВВУФШУНОСЛИК МАКТАБИНИНГ ЎРНИ ВА ИЗДОШЛИК АНЪАНАЛАРИ

Замирахон Рухитдиновна Исақова

фалсафа фанлари доктори (DSc), профессор в.б.

Наманган давлат университети, Ўзбекистон

ms.zamiraxonisaqova@gmail.com

АННОТАЦИЯ

Маънавий қадриятлар такомлида ўзига хос ўрин тутган тасаввуф таълимотининг шаклланиш жараёни, генезиси, эволюцияси, тарихий ўрнини кўрсатиш, тасаввуфга доир манбаларни холис тадқиқ этиш ва унинг гуманистик ва аксиологик ғоялар билан уйғунлашиб, жаҳоншумул бадий ижод намуналари бунёд этилишига замин яратгани дастлаб тасаввуфшунлс олим Н.Комилов томонидан тадқиқ этилган. Мақолада Ўзбекистон фалсафа тарихи ривожида Н.Комиловнинг тасаввуфшунослик мактабининг ўрни ва издошлик анъаналари тизимли таҳлил асосида очиб берилган.

Калит сўзлар: фалсафа тарихи, тасаввуф, тасаввуфшунослик мактаби, Н.Комилов, издошлик, қиёсий тасаввуфшунослик, ирфон, истилоҳ.

ABSTRACT

The process of formation of the Sufi doctrine, which occupies a special place in the development of spiritual values, genesis, evolution, its historical place, an objective study of the origins of Sufism and its connection with humanitarian and axiological ideas, laid the foundation for creating a world-class work of art, was first studied by the Sufist scholar N. Kamilov. Based on a systematic analysis, the article reveals the role of N.Kamilov's school of Sufism in the development of the history of philosophy of Uzbekistan and the tradition of continuity.

Keywords: history of philosophy, sufism, school of sufism, N.Kamilov, continuity, comparative sufism, irfan, terminology.

КИРИШ

Бугунги инсоннинг ақлий кашфиёти, интеллектуал салоҳияти беҳисоб ва ҳайратланарли даражага етган даврни рақамлашган дунё бошқармоқда. Аммо башарият маънавий камолот, ахлоқий етуклик нуқтаи назаридан рақамлашган дунё билан тенглаша



олмаяпти. Ҳаттоки, айрим ахлоқий меъёрлар ва тамойиллар ҳали ҳам тубан даражада эканлиги сир эмас. Тасаввуф таълимотининг юксалган даври – X-XIII асрлар маънавий тараққиёти чўққисидан қараладиган бўлса, инсоният XXI асрда тасаввуф таълимотининг гуманистик ғояларига янада кўпроқ муҳтож бўлмоқда. Бу жараён шундай давом этса, бунинг охири хатарли оқибатлар билан яқунланиши муқаррар. Зеро, ворисийлик ва замонавийлик анъаналарини қайта таҳлил қилиш, илм, ахлоқ ва маънавиятни уйғунлаштирган тасаввуф оламини янгидан кашф этиш бугуннинг заруриятидир. Тасаввуфда инсонга муҳаббат, ҳаётга ташналик, футувват ва жавонмардлик каби олийжаноблик, вафо ва садоқат каби маънавий қадриятлар мужассам. Тасаввуфда ҳамма нарса инсон қалбининг гўзаллиги, ахлоқий камолоти, пок ишқи ва маърифати орқали кашф этилади.

Тасаввуф яхлит дунёқараш бўлиб, диний тамойиллар дунёвийликни, дунёвий тамойиллар динийликни инкор этмайди, аксинча, моддийлик ва илоҳийлик, дунёвийлик охират билан чамбарчас боғлиқ, ҳадисга таянган ҳолда, дунёни “охират экинзори” деб талқин этади.

Тасаввуф инсонни фикр эркинлигига чорлайди, инсоннинг “ҳазрати инсон” экани, жисм ва руҳ бирлигидан таркиб топган инсоннинг борлиқ билан бевосита боғлиқлиги, инсоннинг қалби Аллоҳнинг жамоли акс этадиган “мазҳар”лиги, инсон ана шу юксак мақомнинг улуғворлигини англаши ва бу мақомга лойиқ бўлиши керак. Бу каби эзгу ғоялар замирида инсон ахлоқини поклаш, комилликка интилиш каби буюк мақсад мужассам.

Истиклол туфайли мамлакатимизда барча соҳалар каби илм-фанда ҳам тубдан юксалиш даври бошланди. Бу фалсафа тарихи, шунингдек, тасаввуф таълимотини ҳам янгича руҳ ва аспектларда тадқиқ этиш имконини юзага келтирди. Бу борада илк қадам ташлаган тасаввуфшунос олим, устоз, филология фанлари доктори, профессор Нажмиддин Комилов [1] бўлдилар.

АДАБИЁТЛАР ТАҲЛИЛИ ВА МЕТОДОЛОГИЯ

Устоз Н.Комиловнинг “Тасаввуф” [2] китоблари барча учун йўлчи юлдуз бўлиб хизмат қилди. Шу билан бирга, тасаввуф таълимотининг илк тадқиқи ва кейинги тараққиёти учун тамал тоши бўлиб, бир вақтлар четга суриб қўйилган, манъ этилган, ўтмиш билан бугун ўртасида бузиб ташланган кўприкнинг қайта тикланишига эришилди.

Тасаввуф таълимотининг сир-асрори ҳақида ёзиш учун ҳам диний, ҳам дунёвий билимларни пухта эгаллаш, ақлий-назарий мушоҳадакорлик ҳамда ҳиссий-образли тафаккур



талаб этилади. Тасаввуфни англамасдан туриб, миллий маънавият тарихи, Шарқ фалсафаси, адабиёти ва маданиятини мукаммал ўрганиб бўлмайди. Устознинг эътирофларига кўра, ислом тарихи тасаввуф тарихи билан бирга олиб қаралгандагина тўғри ёритилиши мумкин. Тасаввуф мутлақ илоҳни таниш ва севиш, авлиёлар эътиқодидан туғилган, покиза ахлоқ ҳақидаги илмдир [3].

Устоз Н.Комиловнинг тасаввуфнинг бадий ижод ривожига таъсири билан боғлиқ масалаларга бағишланган тадқиқотлари қўйилган муаммоларнинг кўлами, тадқиқот объекти ва илмий янгилиги билан диққатга сазовор бўлиб, бу таржима ва қиёсий адабиётшунослик, таржима тарихининг назарий масалалари таҳлилидаги юксак салоҳиятларида, матншунослик ва адабий жанрлар тараққиёти билан боғлиқ масалаларни талқин қилиш қобилиятларида, тасаввуф тарихи, асосий йўналишлари, тариқат, шариат, ҳақиқат истилоҳларининг моҳиятини очиб беришдаги истеъдодларида, Хожа Аҳмад Яссавий, Шайх Нажмиддин Кубро, Муҳйиддин Ибн Арабий, Шайх Азизиддин Насафий, Хожа Баҳоуддин Нақшбанд, Раҳимбобо Машраб каби мутасаввифлар илгари сурган ғояларнинг моҳиятини кўрсатиб беришдаги зукколикларида, Шайх Фаридиддин Атторнинг “Илоҳийнома”, Султон Валаднинг “Маориф”, Шайх Азизиддин Насафийнинг “Зубдат ул-хақойиқ” ва Ҳусайн Воиз Кошифийнинг “Футувватномаи султоний” каби асарларнинг таржималари таржимашуносликдаги ўзига хос маҳоратларида яққол намоён бўлган [4].

Шайх Азизиддин Насафий комил инсонга таъриф бериб, унда тўрт фазилат, яъни яхши феъл, ахши ахлоқ ва маърифат [5] мужассам бўлишини айтган. Устоз Н.Комиловнинг асарларида акс этган поклик, тўғрилиқ аслида устознинг сийратларида жилваланиб, кўнгилларни нурга тўлдирган. Устоз илмига амал қиладиган, суратлари сийратларига монанд, илм-фан фидойиси, ҳақиқий маънода комиллик тимсоли, бошқа устозларга ўрнак, буюк қалб эгаси бўлганлар.

Устоз Н.Комилов Шарқ мумтоз адабиёти дурдоналарини асл ҳолида сақланишига сабабчи бўлиш билан бирга, Шарқ мумтоз адабиёти билан замонавийликни уйғунлаштирган илоҳиёт, араб, форс тиллари ва адабиёти, Шарқ шеърияти ва мумтоз адабиётини асл ҳолида шарҳлаб бера олганлар [6].

Устоз Н.Комилов фалсафа ва бадий ижод уйғунлиги акс этган “Ибн Сино ва Данте” [7] асарларида ҳар икки илмни умуминсоний қадриятлар ва қарашларнинг илдизлари призмасида қиёсий ўрганиб, таққослаш усули орқали Шарқу Ғарбнинг адабий алоқаларини даврлаштирганлар.

Устоз Н.Комилов адабиёт, фалсафа, тарих, манбашунослик каби йўналишларда юздан ортиқ шогирдлар



етиштириб, уларнинг қалбида тасаввуфга муҳаббат уйғота олганлар. Тасаввуф фалсафаси билан боғлиқ барча тадқиқотчиларнинг доно маслаҳатчиси, улар олиб борган тадқиқотларининг тақризчиси, ўша даврда тасаввуфга доир ёзилган қарийб барча асарларнинг масъул муҳаррири бўлганлар.

Устоз Н.Комиловнинг ўзбек илм-фани, адабиёти, тасаввуф таълимоти ривождаги хизматларидан яна бири тасаввуфшунослик мактабини яратиб, ижтимоий фанларнинг турли соҳаларида юзлаб тасаввуф илмидан бохабар, ҳалол, иймонли, садоқатли, фидойи шогирдлар тарбиялашга эришдилар. Улардан фалсафа фанлари докторлари Ж.Холмўминов [8] ҳамда З.Исақова [9] тасаввуфшуносликда устознинг фалсафа йўналиши бўйича шогирдларидир.

Ўзбекистон фалсафа тарихида тасаввуфшунослик мактабининг ўрни кейинги йилларда олиб борилган Шарқ фалсафаси ва тасаввуф, уларнинг ўзига хос хусусиятларини ўрганиш бўйича амалга оширилган тадқиқотларда катта из қолдирди. Жумладан, Р.Шодиевнинг Марказий Осиё тасаввуфий таълимотлар генезиси таҳлили [10], Г.Наврўзованинг тариқатлар ривожда нақшбандия тариқатининг мазмун-моҳияти ва “комил инсон” ғояси [11], М.Жакбаровнинг IX-XII аср Мовароуннаҳр фалсафий тафаккурида ижтимоий идеал ва “комил инсон” муаммоси [12], Н.Сафарованинг Марказий Осиёдаги илк тариқат хожагон тасаввуфий таълимотининг альтруистик ғоялари, Б.Тураевнинг Маҳдуми Аъзам ва Хожа Исҳоқ Валининг диний-фалсафий меросида инсон моҳияти, О.Шарипованинг Абдулҳолиқ Гиждувонийнинг фалсафий-ахлоқий қарашлари ва унинг ёшлар тарбиясидаги аҳамияти, Э.Каримовнинг XII-XV асрлар Марказий Осиё тариқатлари генезиси [13], Н.Сафарованинг фундаментализм, экстремизм ва терроризмга қарши ғоявий курашда тасаввуф таълимоти ва ирфоний қарашнинг аҳамияти [14], С. Каримовнинг тасаввуф фалсафаси генезиси [15], М.Маматовнинг тасаввуф таълимотининг тарихий-фалсафий моҳияти [16], Ж.Холмўминовнинг тасаввуф фалсафасининг келиб чиқиши ва “ваҳдат ул-вужуд” таълимотининг нақшбандия тариқатига таъсири [17], М.Хошимхоновнинг Бобораҳим Машраб ва XVII-XVIII асрларда ижтимоий-ахлоқий фикрлар ривожиди [18], Қ.Рўзматзоданинг Хожамназар Ҳувайдо диний-мистик қарашларининг XVII-XVIII асрлар Марказий Осиё тасаввуфи ривождаги ўрни [19], Г.Юнусованинг Абдулқодир Гийлоний маънавий меросида инсон моҳиятининг фалсафий таҳлилида “фаросатли инсон” масаласи [20], Б.Намозовнинг Муҳаммад Порсо тасаввуфий таълимотининг фалсафий асослари [21], Ф.Музаффаровнинг Абу Ҳомид Ғаззолийнинг инсонга муносабати [22], З.Исақованинг ирфон ва унинг Шарқ фалсафий тафаккури

ривожигадаги ўрни [23] мавзуси тасаввуф таълимоти ва унинг намояндалари маънавий меросини ўрганишга бағишланган. Бу каби тадқиқотлар ҳозир ҳам давом этмоқда.

Устоз Н.Комилов тамал тошини қўйган тасаввуфшунослик анъаналарини таниқли файласуф олим, Тошкент давлат шарқшунослик университети “Манбашунослик ва тасаввуф герменевтикаси” кафедраси профессори, фалсафа фанлари доктори Жаъфар Холмўминов давом эттириб, жаҳон динларининг тарихи, уларнинг ривожланиш босқичлари эволюцияси жараёнида уларнинг ғоявий асосларини тасаввуф фалсафаси кесимида қиёсий таҳлил ва тадқиқ этиш заруриятидан келиб чиққан ҳолда фалсафа, қиёсий диншунослик, исломшунослик, манбашунослик, тарих, адабиётшунослик, тилшунослик, психология, социология ва этнология фанларининг туташ нуқталарида ҳосил бўлган янги фан – қиёсий тасаввуфшуносликка асос солди. Бу тасаввуф фалсафасининг генезиси, эволюцияси, праксиологияси билан боғлиқ масалалар тадқиқини бутунлай янги ўлчовлар, танқидий ёндашувлар, илмий мушоҳада ва мантиқий хулосалар асосида тизимли ўрганиш имкониятларини кенгайтиради. Мазкур фан доирасига тасаввуф фалсафасининг мазмуни ва моҳиятини яхлит ҳолда очиб беришга хизмат қиладиган тасаввуф тарихи, тасаввуф манбашунослиги, тасаввуф терминологияси, тасаввуф фалсафаси, тасаввуф фалсафаси герменевтикаси, тасаввуф адабиёти ва тасаввуф адабиёти герменевтикаси каби таркибий қисмлар қамраб олингани билан аҳамиятлидир. Ишонч билан айтиш мумкинки, бу таркибий қисмлар тасаввуф теологияси, тасаввуф этикаси, тасаввуф эстетикаси, тасаввуф социологияси, тасаввуф аксиологияси, тасаввуф психологияси, қиёсий тасаввуфшуносликка доир тадқиқотларнинг келажакда ҳам мазмун, ҳам сифат жиҳатидан янги поғоналарга кўтарилишини таъминлайди.

Устоз Ж.Холмўминов тасаввуф фалсафасининг асоси ислом дини эканлиги, унинг назарий ва амалий манбаларга эга эканлигига қўшилган ҳолда назарий манбаларнинг асоси Қуръони Карим ва ҳадиси шариф, дин пешволари ва уламоларининг ғоялари бўлса, амалий манбалари Аллоҳ Расулининг суннати, ундан келиб чиқадиган саҳобалар одоби, хатти-ҳаракатлари ва ниҳоят, дин пешволари ва уламоларининг фаолиятлари, феъл-атворлари, юриш-туришлари, тасаввуф эса ана шу икки йўналишнинг туташган нуқтаси, деб ҳаққоний белгилаган.

Устоз Н. Комилов эътироф этганларидек, тасаввуфни шеър билан баён этиш – фалсафани, илоҳиётшуносликни шеърга солиш демак. Шу боис тасаввуфий адабиётни том



маънодаги фалсафий адабиёт дейиш ўринли. Шайх Фаридуддин Аттор, Мавлоно Жалолиддин Румий, Муҳйиддин Ибн Арабий, Мавлоно Абдурахмон Жомий, Мирзо Абдулқодир Бедил муаззам Шарқнинг буюк файласуфларидир, лекин уларнинг барча ирфоний асарлари назмда битилган.

НАТИЖАЛАР ВА МУҲОКАМА

Ирфоний асарларни икки қисмга ажратиш мумкин: бир қисмида тасаввуф таълимоти суфиёна истилоҳлар орқали баён этилган бўлиб, Абдулмажид Санойининг “Ҳадиқат ул-хақойиқ”, Махмуд Шабустарийнинг “Гулшани роз”, Мирзо Абдулқодир Бедилнинг “Муҳит ул-аъзам”, Саййид Қосимийнинг “Ҳақиқатнома”, Сўфи Оллоҳёрнинг “Сабот ул-ожизин”, Бобожон Санойининг “Канз ул-маориф” каби асарларида мужассамдир. Бу асарлар асрлар оша мадрасаларда дарслик сифатида ўқитилган.

Иккинчи қисм адабиётларда тасаввуфга доир қарашлар кечинма, ҳаяжон, важд, илоҳий ишқ тараннуми орифона тимсоллар, рамзлар ва мажозлар орқали ифодаланган. Абулмажид Санойининг “Сайр ул-ибод”, Шайх Фаридиддин Атторнинг “Илоҳийнома”, “Булбулнома”, “Уштурнома”, Мавлоно Жалолиддин Румийнинг “Маснавийи маънавий”, Хусрав Деҳлавийнинг “Матлаъ ул-анвор”, Алишер Навоийнинг “Ҳайрат ул-аброр”, “Лисон ут-тайр” каби асарлари тасаввуфнинг бадиий интерпретацияси бўлиб, сўфиёна-фалсафий маънолар шеърӣ сатрлар, маснавийлар, рубоийлар, шунингдек, халқ оғзаки ижоди, маталлар, масаллар, ривоятлар, ҳикоятлар, рамзий ташбеҳлар ва бадиий-ифодали тил орқали талқин этилган.

Имом Бухорийнинг ҳадисларини англаш учун ҳадис илмига тегишли атамаларни, Абу Али ибн Синонинг тиббиётга доир асарларини тушуниш учун таъбабат илмига оид терминларни, Абу Наср Форобийнинг фалсафий қарашларининг маъносига етиш учун фалсафий ибораларни билиш лозим бўлгани каби тасаввуфга доир асарларнинг маъзини тўғри чақиш учун тасаввуф истилоҳларини билиш талаб этилади. Устоз Н.Комиловнинг анъаналарини давом эттирган ҳолда тасаввуфнинг билиш назариясига тегишли компонентлар басират, илҳом, кашф, фаросат, қалб каби бешта гуруҳга ажратилиб, тасниф этилди. Ирфон компонентлари тасаввуф бўйича кейинги тадқиқотлар учун методологик аҳамиятга эга.

Бугунги кунда ўзбек тасаввуфшуносларининг зиммасида қандай вазифалар турибди?

Биринчидан, устоз Н.Комиловнинг тасаввуфшуносликдаги анъаналарини давом эттириш, устоз

шахсининг ибратли томонларини тадқиқ этиш ва ёш тадқиқотчилар, талабалар ўртасида кенг тарғиб этиш долзарб вазифа бўлиб, Ўзбекистонда тасаввуф университети ҳамда “Нажмиддин Комилов мактаби” ташкил этилиши мақсадга мувофиқ.

Иккинчидан, тасаввуфий-ирфоний асарларни тушуниш, тушунтириш ва тарғиб этиш бугунги куннинг долзарб вазифаларидан биридир. Маънавияти юксалган жамиятнинг келажаги фаровон бўлади. Маънавият юксалиши учун орифларнинг ҳаёти, ҳикматли сўзлари, фаолияти, асарларидан баҳраманд бўлиш, инсонийлик қиёфасини сақлаб қолиш, одамийлик ва саховатпешалик фазилатларини намоён этиш, комиллик сари интилиш зарур. Моддийлик ва маънавият уйғун бўлмас экан, бунинг иложи йўқ. Маънавият ва камолот ҳақидаги ҳикматлар қорни оч одамнинг қулоғига “нон” деб киради. Халқ қорни тўқ бўлганидан кейин китоб ўқишга вақт топади, аксинча, умри бир парча нон топиш учун ўтадиган халқнинг китоб ўқишга вақти ҳам, имконияти ҳам бўлмайди. Адолат барқарор бўлган жамиятда инсон бир парча нонни ҳалол топиш ва вақтини илм олишга сарфлайди.

Учинчидан, тасаввуф Шарқ менталитети ва маънавияти билан чамбарчас боғлиқ. Тасаввуфга яқинлашиш учун уни севиш, тасаввуфга доир асарларни ўқиш лозим. Бу, ўз навбатида, ўқувчидан тил ўрганишни, мукаммал изоҳли луғатлар билан ишлаш кўникмасига эга бўлишни, тафаккур тарзи, дунёқараши кенг бўлишни талаб этади. Бунинг учун тасаввуфга доир кенг кўламли тадқиқотларни кўпайтириш, мукаммал изоҳли луғатлар, энциклопедиялар, тасаввуфий-ирфоний асарларнинг табдилий-шарҳли нашрларини амалга оширишни тақозо этади.

Тўртинчидан, тасаввуф алломалари ўз асарларини кутубхоналарнинг қоронғи хоналарида сақланиши ёки қўлёзмалар фондида “олтин фонд” сифатида сақланиши учун ёзмаганлар. Уларнинг бу асарларни ёзишдан эзгу мақсадлари келажакни янада такомиллашган ва ахлоқийлашган, янада гўзаллашган ҳолда кўриш бўлган. Аждодларнинг маънавий мероси тадқиқотчи ва изланувчиларга муҳтож. Бунинг учун бир неча хориж тилларни билиш кўникмаларини кучайтириш, тарих, фалсафа, манбашунослик масалаларини чуқур ўзлаштириш, адабий таҳрир каби мукаммал билимларга эга бўлиш лозим. Тасаввуф маънавият булоғи, устоз устоз Нажмиддин Комилов таъбири билан айтганда, “хизр чашмаси”дир. Ундан қанчалик қониб ичган инсон шунчалик маънавий юксалади.



ХУЛОСА

Хуллас, тасаввуф алломалари ўз даври учун тўғри бўлган ўзига хос ғоялар мажмуини кашф этганлар. Устоз Н.Комилов бу ғояларни янгича ва замонавий руҳда етказишга эришдилар. Бугуннинг вазифаси бу ғояларни замонга кўр-кўрона кўчириш эмас. Башарият бугун ҳикматга муҳтож. Миллати ва динидан қатъи назар, ўз ҳаёт йўлини, мақсадини йўқотиб қўйган ҳар бир инсон қалбининг илоҳийлигини англаш орқали орифларнинг билимларидан фойдалана олади. 2022-2026 йилларга мўлжалланган Тараққиёт стратегиясида белгиланган “Янги Ўзбекистон – маърифатли жамият” концепциясининг миллий дастури учун ирфонийлик ва дунёвийлик тамойилини таълим муассасаларига жорий этиш ва маънавий-маърифий ишларни шу асосда йўлга қўйиш бугуннинг талабидир.

REFERENCES

1. Нажмиддин Комилов (1937 йил 5 октябрь, Панжикент тумани, Тожикистон – 2012 йил 26 апрель Тошкент) адабиётшунос олим, филология фанлари доктори (1975), профессор (1991). Ўзбек тасаввуф мактаби анъаналари асосчиси.
2. Комилов Н. Тасаввуф ёхуд комил инсон ахлоқи. I китоб. – Тошкент: Ёзувчи, 1996. – 272 б.
3. Комилов Н. Тасаввуф. – Тошкент: Ёзувчи, 1996. – Б. 5.
4. Хусайн Воиз Кошифий. Футувватномаи Султоний ёхуд жавонмардлик тариқати. Форс тожик тилидан Нажмиддин Комилов таржимаси. Тошкент: Абдулла Қодирий номидаги халқ мероси нашриёти, 1994. –112 б; Комил инсон ҳақида тўрт рисола / Форс-тожик тилидан Н.Комилов таржимаси. – Тошкент: Маънавият, 1997. – 280 б; Фаридиддин Аттор. Илоҳийнома / Таржима, талқин, тафсир муаллифи Н.Комилов. – Тошкент: Ёзувчи, 1994. – 96 б.
5. Азизиддин Насафий. Зубдат ул-ҳақойик / Форс-тодик тилидан Н.Комилов таржимаси. – Тошкент: Камалак, 1995. – Б. 5.
6. Комилов Н. Дўстлик кўприклари. – Тошкент: Фан, 1979; Унинг ўзи: Ибн Сино ва Данте. – Тошкент, 1983; Бу қадимий санъат. – Тошкент: Фан, 1988; Унинг ўзи: Тафаккур қарвонлари. – Тошкент: Маънавият, 1999; Унинг ўзи: Нажмиддин Кубро. – Тошкент: Абдулла Қодирий номидаги халқ мероси нашриёти, 1995; Унинг ўзи: Тасаввуф. Биринчи китоб. – Тошкент: Ёзувчи, 1996; Унинг ўзи: Тасаввуф. Иккинчи китоб. Тавҳид асрори. – Тошкент: Ўзбекистон – Ғафур Ғуллом номидаги адабиёт ва санъат нашриёти, 1999; Унинг ўзи: Фақр нури порлаган қалб. – Тошкент, 2001; Унинг ўзи: Хизр чашмаси. – Тошкент, 2005.



7. Комилов Н. Ибн Сино ва Данте. – Тошкент, 1983.
8. Холмўминов Ж. Жомий ва ваҳдат ул-вужуд таълимоти (Монография). – Тошкент: Ўзбекистон Миллий энциклопедияси, 2008. – 236 б.; Унинг ўзи: Dschami in Europa (Жомий Европада (Рисола). Немис тилига А.Раҳмонов таржимаси). – Тошкент: Yangi nashr, 2016. – 28 б.; Унинг ўзи: Нақшбандия таълимоти ва Марказий Осиё халқлари маънавий бирлиги (Рисола). – Тошкент: Янги нашр, 2018. – 28 б.; Унинг ўзи: Ваҳдат ул-вужуд фалсафаси ва Нақшбандия таълимоти (Ибн ал-Арабий, Хожа Муҳаммад Порсо, Хожа Аҳроп Валий ва Мавлоно Абдурахмон Жомий қарашлари асосида). (Монография). – Тошкент: Tafakkur, 2020. – 324 б.: Унинг ўзи: Хожа Муҳаммад Порсо Бухорий. Ҳаёти ва фалсафий-ирфоний мероси (Рисола). – Тошкент: Tafakkur tomchilari, 2020. – 44 б.; Унинг ўзи: Қиёсий тасаввуфшунослик. – Тошкент: Тошкент давлат шарқшунослик университети, 2021. 266 б.
9. Исҳоқова З. Тасаввуф таълимотида орифлик ва валийлик талқини. Монография. – Тошкент: Abu matbuot-konsalt, 2011. – 296 б. Унинг ўзи: Шайх Нажмиддин Кубро. – Тошкент: O‘zbekiston, 2013. – 136 б.; Унинг ўзи: Машраб. – Тошкент: O‘zbekiston, 2015. – 128 б.; Унинг ўзи: Комиллик калити. Монография. – Тошкент: Тошкент ислом университети нашриёт-матбаа бирлашмаси, 2016. – 252 б. Унинг ўзи: Shayx Najmiddin Kubro. – Тошкент: O‘zbekiston, 2016. – 136 б.; Унинг ўзи: Хожа Аҳроп Валий. – Тошкент: O‘zbekiston, 2017. – 168 б.; Унинг ўзи: Сўфи Оллоҳёр. – Тошкент: O‘zbekiston, 2018. – 145 б.;
10. Шодиев Р. Суфизм в духовной жизни народов средней Азии (IX-XIII вв). Автореф. дисс. докт. филос. наук. – Тошкент, 1993. – 34 с.
11. Наврузова Г.Н. Нақшбандия тасаввуфий таълимоти ва баркамол инсон тарбияси. Фалс. фан. док. дис. автореф. – Тошкент, 2002. – 32 б.
15. Жакбаров М. IX-XII аср Мовароуннаҳр фалсафий фикрида ижтимоий идеал ва комил инсон муаммоси. Фалс. фан. док. дисс. автореф. – Тошкент, 2000.
16. Каримов Э. Суфийские тарикаты в Центральной Азии XII-XV веков. Автореф. дис. докт. ист. наук. – Ташкент, 1998.
17. Сафарова Н. Фундаментализм, экстремизм ва терроризмга қарши ғоявий курашда тасаввуф таълимотини ва ирфоний қарашларнинг аҳамияти. Фалс. фан. док. дисс. автореферати. – Тошкент, 2004.
18. Каримов С. Тасаввуф фалсафаси. – Самарқанд: Самарқанд нашриёти, 2021.

19. Маматов М. Тасаввуф таълимотининг тарихий-фалсафий моҳияти. Фалс. фан. док. дисс. автореф. – Тошкент, 2018.
20. Холмўминов Ж. Ваҳдат ул-вужуд фалсафаси ва унинг нақшбандия таълимотига таъсири. Фалс. фан. док. (DSc) дис. автореф. – Тошкент, 2020. – 64 б.
21. Хошимхонов М. Бобораҳим Машраб ва XVII-XVIII асрларда ижтимоий-ахлоқий фикр ривожи. Фалсафа фанлари доктори (DSc) дисс. автореф. – Самарқанд, 2018.
22. Рўзматзода Қ. Хожамназар Хувайдо диний-мистик қарашларининг XVII-XVIII асрлар Марказий Осиё тасаввуфи ривожигаги ўрни. Фалс. фан. док. дисс. автореферати. – Тошкент, 2020.
23. Юнусова Г. Абдулқодир Гийлоний маънавий меросида инсон моҳиятининг фалсафий таҳлили. Фалс. фан. док. дисс. автореферати. – Самарқанд, 2019.



MASOFADAN O'QITISHDA TA'LIM BOSHQARUV TIZIMLARINING AHAMIYATI XUSUSIDA

Madina Alimova

Alisher Navoiy nomidagi ToshDO'TAU tadqiqotchisi

ANNOTATSIYA

Mazkur maqolada masofaviy ta'lim haqida ma'lumotlar, uni tashkillashtirish jarayonida ta'limni boshqaruv tizimlarining ahamiyati haqida qarashlar berilgan.

Kalit so'zlar: internet, elektron darslik, masofadan o'qitish, LMS, ta'limni boshqaruv tizimlari, iSpring Learn, Google Classroom, Moodle, LearnDash, Canvas, metodika.

KIRISH

Internet manbalari, elektron darsliklar, audio-video darslar hamda masofadan o'qitishning dasturiy vositalaridan foydalanish bugungi kun talabidir. Zamon talabiga mos kadrlarni tarbiyalash unga jahon standartlari asosida ilm berish maqsadida metodik qo'llanmalar, yangi axborot texnologiyalari joriy etilmoqda. Kompyuter savodxonligi zamonaviy shaxsning muhim belgisiga aylanishga ulgurdi. Axborot texnologiyalari davrida an'anaviy ta'lim bilan birga masofaviy o'qitish shakli ham rivojlanmoqda. "COVID-2019 epidemiyasi butun dunyo hamjamiyatini masofaviy ish, ta'limga, onlayn muloqotga o'tishga majbur qildi. Dunyodagi barcha ta'lim muassasalari talabalarni, o'qituvchi hamda xodimlarni yuqumli infeksiyadan himoya qilish maqsadida vaqtincha yopildi. YUNESKO tadqiqotlariga ko'ra pandemiya 143 mamlakatda 1,2 milliardga yaqin o'quvchining ta'lim jarayoniga ta'sir ko'rsatdi[1]. Masofaviy ta'lim sohasida katta o'zgarishlar yuz berdi. Masofaviy o'qitishni o'zi nima? Masofaviy o'qitish — zamonaviy axborot-kommunikatsiya va raqamli texnologiyalarga asoslangan ta'lim tizimi. U o'quvchiga ma'lum standartlar, ta'lim qonun-qoidalari asosida o'qituvchi bilan muloqot olib borish hamda xohlagan vaqtida, istalgan joydan turib mustaqil ravishda shug'ullanish imkoniyatini ta'minlaydi. O'qituvchi uchun esa maxsus axborot muhiti yordamida o'z o'quv materiallarini o'quvchiga taqdim etish va o'quvchilarning o'zlashtirishini masofadan turib kuzatib borish imkoniyatini yaratadi[2]. Oliy ta'lim muassasalarida "MOODLE" (Modular Object Oriented Dynamic Learning Environment) elektron ta'lim platformasi, "LMS" (Learning Management System) bevosita ta'lim jarayonini boshqarish, "CMS" (Content Management System) ta'lim manbasini boshqarish tizimlari asosida zamonaviy axborot kommunikatsiya texnologiyalari va multimedia vositalaridan keng foydalanish joriy etilgan. Respublikamiz ta'lim muassasalarining "ZiyoNet"

axborot tarmog'i bilan uzviy bog'langanligi ham professor-o'qituvchilar va talabalarga keng imkoniyatlar yaratmoqda[3]. Shu o'rinda masofaviy ta'lim qachon paydo bo'ldi? degan savol ham o'rinli bo'ladi. Masofaviy ta'limni shakllanish bosqichlari beshta bo'lib mazkur maqolada ulardan to'rttasi haqida ma'lumot beramiz chunki birinchi bosqich tilni joriy etilishi haqidagi qarashlar masofaviy ta'limni rivojlanish bosqichlarini tushunish uchun ahamiyatli deb hisoblamadik. Yozuv ixtiro qilinishi olimlar tomonidan ikkinchi informatsion inqilob sifatida e'tirof etiladi. Biroq masofaviy o'qitishning shakllanishini o'rganish doirasida biz yozuvni paydo bo'lishiga birinchi informatsion inqilob sifatida qaradik. Axborotni qayta ishlash sohasida yozuv ixtiro qilinishi bilan katta o'zgarish sodir bo'ldi ya'ni yozuv orqali to'plangan bilimlarni keyingi avlodlarga qoldirish imkoniyati yaratildi. XVI asrning o'rtasida ma'lumotlarni bir to'plam holda nashrdan chiqishi ya'ni kitobni ixtiro qilinishi ma'lumotlarni saqlash va uzatishda tubdan o'zgarishlarni keltirib chiqardi hamda ikkinchi axborot inqilobi bo'la oldi. Uchinchi axborot inqilobi elektr, telefon, radio va televideniyaning paydo bo'lishi bilan bog'liqdir. To'rtinchi axborot inqilobi kompyuter texnologiyalarini ixtiro qilinishi deb hisoblanadi [4].

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Isaak Pitmanni masofaviy ta'limning asoschisi deb ayta olamiz. 1840-yilda u pochta orqali (corresponding learning) studentlarga stenografiyani o'rgatishni boshladi. Masofaviy ta'limdagi keyingi qadam Ch.Tusen va G. Lanchenshteydtlar tomonidan tashlangan. Ular 1856-yili Berlinda sirtqi ta'lim shaklidagi institutga asos solishgan. O'qituvchilar talabalarga o'quv materiallari, metodik ko'rsatmalar va nazorat ishlari hamda bajariladigan mashqalrning javoblarini pochta orqali yuborishgan. E.Kojarinovani ta'kidlashicha 1873-yilda Anna Eliot Tiknor Amerikada masofaviy ta'limni rivojlantirish uchun ilk qadamlarni qo'ygan. U pochta orqali masofadan o'qishni istagan ayollar uchun Tiknor jamiyatiga asos solgan. 1874-yili AQShning Illinoys universiteti o'qituvchisi Ayzek Pitman pochta orqali o'qitish dasturini yaratishni taklif qildi. 1892-yil Chikago universitetida masofadan o'qish istagini bildirgan talabalar uchun ilk bo'limlar tashkil etilgan edi[4].

1960-yillarda masofaviy ta'lim shakli xalqaro e'tirof etildi hamda YUNESKO tomonidan qo'llab quvvatlanishi sababli turli mamlakatlarda rivojlandi. Yangi ta'lim shakli siyosatchilarni e'tiborini ham tortdi. Xususan Angliyaning bosh vaziri G.Vilson 1963-yilda "Efirli universitet"ni tashkil etilishi haqida e'lon qildi. Mazkur tashkilot talabalarini o'qitish jarayonida masofaviy ta'lim texnologiyalarini (pochta orqali yozishmalar, radio va televideniye) qo'llovchi ta'lim muassasalarini birlashtirishi kerak edi. Olimlar, siyosatchilar hamda xalqaro tashkilot (YUNESKO)ning samarali harakatlari va mehnati sababli 1969-yilda Angliyada Ochiq universitet (Open University)

tashkil etildi. Hozirgi kunda masofaviy o'qitish borasida katta tajribaga ega universitetlardan hisoblanadi[4].

Bugungi kunga kelib internet orqali masofadan o'qish va o'qitish imkoniyatini raqamli texnologiyalarning rivojlanishi bilan bog'lash mumkin. Masofadan o'qitish jarayonida informatsion va kommunikatsion texnologiyalardan unumli foydalanish talab etiladi. Hozirda internet, elektron darslik, elektron pochta, multimedia o'quv qo'llanmalari, video konferensiya, audio-video materiallar, ta'lim jarayonini boshqaruvchi tizimlar kabi terminlar zamonaviy yoshlarning kundalik leksikonidan o'rin olgan faol so'zlardir. Shu sababli masofaviy o'qitishni XXI asr ta'limi deb aytishimiz mumkin. Masofadan turib ta'lim olish orqali talabada mustaqil bo'lish, o'z o'zini nazorat qilish ko'nikmalari shakllanadi. Ta'lim jarayonini masofaviy shaklda tashkil etish uchun ta'limni boshqaruv tizimlari (LMS – Learning management systems)dan foydalaniladi. “Ta'lim boshqaruv tizimlari (LMS — learning management systems) — bilim olish faoliyatini tashkil etish va boshqarish uchun mo'ljallangan hamda video dars, ma'ruza materiallari, taqdimot, kitob kabi o'quv materiallari majmuasidan iborat muloqot rejimida ishlay oladigan inson-mashina majmuasi yoki masofaviy ta'lim shakli”[2]. Ta'lim muassasalari bilan bir qatorda yangi bilimlarni beruvchi o'quv markazlari ham ta'limni boshqaruv tizimlaridan unumli foydalanishlari mumkin. TBT orqali biron ta'limiy kurs uchun bilimlar bazasini yaratish, boshqarish hamda tekshirish jarayonlarini amalga oshirish imkoniyati mavjud. Bunday dars jarayonini tashkil etuvchi o'qituvchidan pedagogik mahorat va salohiyatdan tashqari texnologik qurilmalar hamda yuqori AKT kompetentligi talab etiladi. O'z navbatida o'rganuvchi ham texnologik qurilmalar, kompyuter savodxonligi bo'yicha yetarli ko'nikmalarga ega bo'lishi kerak. Ta'limni boshqaruv tizimlari ish jarayonidan uzilmagan holda bilim olish imkonini berishi bilan qulay hisoblanadi. Bunday tizimlardan foydalanish avvalo zamon bilan hamnafaslikni ta'minlasa boshqa tarafdin o'qish uchun ketadigan harajatlarni kamaytiradi. LMSning afzaliklaridan yana biri dasrlarni o'zaro kelishgan holda tashkil etish mumkinligi ya'ni dars jadvalining moslashuvchanligidir. Baholash jarayonida ham bir qancha qulayliklar mavjud xususan darsga qatnashish, o'zlashtirish kabi ma'lumotlarni tizimda belgilab borilishi istalgan paytda statistik hisobotni olish imkoniyatini beradi. Demak, LMS tizimlarining asosiy vazifalari o'quv kontentlari bilan ishlash, o'quv jarayonni boshqarish, baholash, foydalanuvchilar o'rtasida o'zaro aloqa hamda statistikadir.

Hozirda faol qo'llanilayotgan bir qancha LMS platformalari mavjud. Quyida ular haqida qisqacha ma'lumot beramiz.

Schoology (<https://www.schoology.com/>) — ta'lim muassasalari uchun mo'ljallangan bulutli LMS. Schoology Google Drive, Microsoft OneDrive, Blackboard Collaborate,



Moodle, PowerSchool, Evernote va YouTube bilan birlasha oladi. Shuningdek, u maktab ma'lumotlari tizimi bilan sinxronlashadi. O'qituvchilarga o'quvchilar bilan o'quv materiallari va topshiriqlar yuzasidan fikr almashish hamda o'quvchilar va ularning ota-onalari bilan uyushgan holda aloqa o'rnatish imkoniyatini beradi.

iSpring Learn (<https://www.ispringsolutions.com/ispring-learn>) platformasi ta'lim muassasalari va kompaniyalarda kadrlar tayyorlash uchun ishlab chiqilgan. Biroq ayni paytda amalda asosiy mijozlari sifatida ta'lim muassasalari faoliyat yuritmoqda. Platformaning ma'ruza muharriri bo'limi yordamida modul va uning materiallari (matnli, audio, video, taqdimot, simulyator, topshiriq, test va b.) kiritiladi. Hisobotlar bo'limi yordamida foydalanuvchilar faoliyati hamda o'zlashtirish natijalari tahlili va statistikasini yuritish mumkin.

Google Classroom (<https://classroom.google.com/>) — ta'lim uchun mo'ljallangan platforma bo'lib, kurs/sinfni yaratish va o'quvchilarni qo'shish, kerakli o'quv materiallarini kiritish va o'quvchilarga taqdim etish, o'quvchilarga topshiriqlar berish, ularning ishlarini baholash va faoliyatini kuzatib borish, o'quvchilar bilan muloqot qilish kabi imkoniyatlarni taqdim etadi. Google Classroomda Googleda akkauntga ega xohlagan foydalanuvchi kurs yaratishi mumkin.

Moodle (Modular Object-Oriented Dynamic Learning Environment) (<http://moodle.org/>) masofaviy ta'lim olish muhiti hisoblanib, sifatli masofaviy kurslarni yaratish uchun mo'ljallangan. Bu dasturiy mahsulot dunyoning 100 dan ziyod mamlakatlarida ishlatiladi. Bepul tarqatiladigan bu dasturiy majmua o'zining funksional imkoniyatlari, o'rganishdagi soddaligi va ishlatishdagi qulayligi bilan foydalanuvchilarning ko'plab talablarini qanoatlantira oladi. Moodle masofaviy ta'limda o'qitish jarayonini to'la qo'llab-quvvatlash uchun keng doiradagi, jumladan, o'quv materiallarini turli usullarda berish, bilimlarni tekshirish va o'zlashtirish nazoratini amalga oshirish kabi imkoniyatlarni beradi.

LearnDash — ommabop kontent boshqaruv tizimi (CMS)da sinflar yaratish, ularni boshqarish, o'zgartirish va nashr etish imkonini beruvchi ishonchli plugin. Bu plugin WordPress platformasi tarkibida ishlaydi. Shu sababli, agar ta'lim muassasasi kompyuteriga WordPress o'rnatilgan bo'lsa, qo'shimcha ravishda LearnDash pluginini o'rnatgan holda o'quv kurslarini yaratish mumkin. Plugin bir necha kursni yaratish va ularning tarkibini bitta sinfdan boshqa sinfga nusxalash imkonini ham beradi. Shuningdek, kontent tarkibidagi funksiyalar yordamida sertifikat hamda nishonlarni rasmiylashtirish mumkin[2].

Yuqorida ma'lumotlari keltirilgan TBT platformalari qatorida bizga nisbatan kamroq tanish bo'lgan "Canvas" LMS ham bor. "Canvas" ta'limni boshqaruv tizimi keng tarqalgan ommaviy ochiq interaktiv onlayn tizimlardandir. Ushbu tizim talabalar bilan sinxron (video konferensiya formatda) hamda asinxron formatda aloqada bo'lish imkonini beradi.

O'qituvchi o'quv materiallarni joylashtiradi, topshiriqlarni bajarish muddatini belgilaydi, talaba esa berilgan materiallarni o'rganadi hamda o'ziga qulay vaqtda joylashtirish imkoniyatiga ega bo'ladi. Yangi kurslar yaratish (strukturali yoki modullarga bo'lingan kontent joylashtirish imkoni bor) mumkin. Misol uchun ma'ruza materiallarini taqdimot yoki video ma'ruza shaklida yoki matnli hujjat holida, mustaqil ishlash uchun beriladigan vazifalarni test, nazorat ishi, guruh bo'lib loyiha ustida ishlash va boshqa turli shakllarda joylashtirish mumkin. Asosiy va qo'shimcha adabiyotlar bilan ta'minlash, qo'shimcha manbalarni ham matn, video va audio formatda joylashtirish mumkin. Ishlab chiqilgan kurslarni import qilish va arxivlash, talabalarning bilish jarayonini baholashda ball-reytingli tizimni avtomatlashtirish (har bir ish turi uchun ball belgilash, baholanyapgan har bir ishni mezonlarini ko'rsatish, topshiriqlarni bajarish muddatini belgilash, avtomatlashtirilgan umumiy baholarni hisoblash funksiyalarini faollashtirish) mumkin. Bundan tashqari tizim elektron yozishmalar rejimida, "muhokamalar" bo'limida yoki har bir alohida topshiriqqa sharh qismi orqali talabalar bilan aloqa qilish imkoniyatini taqdim etadi. U nafaqat o'qituvchi balki boshqa ta'lim oluvchilarga ham baholash imkonini berish bilan birga guruh bo'lib vazifalarni bajarishlari ham mumkin[5].

XULOSA

Xulosa qilib aytganda bugungi kundagi globallashuv jarayonida masofaviy o'qitish oliy ta'lim muassasalari bilan bir qatorda malaka oshirish kurslari, qayta tayyorlov kurslari, xorijiy til o'rgatish markazlari uchun ham muhimdir. Masofaviy ta'limni tashkil etishda ta'limni boshqaruv tizimlaridan samarali foydalanish sifatli ta'lim sari ilk qadamdir.

REFERENCES

1. <https://www.unesco.org/en/covid-19/education-response>
2. Fayziyeva M.R., Sayfurov D.M. Informatika va axborot texnologiyalari, umumiy o'rta maktabning 8-sinfi uchun darslik. Toshkent "Tasvir", 2020, 60-bet.
3. Muxitdinova X.S., O'zbek tilini ikkinchi til sifatida o'qitish metodikasi: o'quv qo'llanma. Toshkent: G'afur G'ulom nomidagi nashriyot-matbaa ijodiy uyi, 2023, 251-bet.
4. Пьянников М.М. К вопросу об истории дистанционного образования. <https://cyberleninka.ru/article/n/k-voprosu-ob-istorii-distantsionnogo-obrazovaniya>
5. Тимошенко Т. Е., Штукарева Е. Б. Использование возможностей LMS Canvas при реализации балльно-рейтинговой системы (на материале курса «Русский язык и культура речи»). Журнал Педагогика. Вопросы теории и практики .Pedagogy. Theory & Practice .2022. Том 7. Выпуск 7. С. 722-730 | 2022. Volume 7. Issue 7. P. 722-730.

O'QUVCHILARDA EKOLOGIK TARBIYA ELEMENTLARINI SHAKLLANTIRISHDA TAQQOSLASH METODIDAN FOYDALANISH METODIKASI

F. U. Babakulova

Chirchiq davlat pedagogika universiteti Biologiya yo'nalishi 2-bosqich talabasi

M. R. Asqarova

Chirchiq davlat pedagogika universiteti Biologiya kafedrasida o'qituvchisi

askarovamiribon@gmail.com

ANNOTATSIYA

Ushbu maqola o'quvchilarda ekologik tarbiya elementlarini taqqoslash metodi yordamida samarali o'zlashtirish mumkinligi va ekologik tarbiyani qay jihatdan muhimligi haqida ma'lumot beradi.

Kalit so'zlar: ekologik tarbiya, taqqoslash metodi, antropogen omil, biogen omil.

ABSTRACT

This article provides information on how students can effectively learn the elements of environmental education using the method of comparison and how important environmental education is.

Keywords: environmental education, comparison method, anthropogenic factor, biogenic factor

KIRISH

Ekologiya bu tirik organizmlar yashab turgan muhit va undagi omillardir majmuasidir. Ushbu maqolada ekologik muammolarni hal etishda taqqoslash usulidan foydalanish metodlari va ularning

TADQIQOT NATIJALARI

Eng tezkor natijasi nafas olish va yurak-qon tomir kasalliklarining ko'payishi. Mamlakat iqtisodiy jihatdan rivojlanayotgan bo'lsa-da, odamlar salomatligi to'g'risida uzoqroq istiqbolni ko'rish kerak. Shuning uchun atrof-muhitni muhofaza qilishning eng qat'iy siyosatini o'rnatish zarur.



1-rasm. Shvetsariyaning musaffo havoli hududlari.



2-rasm. Bangladesh havosining sanoat chiqindilari bilan ifloslanishi.

Shubhasiz, yetakchi va dunyodagi eng toza mamlakat bu – Shveysariya. Buni mamlakatga har yili va tozaligidan bahramand bo‘lish uchun eng ko‘p sayyoh tashrif buyurishi tasdiqlaydi. Ajablanarlisi, toza muhit sog‘lom va tinch hayotni ta‘minlaydi va bu shveysariyaliklarning o‘rtacha umr ko‘rishlari davomiyligi bilan tasdiqlanadi.

Yuqoridagi misoldan ko‘rinib turibdiki, ekologiyani qanday ahvolda saqlanishi bu biogen omillargagina emas antropogen omillarga ham o‘zaro aloqador. Ekologik jihatdan tarbiyani to‘g‘ri shakllantirishda taqqoslash metodi eng samarali usuldir. Yuqorida ko‘rgan misolimiz singari ikki obyektning o‘zaro taqqoslash inson miyasida chuqur taasurolarini qoldiradi va ekologik tarbiya elementlarini tez va to‘g‘ri shakllantirishga imkon beradi. Bu esa pedagogik metod va pedagogning yutuqli tamoyili hisoblanadi.

Taqqoslash metodida yanada samarali natija olish maqsadida o‘quvchilarning ko‘z o‘ngida bo‘layotgan jarayonlar, voqealar, ma‘lum hududlarni o‘zaro taqqoslash ham mumkin. Misol uchun O‘zbekiston Respublikasidagi ekologik jihatdan eng toza Zomin va ekologik jihatdan eng ifloslangan Toshkent shahrini keltirish mumkin. Ularga ta‘riflarni quyida ko‘rib chiqamiz: Zomin bog‘i 1976 yilda tashkil etilgan bo‘lib, uning hududlari dengiz sathidan 1000-4030 metr balandlikkacha cho‘zilgan.



3-rasm. Zomin tumanining o‘ziga xos bo‘lgan ajoyib tabiati.

Bu yerning o'ziga xosligi – archalar bilan qoplangan o'rmonlaridir. Davolanishga keluvchilarning aksari – allergik va nafas yo'llarida kasalligi bo'lgan bemorlar [5]. Havosining tozaligi, archazor o'rmonlar, yangi qurilgan arqon yo'li, sharshara, 700 yillik boboyong'oq va o'ziga xos tabiat manzaralari keluvchilarni o'ziga rom etadi.

Bu yer O'zbekiston bo'yicha ekologik jihatdan eng toza hudud bo'lganligi sababli “O'zbekiston Shveysariyasi – Zomin” degan atama bilan ham qo'llaniladi. Bu yerning tub aholisi ham ekologik jihatdan birmuncha sog'lomdir [5].

Toshkent shahri hozirgi kunga kelib, aholi sonining ortishi, ishlab chiqarish sarfining kengayishi, transport va texnikalarning soni va faoliyati oshib ketganligi sababli ekologik jihatdan yuqori darajadagi buzilish holatlari yuzaga kelgan. Bu borada statistic ma'lumotlarni keltirib o'tadigan bo'lsak, 07.11.2023 sanadagi holatga binoan, Toshkent shahri havoning iflosligi bo'yicha IQAir reytingida Mumbai va Karachidan ham oldinga o'tib, dunyoda 5- o'rinni egalladi [4].



Toshkent shahrining bu holatga kelishi sababi yuqorida aytilanidek, aholi sonining ortishi bilan bog`liq quyida bunga tegishli faktlarni ko`ramiz [4].



Bunday metodik misollardan foydalanishning asosiy sababi, inson ongi o`zi yashab turgan bir vaqtdagi bo`lgan voqea va hodisalarni oson eslab qoladi va buning pedagogka foydali jihati shuki, atrofdagi jarayonlardan olingan xulosa orqali ekologik tarbiyani shakllantirish boshqa metodikalarga nisbatan samaraliroq natija ko`rsatadi [6].

XULOSA

Xulosa o`rnida shuni ta`kidlash joizki, ekologik tarbiyani har bir insonda bo`lishi va uni to`gri shakllantirilishi bu bizning kelajak avlod uchun qilgan eng buyuk xizmatimizdir.

REFERENCES

1. P.S.SULTONOV EKOLOGIYA VA ATROF-MUHITNI MUHOFAZA QILISH ASOSLARI «MUSIQA» nashriyoti Toshkent 2007
2. H.T. Tursunov, T.U. Raximov EKOLOGIYA Toshkent “NIF MSH” 2020

3. M. Asqarova “EKOLOGIK TA'LIM TARBIYANI OLIV BORILISHI: SINGAPUR TAJRIBASI” European Journal of interdisciplinary Research and Development 9 2022.
4. Ахмадалиев, Б. Ж., Абдувалиев, Б. А., Қодирова, З. Н., Нугманова, К. И., Каримов, Р. А., & Зайлобидинов, Н. У. ТОМАТО MOSAIC TOBAMOVIRUS ИНФЕКЦИЯСИГА СПЕЦИФИК АНТИЗАРДОБ ОЛИШ ВА ТИТРИНИ АНИҚЛАШ. ЁШ ОЛИМЛАР АХБОРОТНОМАСИ.
5. Yakubjonova, S. T., Norboboyeva, T., & Saidmurotov, S. X. (2021). “O'SIMLIKLARNING HAYOTIY SHAKLLARI” MAVZUSINI O'QITISHDA NAMKORLIKDA O'QITISH TEXNOLOGIYASIDAN FOYDALANISH SAMARADORLIGI. Academic research in educational sciences, 2(2), 1012-1017.
6. Норбобоева, Т., & Каримов, Г. (1978). Красильные растения—эдификаторы Узбекистана. Эколого-биологические особенности важнейших сырьевых растений в культуре. Ташкент, 139-148.
7. Zakirov PK, Norboboeva T. Quantitative composition of dominant species of vegetation of Central Asia. In Doklady Akademii nauk UzSSR= 1974.
8. Рамазонов БР. Противозерозионные меры борьбы на склоновых землях и предгорных районах, процессы деэртификации. Academic research in educational sciences. 2021;2(5):410-9.
9. Ramazonov BR. Plant world of the drained bottom of the Aral Sea. Current ecological state of the environment and scientific and practical aspects of rational nature management. In III International Scientific and Practical Internet Conference/Compilation NA Shcherbakova/FSBSI" Caspian Research Institute of Arid Agriculture", p. Salty Loan.-2018. S 2018 (pp. 716-718).
10. Fayziev V, Kadirova Z, Chirkov S, Jurayeva U, Vakhabov A, Javlieva D. Study of some biological properties necrotic isolat of potato virus x and phylogenetic analysis. International Journal of Psychosocial Rehabilitation. 2020;24(9):455-62.



11. Fayziev VB. Kartoshka x virusi antigeni asosida turli immunologik usullar va ifa variantlari sezgirligini aniqlash. Academic research in educational sciences. 2021;2(1).
12. Zulxumor Shuxradovna Mirzayeva, & Voxid Baxromovich Fayziev (2021). O‘QUVCHILARDA MUSTAQIL TA’LIMINI TASHKIL ETISH YO‘LLARI. Academic research in educational sciences, 2 (5), 362-366. doi: 10.24411/2181-1385-2021-00899.
13. <https://azkurs.org/mavzu-pedagogika-fanining-ilmiy-tadqiqot-metodlari-reja-kirish.html?page=2>
14. <https://rost24.uz/oz/news/1045>
15. <https://yuz.uz/uz/news/dunyodagi-eng-toza-mamlakatlar-ontaligi>



HAYOT RIVOJLANISHIDA METALLARNING TUTGAN O‘RNI

Nodira Quvondiq qizi Boyxo‘rozova

Muhiddin Xayrulla o‘g‘li Halimov

Jizzax politexnika instituti talabalari

Feruza Sattarovna Karimova

Jizzax politexnika instituti katta o‘qituvchisi

ANNOTATSIYA

Ushbu maqolada metallarning insoniyat hayotida tutgan o‘rni, foydali xususiyatlari, kimyoviy xossalari va paydo bo‘lish tarixiga to‘xtalib o‘tilgan..

Kalit so‘zlar: metall xususiyatlari, metall turlari, kasalliklar, kimyoviy elementlar, xossalari, rangli metall, qora metal, metall bog‘, zichlik va hk.

KIRISH

Hozirgi kunda sanoat miqyosida jadal rivojlanish yuz bermoqda. Shu sababli yangi kimyoviy texnologiyalarni ishlab chiqmasdan turib rivojlanishni amalga oshirish mumkin bo‘lmaydi albatta. Metallar sanoatimizning keng ishlab chiqarish tizimini tashkil qiladi. Metallar Mendeleev kimyoviy elementlar davriy sistemasida mavjud 118 ta elementning ko‘pchiligini tashkil etadi. Ularning yettitasi qadimdan ma‘lum bo‘lib, ulardan qadimda ham, hozirda ham insonlar foydalanib kelishgan. Ularning ba‘zilarining xossalari haqida to‘xtalib o‘tamiz: Viruslar, bakteriyalar va boshqa mikroorganizmlar inson hayotiga ko‘p hollarda havf soladi. Bunday mikroorganizmlardan insonlarni himoya qilish uchun kumushdan foydalanish mumkin. Doimiy ichimlik suvi saqlanadigan idish ichiga turli keraksiz kumush buyumlarni solib qo‘ysak, suvda mavjud turli mikroorganizmlar nobud bo‘lishi mumkin.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Zararli mikroorganizmlardan saqlanishning yana bir yo‘li tish koronkalarini kumushdan yasatishdir. Yuqumli kasalliklarni davolash jarayonida viruslar, mikroblar doimiy ishlatiladigan antibiotiklarga moslashib, yashovchanligi yanada ortar ekan. Immuniteti o‘ta past bo‘lgan bemorlar bunday hollarda uzoq vaqt mikroblardan qutula olmay qiynalishadi. Bunday hollarda kasalxona eshiklari oddiy tutqichlari o‘rniga mis yoki latundan yasalgan tutqichlarga almashtirish samarali natija beradi. Bu usulni “alternative himoya” usuli deb ataladi. Metallar xalq xo‘jaligining barcha sohalarida ishlatiladi. Inson hayotiy faoliyati uchun foydalanish darajasi bo‘yicha metallar oldingi o‘rinlarda turadi. Ishlatilish sohasiga qarab, metallar shartli ravishda qora va rangli metallarga bo‘lingan. Qora metallar - temir va uni qayta ishlashning asosiy mahsulotlari cho‘yan va po‘latlardir. Rangli metallar - temirdan boshqa metallar va ularni qayta ishlangan mahsulotlaridir. Rangli metallarning zararli mikroob va bakteriyalarni yo‘q qilishini qadimdan bilishgan va ba‘zi usullarni qo‘llashgan. Masalan momolarimiz chaqaloqni birinchi marta yuvintirishganda, chaqaloq terisi hayoti mobaynida turli kasalliklarga chidamli bo‘lishi uchun, suvga mis va kumush tangalarni, oltin taqinchoqlarni solib qo‘yishgan.

NATIJALAR VA MUHOKAMA

Tarixiy manbalarda keltirilishicha inglizlar Hindistonni bosib olishgan paytda o‘lat kasalligi tarqalgan. Oddiy askarlarning deyarli barchasi ushbu yuqumli kasallikka chalinishgan. Biroq bu havfli kasallik qo‘shin sarkardalariga yuqmagan. Buning sababi oddiy edi. Ya‘ni, sarkardalar ovqatni kumush idishda tanovul qilishgan va suv ichishgan, askarlar esa oddiy temir idishlarda taomlanishgan. Bunday misollarni hayotimiz mobaynida juda ko‘p bora uchratishimiz mumkin. Sog‘lig‘imizni saqlash o‘z qo‘limizda, ko‘proq mis, kumush va oltin buyumlardan foydalanish sog‘lig‘ingiz uchun naqadar muhim ekanini unutmang! Noyob metallar aktinoidlar, lantanoidlar, molibden,

volfram, vanadiy, niobiy, tantal, radiy, toriy va boshqa kabi tiplarga bo‘linadi. Indiy va kumush nurni yaxshi aks ettirganligi uchun proyektor va reflektorlar tayyorlashda ishlatiladi. Qadimgi vaqtlarda asl metallar: oltin va kumush hamda misdan to‘lov vositalari bo‘lgan pul birliklari tayyorlanib, turmushda ishlatilgan. Metallar bolg‘alanuvchanlik va plastiklik xossasiga ega. Bolg‘alanuvchanlik - jismlarning tashqi ta’sirlar natijasida osongina shaklini o‘zgartirish qobiliyati. Eng bolg‘alanuvchan metall oltin bo‘lib, undan yupqa folga va nozik ip tayyorlash mumkin. Metallarning kristall panjarasi tugunlarida neytral atomlar, musbat zaryadlangan ionlar joylashadi va ular orasida erkin elektronlar harakatlanadi. Metallarda doimiy ravishda atomlardan elektronlarning ajralishi va ionlarga birikishi sodir bo‘lib turadi. Shu erkin elektronlar bo‘lishi ularning elektr toki va issiqlikni yaxshi o‘tkazishini ta’minlaydi. Elektronlar butun kristall bo‘yicha umumiy hisoblanadi. Metallarda musbat ionlar va umumiy elektronlar orasida vujudga kelgan kimyoviy bog‘ metall bog‘ deb yuritiladi. Metall bog‘ qattiq va suyuq agregat holatida bo‘lishidan qat’iy nazar, faqat metallar uchungina xosdir. Zichlik, suyuqlanish va qaynash harorati, qattqlik metall atomlarining xususiy xossalari bo‘lgan yadro zaryadi, massa, metall bog‘ning mustahkamligiga bog‘liq. 39 Апрель 2021 21-қисм Тошкент Umumiy zichlik bo‘yicha metallar yengil, ya’ni zichligi 5000 kg/m^3 dan kichik (litiy, natriy, magniy, aluminiy va boshq.) hamda zichligi bundan katta og‘ir metallarga (rux, temir, mis, simob, oltin, platina, osmiy va boshq.) bo‘linadi. Eng quyi suyuqlanish harorati simobga tegishli ($-38,87^\circ\text{C}$) bo‘lsa, eng yuqorisi volframga tegishli (3410°C). Eng qattiq metallar xrom va volfram bo‘lsa, eng yumshoqlari natriy, kaliy va indiydir. Metallarning kimyoviy xossalari ular atomlarining valent elektronlarini oson berib tegishli ionlarga aylanish qobiliyatlari bilan aniqlanadi. Kimyoviy reaksiyalarda metallarning atomlari qaytaruvchilik xossalarini namoyon qiladi. Masalan, kislorodda yonish jarayonida metall valent elektronlarini berib, musbat zaryadli ionga aylanadi-oksidlanadi, kislorod esa elektronlarni qabul qilib, manfiy zaryadli ionga

aylanadi-qaytariladi; natriy xlor bilan birikkanda elektronlarini xlorga beradi, rux sulfat kislota bilan ta'sirlashganda, uning bergan elektronlarini vodorod qabul qiladi.

XULOSA

Metallar insoniyat tarixida muhim ahamiyatga ega. Insoniyat taraqqiyotining muhim kashfiyotlaridan biri hisoblanadi. Dastlabki metall temirni Kichik Osiyoda yashagan xalqlar bundan bir necha ming yilliklar avval kashf etib ishlata boshlaganlar. Shundan boshlab insoniyat iqtisodiy tamadduni gurkirab rivojlana bordi va bugun ham metallarning ahamiyati hayotimizning har bir sohasida muhim ahamiyat kasb etadi desak mubolag'a bo'lmaydi. Bundan ko'rinib turibdiki, metallar ishlab chiqarish jarayoning rivojlanish tarixida ham tub burilishni yuzaga keltirgan degan xulosaga kelishimiz mumkin .

REFERENCES

1. Semenov I.N, Maksimov A.A Kimyo va ilmiy-texnik taraqqiyot.
2. Legasov V.A Kimyoni rivojlantirish muammolari: kelajakka yutuq.
3. Solovyov Yu.I , Kurashov V.I Kimyo fanlar chorrahasida-O'zaro ta'sirning rivojlanishining tarixiy jarayoni.
4. Gulbayev Y.I, Abdullayev, A.A, Qurbonova, D.S., & Raxmatillayev, X.O.O.G.L. (2022) Mikroorganizmlarning suvlarda tarqalishi va suvlarni turli yo'llar bilan toalash. Science and Education, 3(4), 330-337.
5. Solovyov Yu.I. Kimyo tarixi: Qadimgi davrlardan 19-asr oxirigacha kimyoning rivojlanishi: Kitob. o'qituvchi uchun. -2-nashr. -M.: Ma'rifat, 1983-yil.



QANDSIZ DIABET KASALLIGINING XAVFLI OQIBATLARI

Maftuna Muzaffar qizi Sulaymonova

Chilonzor Abu Ali ibn Sino nomidagi Jamoat salomatligi texnikumi 3-bosqich

o'quvchisi

sulaymonovamaftuna239@gmail.com

ANNOTATSIYA

Hozirgi vaqtda qandsiz diabet kasalligi ko'payib bormoqda. Qandsiz diabet kasalligi bu kam uchraydigan kasalliklardan biri. Kasallikning belgilari to'satdan boshlanadi, ko'p suyuqlik ichadi va ichgan suyuqligi organizmga so'rilmaydi, qancha miqdorda suyuqlik ichgan bo'lsa shu miqdordagi suyuqlik tashqariga chiqib ketadi. Bunda bemor yomon ovqatlanadi va vazni ortadi, ovqat qabul qilishda tez-tez qayt qilishdan aziyat chekadi, qabziyat va kechalari siydik tuta olmasligi bo'ladi, bo'g'imlardagi og'riqdan shikoyat qiladi. Bunday holda, tashxis kech qo'yilganligi sabab jismoniy va ruhiy rivojlanishdan orqada qolib ketgan bo'ladi. Bu kasallik birdaniga boshlanadi va bu kasallikni tuzatishning iloji yo'q. Lekin bu kasallikga olib boruvchi yo'l turmush tarzimizda ahamyatsizdek ko'ringan hodisalardan boshlandi. Bular bosh miya jarohatlari va infeksiyon kasalliklar qandsiz diabet kasalligini keltirib chiqarishda asosiy omil hisoblanadi. Bu kasallikning oldini olinmasa juda ko'p kasallikni keltirib chiqaradi, natijada butun umir hayotingiz dorilar bilan o'tishga majbur bo'ladi.

Kalit so'zlar: ADG, poliuriya, enurez, vazopressin, diagnostika, analiz, endokrin, nikturiya, simptomlar, polidipsiya, ensefalit.

KIRISH

Qandsiz diabet kasalligi bu to'satdan boshlanadi. Lekin ko'pchilik bu kasallikni qayerdan kelib chiqishini bilmaydi.

Qandsiz diabet kasalligi bu gormonlar ishlamasligidan kelib chiqadi, lekin bu gormonlarning ishlamasligiga nima sabab bo'lishi mumkin? Qandsiz diabet – antidiuretik gormon yetishmovchiligi yoki ushbu gormonga bo'lgan buyraklar sezuvchanligining pasayishi bilan yuzaga chiquvchi kasallik. Buning natijasida peshob bilan ajralib chiqayotgan suyuqlik miqdori ortadi, doimiy chanqash hissi bemorni bezovta qilib turadi. Agar ajralib chiqayotgan suyuqlik hajmi qoplanmasa organizmda suvsizlanish kelib chiqadi (degidratsiya), bunda peshob ajralishi ko'pligicha qolaveradi. Qandsiz diabet diagnostikasida kasallikka xos bo'lgan belgilar va qondagi ADG (antidiuretik gormon) miqdorini o'lchash kerak bo'ladi.

ADABIYOTLAR TAHLILI VA METODLAR

Qandsiz diabet kasalligini 1674-yili ingliz olimi Tomas Uillis aniqlagan. Olimning fikricha, qandsiz diabet kasalligi gipofiz bezidan ishlab chiqaradigan antidiuretik gormonning yetishmasligi jihatdan qandli diabetdan farqlanadi. Ma'lumki, qandli diabet insulin gormonining yetishmasligi yoki uning ta'sir mexanizmining buzilishi tufayli kelib chiqadi. Qandsiz diabetga chalingan bemorlar siydigini tekshirib, qandli diabetdan farqli ravishda ularning siydigi tarkibida qand moddasini topmagan va bu kasallikni qandsiz diabet deb atagan. Kasallikning bu belgilari tez orada zo'rayadi, bemor bezovtalanadi, va asabiylashadi. Dard avjiga chiqqan davrda bir kunda ajraladigan siydik miqdori nihoyatda oshib ketishi mumkin. Tez orada bemor ancha ozib ketadi, organizmda minerallar almashinuvi buzilishi natijasida terisi quruqlashib qoladi, sochlari sinuvchan, tirnoqlari esa mo'rt va uvalanadigan bo'lib qoladi. Ko'p miqdorda suv ichish ovqat hazm qilish tizimiga noxush ta'sir ko'rsatadi. Qandsiz diabet neyroendokrin kasalik; asosan gipotalamus va gipofiz funksiyasidan kelib chiqadi. Bu kasallik 18 yoshdan 25 yoshgacha bo'lgan insonlarda ko'proq uchraydi.

MUHOKAMA VA NATIJALAR

Qandsiz diabet ikkita asosiy turga bo'linadi:

1. Markaziy qandsiz diabet;
2. Buyrakli (nefrogen) qandsiz diabet;

1. Markaziy qandsiz diabet kelib chiqish sabablari. Vezopressin gormoni ishlamasligi sabab bo'ladi, ya'ni vazopressin gipotalamusda sintez qilinadigan (ishlab chiqariladigan) gormon bo'lib, u gipofizga tushadi va u yerdan qonga o'tishi natijasida shakllanadi.

Markaziy qandsiz diabet kasalligining kelib chiqish sabablari:

1. Gipofiz yoki gipotalamus o'smalari;
2. Bosh miyadagi operatsiyalardan keyingi asoratlari;
3. Sifilis;
4. Ensefalit (bosh miyaning yallig'lanishi);
5. Bosh suyagi va bosh miya jarohati;
6. Gipotalamus yoki gipofizda qon aylanishining yomonlashuvi;
7. Gipofiz yoki gipotalamusning faoliyatiga ta'sir ko'rstishi bilan kechadigan yomon sifatli o'smalarning miyaga metastazi.

2. Buyrakli (nefrogen) qandsiz diabet.

Ushbu shaklda vazopressin darajasi me'yorda bo'ladi, ammo buyrak to'qimasiga unga reaksiya bermaydi.

Buyrakli (nefrogen) qandsiz diabet kelib chiqish sabablari:

1. Qonda kaliyning ortishi yoki kalsiyning pasayishi;
2. Kasallik ba'zan buyrakning miya moddasi yoki nefronning siydik naychalari shikastlanishi bilan kechadigan ma'lum sharoitlar yoki kasalliklar bilan bog'liq bo'ladi;
3. Kasallik tug'ma bo'lishi mumkin (eng keng tarqalgan sababi);
4. Buyrak to'qimasiga toksik ta'sir qiluvchi dorilarni qabul qilish (masalan, Litiy,

Amfoteritsin B, Demeklotsilin).

Qandsiz diabetning buyrak bilan bog‘liq turi rivojlanish sabablariga tug‘ma yoki orttirilgan buyrak kasalliklari (buyrak yetishmovchiligi, amiloidozi, giperkalsiyemiya) yoki litiy preparatlari bilan zaharlanish kabi omillar kiradi. Qandsiz diabetning tug‘ma ko‘rinishiga ko‘pincha autosom-retsessivgen orqali o‘tuvchi volfram sindromi sabab bo‘ladi, bunda qandsiz diabet bilan bir qatorda, qandli diabet, ko‘ruv nervi atrofiyasi rivojlanishi mumkin.

Qandsiz diabetning simptomlari: Psixogen polidipsiya stressga javoban kuchli chanqashning rivojlanishi. Ko‘p miqdordagi suv ichishi, og‘iz qurishi va ko‘p siydik ajralishi (sutkasiga 5 litrdan 20 litrgacha) simptomlari kuzatiladi. Juda ko‘p peshob ajralishi (poliuriya). Nikturiyada tunda siydikni ushlab tura olmaslik alomatlari kuzatiladi. Qayt qilish, so‘lak ajralishining pasayishi, teri quruqlashishi, bolalarda bu kasallik kechasi siyib qo‘yish (enurez) bilan boshlanadi.

Tashxis qo‘yish

1. Siydikning osmolyarligi va nisbiy zichligi (buyraklarning filtrlash funksiyasini xarakterlaydi), shuningdek, qon zardobining osmolyarligi aniqlanadi;
2. Bosh miya kompyuterli tomografiyasi yoki magnit-yadroviy tomografiyasi;
3. Buyrak UT tekshiruvi;
4. Exoensefalografiya (EEG);
5. Ekskretorli urografiya;
6. Zimnitskiy test.

Siydik va qonning osmolyarligi me‘yoriy chegaralar oralig‘ida bo‘lsa-da, bemorning shikoyati va alomatlari qandsiz diabet mavjudligini ko‘rsatsa, suyuqlikni cheklash bilan test o‘tkaziladi. Sinovning mazmuni shundaki, organizmga suyuqlikni kam miqdorda tushishi muayyan vaqtdan (odatda 6-9 soatdan) keyin vazopressin ishlab chiqarilishni rag‘batlantiradi. Shuni ta’kidlash kerakki, bu test nafaqat tashxis qo‘yish, balki patologiyaning turini aniqlash imkonini ham beradi.

Qandsiz diabetning oqibati. Bu kasallikda organizmga suv yaxshi soʻrilmaganligi sababli koʻp kasalliklar kelib chiqadi. Bunda holsizlik, taxikardiya, koʻngil aynishi, psixik oʻzgarishlar, qonning quyushib ketishi, arterial bosimning pasayishi, qandli diabetni keltirib chiqarish hamda nevrologik oʻzgarishlar bilan kechadi.

Davolash usullari

Hozirgi vaqtda vazopressin oʻrnini bosuvchi vosita sifatida belgilanadigan yagona preparat Minirindir (Desmopressinning tabletkadagi shakli). Kasallik alomatlarini bostiradigan Minirin dozasi bemorning yoshiga yoki vazniga bogʻliq boʻlmaydi. Chunki hammasi antidiuretik gormonning yetishmasligi darajasiga yoki uning toʻliq yoʻqligiga bogʻliq. Davolash minimal dozalardan boshlanadi va zarur boʻlganda koʻpaytiriladi. Preparat kuniga uch marta qabul qilinadi. Simptomatik qandsiz diabet davosi kasallikka sabab boʻluvchi asosiy patologiyani davolash orqali (masalan oʻsmalar) amalga oshiriladi. Qandsiz diabetning har qanday koʻrinishida ham ADG gormoni oʻrnini bosuvchi preparatlar buyuriladi. Gipotalamo-gipofizar tizimdagi kamchiliklarni bartaraf etish uchun antidiuretik gormon sintezini kuchaytiruvchi dori preparatlar qabul qilish tavsiya etiladi.

XULOSA

Olib borilgan tadqiqotlar shuni koʻrsatdiki, qandsiz diabetga chalingan bemor tugʻruqdan keyingi holatida namoyon boʻlgan. Bunga asosiy sabab zoʻriqish boʻlgan. Kasallikga chalinmasidan bir necha yil oldin bemor hushidan ketgan xolda boshidan jarohat olgan, bemor tuzalib ketgan lekin biroz vaqt oʻtib homilador boʻlgan va tugʻruqdan soʻng zoʻriqish natijasida qandsiz diabetga chalingan. Hayotda biz uchun ahamiyatsiz koʻringan holatlar katta bir kasallikni keltirib chiqarishiga sabab boʻladi. Shu boisdan ham bosh miya jarohatlaridan ehtiyot boʻlish lozim. Biz ahamiyatga olmagan holatlar bu bosh miyaning qattiq jarohat olishi yoki, turli xil jarohatlarga infeksiya tushishidan ehtiyot boʻlish lozimdir.

Kasallikning ilk belgilari paydo bo‘lishi bilanoq darhol endokrinolog shifokorga murojaat qilish kerak.

REFERENCES

1. Ибрагимов Тахир «Можно ли побороть сахарный диабет» Ташкент-2019 148 б
2. Бутрова С.А. От эпидемии ожирения к эпидемии сахарного диабета // Междунар. Эндокринолог. Журнал – 2013. № 2 (50)
3. Лолтарёв С.С., Курцина И.Т. Физиология пищеварения. Учебн. Пособие. М.: “Высшая школа”. 1984. –С. 87-100.
4. Мак-Мюррей У. Обмен веществ у человека. М.: “Мир”, 1980. –С. 35.
5. Мамадалиева З. Р. Саидмуродова З. Значение микроэлементов в живых Организмах. Самарканд-2015 год 34 б
6. Матохина З.П. Основы физиологии питания, гигиены и санитарии. Учебник. Москва, 2002. –С. 198-233.



GLASS CERAMIC TILES FOR FLOORS BASED ON LOCAL RAW MATERIALS AND INDUSTRY WASTE

Hurmatbek Palvannazirovich Jumaniyozov

Urgench state university

hurmatbek.jumaniyozov@gmail.com

ABSTRACT

The article presents the results of studies on the production of glass ceramic floor tiles based on local raw materials. The physicochemical properties and structural formation of glasses during crystallization were studied by X-ray analysis. According to the X-ray data, the main crystalline phase in them is anorthite-like solid solutions. Synthesized glass ceramic materials are recommended for use as floor tiles in construction.

Keywords: rocks, diabase, kaolin, glass, crystallization, anorthite, glass ceramic material.

INTRODUCTION

In construction and other industries, glass-ceramic materials, such as pyroceram, petrositals, glass crystals and others are widely used. Glass-ceramic materials obtained by a special technology, having high mechanical strength, hardness, a small coefficient of thermal expansion, and high resistance to impacts, are called glass-ceramics.

Glass-ceramics are a special class of materials that combine the properties of both glasses and ceramics. They are composed of a crystalline phase and an amorphous glass phase. This unique microstructure gives glass-ceramics a wide range of desirable properties, including: high strength and hardness, excellent optical properties, chemical resistance, thermal stability.

Glass-ceramics are made by controlled crystallization of a glass. This process involves heating the glass to a temperature where crystals can nucleate and grow. The type of crystals that form, as well as their size and distribution, can be controlled by adjusting the composition of the glass and the heat treatment parameters.

In recent years, there has been a growing interest in developing sustainable construction materials that utilize local raw materials and minimize environmental impact. Glass ceramic tiles, in particular, have emerged as a promising alternative to conventional ceramic tiles. Glass ceramic tiles are produced from a combination of glass and ceramic materials, and they offer several advantages over traditional tiles.

LITERATURE ANALYSIS AND METHODOLOGY

Since their discovery in the early 1950s, glass-ceramic materials have become widely used in: daily life (e.g. on stoves) [1], industrial applications (e.g., abrasion-resistant tiles in industrial pipes), in the environment (e.g., waste recycling) [2], biomedical applications (eg prostheses for surgical implants) [3], architectural applications [4,5] and in more advanced technological applications (eg telescope mirrors, warheads and composite materials) [6]. Glass-ceramic materials are produced from virgin glass by a sequential thermal process that includes controlled crystallization, which consists of the growth of one or more crystalline phases in a vitreous mass. Crystallization occurs in two stages: nucleation and crystal growth, which can be defined as a thermal and kinetic process in which a structurally amorphous phase (glass) is transformed into a stable solid phase with a regular ordered geometry. This ordering process is a consequence of the energy reduction that occurs when molten glass is cooled below its temperature. This phenomenon is known to the scientific community under the name "crystallization" because it is the opposite of the typical glassy nature. However, what was originally considered an



undesirable process in glass fabrication, as the origin of defects, has become an essential mechanism for obtaining glass-ceramic materials with useful processing properties.

The use of rocks and industrial waste in the production of glass-ceramic materials, the presence of Ti, Mn, Fe and other metal oxides in their composition reduces the need for their extra addition. This, in turn, leads to a reduction in the cost of production. Therefore, this study is devoted to the creation of a technology for obtaining glass-ceramic material based on less studied rocks - diabase.

RESULTS

In this work, the batch composition of glasses was selected to obtain glass-ceramic floor slabs. In Uzbekistan, such kinds are quite widespread. One of the promising objects is Arvatendiabase deposit, located in Jizzakh region, 9 km north-west of Jizzakh lime plant, 1.5 km from the village of Kuyabash. The reserves are 95 million tons. Analysis of the composition of the diabas of Arvaten deposit indicates the multi-phase nature of the studied rock. According to microscopic, X-ray and electron microscopy data, they contain 4-5 main phases in oligoclase with the formula $(Ca,Na)Al_2Si_2O_8$, orthoclase $K(AlSi_3O_8)$, iron-containing pyroxene solid solution of the augite type $(Mg, Fe^{2+})[Si_2O_6 \cdot CaFe(AlSiO_6)]$, calcite $CaCO_3$, chlorite (clinachlor) with the formula $Mg_{4.5}Al_{2.5}[OH]_8(Si_3AlO_{10})$, very little quartz SiO_2 . Minor ore minerals are also present. Crystallization of a diabase melt or a supercooled liquid also does not lead to the formation of monomineral products [7]. The results obtained indicate the multiphase nature of crystallized glasses from the rocks of Arvaten deposit after their heat treatment. In this regard, to obtain a monomineral product, they need to be batched.

The batch composition of glasses in this work was selected in order to obtain monomineral crystalline materials of anorthite composition. Diabase rocks, Angrenkaolins and alumina-containing chemical industry waste were chosen as the source of the required oxides. The chemical

composition of the experimental samples is given in Table 1. The prepared mixtures were boiled in an electric furnace with silicate heaters in corundum crucibles with a volume of 100-500 g, with a temperature rise rate of 250-300 deg/h. The glass melting temperature was 1450°C with an exposure of 1 hour. Welded glasses were poured into special steel molds in the form of sticks and discs. The glasses were not annealed to avoid the induction of crystallization. The resulting glasses were homogeneous, transparent, and had various shades of black color depending on the content of FeO, Fe₂O₃, MnO, and TiO₂ coloring oxides.

Table 1

Calculated chemical composition of the prepared batches

Content of oxides, wt. %	Indices of prepared batches							
	D1	D2	D3	D4	D5	D6	D7	D8
SiO ₂	47,98	41,05	38,63	41,07	38,65	36,24	38,67	36,25
Fe ₂ O ₃	5,85	4,55	4,5	4,31	4,26	4,21	4,02	3,97
FeO	7,70	5,87	5,87	5,49	5,49	5,49	5,1	5,1
TiO ₂	1,79	1,36	1,36	1,28	1,28	1,28	1,19	1,19
MnO	0,10	0,08	0,08	0,08	0,07	0,07	0,07	0,07
Al ₂ O ₃	13,48	26,68	29,37	27,8	30,5	33,2	31,6	34,33
CaO	8,46	6,47	6,46	6,05	6,04	6,04	5,69	5,62
MgO	5,81	4,46	4,44	4,18	4,17	4,15	3,89	3,88
K ₂ O	2,86	2,23	2,21	2,12	2,09	2,06	1,98	1,95
Na ₂ O	1,28	1,02	1,00	0,98	0,96	0,93	0,92	0,89
SO ₃	0,25	0,20	0,20	0,18	0,18	0,18	0,16	0,16
L.O.I.	4,69	6,03	5,88	6,46	6,31	6,15	6,71	6,59

The production of glass-ceramic products under industrial conditions is currently based on two basic production schemes that differ in the method of molding: according to the glass technology and the ceramic technology [8].

Known schemes for the production of glass-ceramic floor slabs according to the so-called of glass technology include the following production stages: batch preparation → melting and production of sheet glass

(1450°C) → glass cutting to specified dimensions → 1st crystallization stage (800°C) → 2nd crystallization stage (1100°C) → annealing and cooling → control and packaging → warehouse for finished products.

Industrial schemes for the production of glass-ceramic plates according to the so-called ceramic technology includes the following production stages: batch preparation → glass melting (1450°C) → granulation → grinding of glass into fine powder → preparation of a technological mixture → product molding → 1st crystallization stage (800°C) → 2nd crystallization stage (1100°C) → annealing → control and packaging → warehouse for finished products

All types of technological schemes include the stage of batch preparation. To ensure optimal conditions for melting glass, it is necessary to obtain a mixture of the required dispersion. Depending on the initial state of the raw material component, a grinding scheme is used to bring it to the required degree of dispersion. Lump diabase is subjected to coarse grinding in a jaw crusher, after which it enters for fine grinding in a hammer crusher. The selected fraction should have a particle size of no more than 1 mm. Enriched kaolin AKF-78 and granulated alumina-containing waste are also subjected to fine grinding in a hammer mill. The selected fraction should have a particle size of not more than 0.25 mm. Crushed diabase and alumina-containing waste, together with pre-dried kaolin, enter the mixer to obtain a homogeneous technological mixture. The resulting homogeneous mixture is subjected to moisture within 2% and then subjected to granulation. The granular charge is sent to the bath furnace.

The next general stage is glass melting. The glass melting temperature of the developed compositions is in the range of 1450°C. Upon completion of the processes of homogenization and clarification, the glass mass enters the production by molding or granulation.

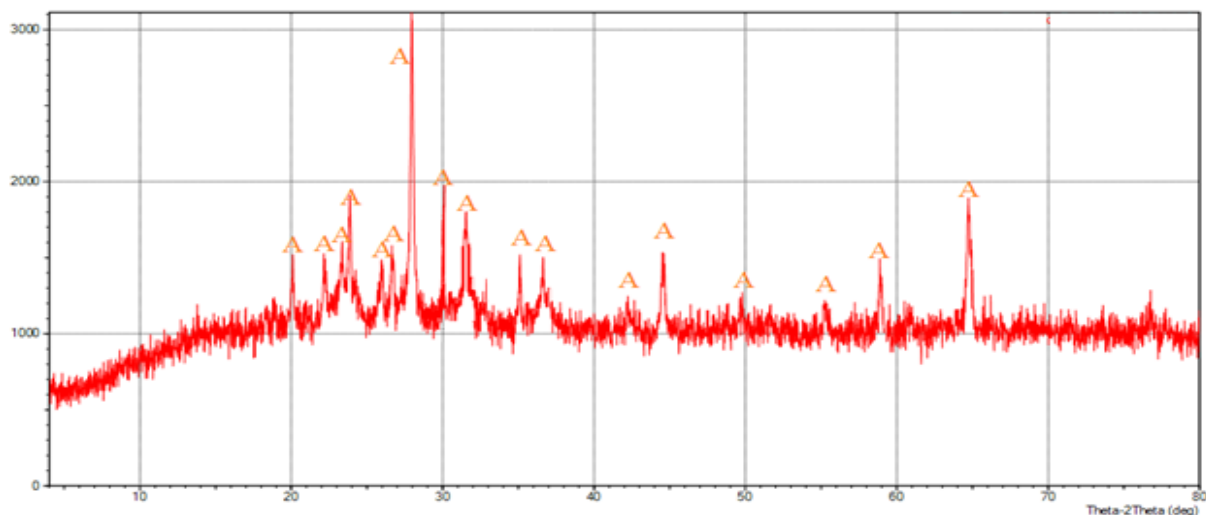
For products obtained by glass technology at the molding stage, the following is carried out: glass production, glass cutting,

end processing. Glass production is carried out at a temperature of 1250°C. The thickness and dimensions of the product are selected depending on the requirements. After processing the end parts, the semi-finished products are sent for heat treatment.

For products obtained by ceramic technology, after the completion of cooking, the following is carried out: glass granulation, granulate grinding, introduction of binders, molding. For granulation, the clarified glass melt is poured into water, where it breaks into small pieces of different sizes. Then they are finely ground, binders and plasticizing components are introduced, the batch is mixed and the semi-finished product is molded.

DISCUSSION

The heat treatment of the semi-finished product, carried out in order to crystallize the glass with the formation of a given phase, is carried out according to the developed regime. The processing mode includes 2 stages. At the 1st stage, the temperature is brought to 800°C at a rate of 200°C/hour and an exposure of 0.5 hour is given. The final temperature of the 1st stage is 1100°C and is reached at a rate of 100°C/hour with holding at the final temperature for 2 hours.



A-anortithe

Fig.1. X-ray patterns of glass samples of D5 compositions crystallized in a two-stage regime: 800°C-0.5 h and 1100°C-1 h.

The physical and technical properties of glass-ceramic are determined by the phase composition, depend on the size of the crystals and the content of the crystalline phase, as well as on its homogeneity and phase composition. The greatest homogeneity and signified finely dispersed crystallization, according to the visual assessment of chips of crystallized samples, were distinguished by samples with monomineralanorthite crystallization - D5. The phase compositions of these samples based on the investigated diabases, crystallized in a two-stage mode, were determined by the X-ray method (Fig. 1). Analysis of the obtained diffraction patterns revealed the presence in the samples of crystallized glasses of only one crystalline phase - anorthite (0.153, 0.162, 0.168, 0.171, 0.176, 0.180, 0.184, 0.188, 0.304, 0.318, 0.334, 0.344, 0.377, 0.403 and 0.468 nm).

Table 2

Physical and chemical properties of the obtained glass-ceramic materials

№	Density, kg/m ³	CLTE $\alpha \cdot 10^{-7} K^{-1}$	Micro hardness MPa	Abrasion, g/cm ²	Bending strength, MPa	Compressive strength, MPa	Chemical resistance, %		
							conc. HCl	35 % NaOH	conc. H ₂ SO ₄
D1	2800	55,50	8150	0,007	115	500	96,50	93,20	98,00
D2	2850	54,25	8280	0,006	122	690	96,89	94,50	98,35
D3	2900	52,08	8440	0,005	128	730	97,67	95,98	98,00
D4	3000	51,76	8580	0,005	132	750	98,20	99,00	98,50
D5	3100	48,04	8850	0,003	140	800	98,98	99,83	99,92
D7	3090	50,24	8670	0,004	135	770	98,30	99,68	98,50

It can be seen from the data in Table 2 that the samples crystallized in a two-stage regime have high physicochemical and mechanical properties, significantly exceeding those of their original glasses, which is the result of the formation of a finely dispersed crystalline structure.

CONCLUSION

The results of the experiment show that the obtained glass crystals have high physical and technical characteristics. Based on the optimal composition of D5, it is possible to produce glass-ceramic floor tiles. The resulting glass-ceramic materials are used in construction, they are also used for floor glass-ceramic slabs, external and internal wall cladding, and for other purposes.

REFERENCES

1. Willhauk E., Harikantha R. (2005) Glass ceramics for household appliances. In: ach H, Krause D (eds) Low thermal expansion glass-ceramics, 2nd edn. Springer Verlag, Heidelberg, pp 51-58.
2. Manankov A.V., Vladimirov V.M., Strakhov B.S. High-strength petrositall structures for work in the special conditions of the Arctic // Bulletin of the Tomsk State University. 2014. No. 385. P. 223–232.
3. Aripova M., Babakhanova Z.A. Biocompatible glass ceramics // Glass and Ceramics (English translation of StekloiKeramika), 1998, 55(9-10), p. 326-327
4. Kim A.Yu., Kharitonov S.P., Amoyan M. Creation of a technological line for the production of glass-ceramic products in a small enterprise at the University of Innovation in Science. 2015. No. 41. p. 44-51.
5. AripovaM.Kh., Ruzibaev B.R.Synthesis of glass in the system quartz - kaolin – dolomite // Glass and Ceramics (English translation of StekloiKeramika), 2009, 66(11-12), p. 378-380
6. Puzanova E.G., Martyukhova D.A., Sigaev V.N., Stroganova E.E., Savinkov V.I. Ion-exchange hardening of optical glass-ceramics of the lithium-aluminum-silicate system // Advances in chemistry and chemical technology. 2016. V. 30. No. 7 (176). pp. 93-95.
7. JumaniyozovKh.P. Investigation of diabase rocks of Arvaten and Uzunbulak deposits for obtaining glasses and glass-ceramics

// Chemical industry. St. Petersburg 2013. V.88, No. 5. pp. 223-233.

8. Aripova M.Kh., Babakhanova Z.A., Jumaniyozov Kh.P. Glass-ceramic floor tiles based on local raw materials and industrial waste // Universum: Technical sciences: electron. scientific magazine Moscow, 2020. No. 6. (75). p. 76-80.

KREATIVLIKNING MAZMUN- MOHIYATI VA UNI RIVOJLANTIRISHNING PEDAGOGIK-PSIXOLOGIK SHART- SHAROITLARI

Zulxumor Shuxradovna Mirzaeva

Chirchiq davlat pedagogika univesiteti biologiya kafedrası o‘qituvchisi

ANNOTATSIYA

Maqolada bo‘lajak pedagoglarning kreativ qobiliyatini rivojlantirish yo‘llari hamda kreativlik qobiliyatini rivojlantirishda qanday metodlardan foydalanish maqsadga muvofiq bo‘lishi to‘g‘risida fikr yuritiladi.

Kalit so‘zlar: pedagogik kreativlik, interfaol usul, intellekt, mustaqil ishlar.

ABSTRACT

The article discusses ways to develop the creative ability of future teachers and what methods should be used in the development of creative ability.

Keywords: pedagogical creativity, interactive method, intellect, independent works.

KIRISH

Zamonaviy dunyoning innovatsiyalariga moslashish, doimiy yangilanuvchi jamiyat hayotiga yosh avlodni tayyorlash va uni zamon talablariga muvofiq takomillashtirish jarayonlarida faol ishtirok etish qobiliyatini rivojlantirish oliy ta‘lim muassasasi pedagogining muhim kasbiy vazifasi hisoblanadi. Kreativlik ta‘lim jarayonini tashkillashtirishni o‘zida mujassamlashtirib, kreativ ta‘lim jarayonini qurish, ta‘lim texnologiyalaridan ijodiy salohiyatni rivojlantirish turli uslublar, bilim va ko‘nikmalar muvozanatini rivojlantirishni o‘z ichiga oladi.

Kreativlikning mohiyati - intellekt insonning aqliy salohiyati

bo'lsa, kreativlik ana shu aqliy salohiyatni maqsadga yo'naltirilgan tarzda erkin ishlata olish qobiliyati hisoblanadi.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Kreativlik atamasi Angliya-Amerika psixologiyasida 60-yillarda paydo bo'ldi. U individning yangi tushuncha yaratishi va yangi ko'nikmalar hosil qilish qobiliyati, xislatini bildiradi. J. Gilford kreativlikni tavsiflaydigan qator individual qobiliyatlarni ko'rsatadi: fikrni maqsadga muvofiq yo'llay olish; ziga xoslik (originallik);– qiziquvchanlik;– farazlar yaratish qobiliyati;– xayol qila olish (fantaziya). Mamlakatimizda inson, uning har tomonlama kamol topishi va farovonligi, manfaatlarini ro'yobga chiqarish sharoitlarini yaratish, ta'lim sifati va samaradorligini yangi bosqichga olib chiqish borasidagi izchil islohotlar natijasida interfaol o'qitish metodlari asosida talabalarning kreativlik qobiliyatlarini rivojlantirishni keng tatbiq etish imkoniyatlari yaratilmoqda. O'zbekiston Respublikasini yanada rivojlantirish bo'yicha Harakatlar strategiyasida "Uzluksiz ta'lim tizimini yanada takomillashtirish, sifatli ta'lim xizmatlari imkoniyatlarini oshirish, yosh avlodning ijodiy va intellektual salohiyatini qo'llab-quvvatlash va ro'yobga chiqarish" kabi ustuvor vazifalar belgilanib berilgan. Shunga muvofiq interfaol o'qitish metodlari asosida talabalarning kreativlik qobiliyatlarini rivojlantirish muhim ahamiyat kasb etadi. Shaxsda kreativlik sifatlarini rivojlantirish jarayonining umumiy mohiyatini to'laqonli anglash uchun dastlab "kreativlik" tushunchasining ma'noni tushunib olish talab etiladi. "Kreativlik" tushunchasini quyidagicha sharhlash mumkin: Kreativlik (lot., ing. "create" – yaratish, "creative" – yaratuvchi, ijodkor) – individning yangi g'oyalarni ishlab chiqarishga tayyorlikni tavsiflovchi va mustaqil omil sifatida iqtidorlilikning tarkibiga kiruvchi ijodiy qobiliyati. A.X. Maslou kreativlikni 2 turga bo'ladi: iste'dodning kreativligi va shaxsning o'zo'zini aktuallashtirish kreativligi. Shaxsning o'z-o'zini aktuallashtirish kreativligi shaxs bilan uzviy bog'langanligi sababli biz unga kundalik hayotda va kasbiy faoliyatning ko'p sohalarida duch



kelishimiz mumkin. A.X. Maslou kreativlikda o'z-o'zini aktuallashtirishning ikki darajasini keltirib o'tgan: birinchisi – “ixtiyorsiz kreativlik, bunda shaxs birdan aqliga kelish, ruhlanish, qiyin kechinmalarga ega bo'ladi”, “ikkinchisi – ixtiyoriy, og'ir mehnat bilan bog'liq, uzluksiz ta'lim, kamolotga intiluvchanlik”. A.X. Maslou kreativlikni inson tabiatining fundamental xarakteristikasi sifatida ko'radi, ya'ni barcha insonlardagi tug'ma qobiliyat, lekin hayoti davomida ma'lum ijtimoiy to'siqlar natijasida yo'qolib ketadi, deb hisoblaydi. T.A. Barisheva va Yu.A. Jigalovalar pedagogikada kreativlikni tizimli (ko'p bosqichli, ko'p o'lchamli) psixik (ruhiy) ta'limim sifatida talqin etib unga faqatgina intellektual potensialni emas, balki motivatsiya, emotsiya, estetik rivojlanish darajasi mavjudligi, kommunikativ parametrlari, kompetentligi va hokazolarni ham kiritadi. Shuningdek, kreativlikning mezonlari Dj.P. Gilforda, E.P. Torrans tomonidan belgilangan:– ravonlik: ma'lum bir vaqt oralig'ida ko'plab fikrlarni ishlab chiqarish qobiliyati; – o'ziga xosligi: aniq, taniqli, umume'tirof etilgan, oddiy yoki qat'iy belgilanganidan farq qiluvchi g'ayrioddiy, nostandart g'oyalarni ishlab chiqarish qobiliyati; – sezuvchanlik: g'ayrioddiy detallarga sezgirlik, qarama-qarshilik va turli xil noaniqliklar, tezda bir fikrdan ikkinchisiga o'tishga tayyorlik; – mo'tadillik: g'ayritabiiy kontekstda ishlashga tayyor bo'lish, ramziy, birlashtiruvchi fikrlashga moyillik, oddiy va murakkab sharoitda ko'rish qobiliyati; – rivojlanish: paydo bo'lgan g'oyalarni batafsil ishlab chiqish, ularni sath va quyi tizimlarga aylantirish qobiliyati; – to'xtashga qarshilik: bir xillikka qarshilik ko'rsatish, ya'ni muammoni yechish jarayonida kelib tushayotgan turli informatsiyalar andozalariga qarshilik ko'rsatish. – noaniqlik: stimuldin mustaqil mantiqiy reaksiyagacha bo'lgan qobiliyat; “nomlash”ning mavhumligi: shaxsning muammo mohiyatini tushunish qobiliyati, aslida, ahamiyatga ega bo'lgan nomni tushunish va aksini aks ettirish qobiliyati (“nomlash” jarayoni mufassal shaklni, muammoning mohiyatini ko'rish qobiliyatini, og'zaki shaklga aylantirish qobiliyatini aks ettiradi); – ko'p vazifalilik: bir vaqtning o'zida bir nechta loyihalarda ishlash



qobiliyati; – samaradorligi: ularning foydasi, mahsulotning maqsadli auditoriyasi tomonidan yangi, noyob, original bo‘lishi haqidagi idrok; – mamnuniyat: kreativlikning natijasi. Adabiyotlarni tahlil qilish shuni ko‘rsatadiki, shaxsning ijodiy salohiyati muammoga mustaqil qarash, qarama-qarshiliklar, tanqidiy fikrlash; har qanday muammolarni tahlil qilish qobiliyati, analitik fikrlash; ular uchun yechim topish qobiliyati; bilim olish, malaka va ta‘lim berish usullarini yangi holatga o‘tkazish imkoniyati; ilgari o‘rganilgan usullarni yangilarga birlashtira olish kabi ko‘nikmalarda namoyon bo‘lishi mumkin. Tafakkurning egiluvchanligi – jamiyatda qabul qilingan va an‘anaviy mavjud bo‘lgan, aslida, to‘g‘ri deb o‘ylangan shablon yo‘nalishlar va tamoyillarning zamonaviy taraqqiyot uchun javob bera olmay qolganligini anglash, yangi yo‘nalish va choralarni sezish, ularni tafakkur qila olish va shakllantira bilish, o‘z faoliyatini yangidan qura olish va masala yechiminining yangi yo‘nalishlariga o‘zini safarbar eta olishdir. Prognoz, bashorat qila olish esa o‘z sohasi rivojidagi istiqbol o‘zgarishlar mohiyati, kelib chiqish sabablari va yuzaga kelish muddatlarini tafakkur tahlili orqali oldindan anglash tafakkuri hisoblanadi.

MUHOKAMA VA NATIJALAR

Masalan, mehnat unumdorligining ko‘tarilishi va pasayishi, konyuktura yoki bozorning o‘zgarishi hamda mazkur o‘zgarishlarning sohaga bo‘lgan ta‘siri, narxlarning ko‘tarilishi, pasayishi va b. Ta‘lim oluvchilarda kreativlikni rivojlantirish ta‘lim mazmunini o‘zlashtirishda ta‘lim oluvchilarning bilim saviyasi, o‘zlashtirish darajasi, ta‘lim manbai, didaktik vazifalariga qarab, munosib ravishda o‘qitish jarayonini tashkil etishni talab qiladi. Bunda quyidagi pedagogik shart-sharoitlarga amal qilish lozimligi nazarda tutiladi: – ta‘lim oluvchilarda kreativ faoliyatni egallash mayllarini qaror toptirish, bilish ehtiyojlarini shakllantirish va ta‘lim jarayonida mustaqillikni namoyon qilish muhitini ta‘minlash; – ta‘lim oluvchilarda ijodiy fikrlash uchun qulay imkoniyat yaratish, ta‘lim oluvchilar tomonidan bayon qilingan turli-tuman fikrlar va g‘oyalarni



bag'rikenglik bilan qabul qilish hamda ularning o'quv jarayonidagi faolligini ta'minlash, har bir ta'lim oluvchida uning ijodiy fikrlashga qodirligi haqidagi ularning ijodiy faolliklarini muntazam rag'batlantirish; o'quv jarayonini ta'lim oluvchi shaxsning xususiyatlari, ehtiyojlari va intellektual salohiyatidan kelib chiqqan holda individuallashtirish; – ta'lim oluvchilarda individual, kichik guruhlar va jamoada ishlash ko'nikmalarini shakllantirish, ularning ijodiy imkoniyatlarini kengaytirish, ularni muammolarni hal qilishda tayyor, standart yechimlar bilan birga nostandart yechimlar qabul qilishga undash; kreativ faoliyatni rivojlantirishning asosi bo'lgan kognitiv bilimlarni amalda qayta ishlab chiqish va takomillashtirish imkonini beradigan interfaol mashg'ulot shakllari va metodlarini tanlash va tatbiq etish va hokazo. Tadqiqotchi G. Ibragimova interfaol o'qitish jarayonida ta'lim oluvchilarda kreativlikning rivojlantirish bosqichlarini quyidagicha ifodalab o'tgan: 1. Reproduktiv-tavakkalchilik bosqichi. Bu bosqich ta'lim oluvchilarda kreativ faoliyat, kreativ faollik va ijodkorlikka bo'lgan moyillikni qaror toptirish, ta'limdagi innotvasion texnologiyalarning mohiyatini anglash va yangi g'oyalarning tug'ilishi, shakllanishi bilan tavsiflanadi. 2. Ijodiy-izlanish tadqiqotchilik bosqichi. Ta'lim oluvchilardagi tadqiqotchilik, ijodiy faollik, nostandart tafakkur, bilish mustaqilligi, improvizatsiya, yangilik yaratish ko'nikmalarining shakllanishi bilan belgilanadi. 3. Kreativlik, novatorlik bosqichi. Yaratilgan yangilikni amalda qo'llash, baholash, tahlil qilish, ommalashtirish va uni keng tatbiq etish hamda istiqbolga yo'naltirilgan strategik rejalarni tuzish bilan bog'liq jarayonlarni o'z ichiga oladi. Ta'lim oluvchilardagi kreativlik qobiliyatlarini rivojlantirish jarayonida interfaol ta'lim jarayoni ahamiyatli sanaladi. Interfaol ta'lim – ta'lim oluvchining bilish faoliyatini faollashtirish ehtiyojlaridan kelib chiqib, o'quv jarayonini o'zaro hamkorlik asosida tashkil etilgan “subyekt-subyekt” munosabatlariga asoslangan o'qitish metodlari tizimidir. Bunda o'zaro harakat ta'lim oluvchilarning faollashuvi, guruh tajribasiga asoslanish, teskari aloqa o'rnatish kabi tamoyillarga tayanadi.

Demak, interfaol o'qitish metodlari va texnologiyalari vositasida



ta'lim oluvchilarda kreativlik qobiliyatlarni rivojlantirishning muhim sharti ta'lim jarayonida erkin-ijodiy muhitning yaratilishi, professor-o'qituvchilar, o'qituvchi va ta'lim oluvchilarning birgalikdagi munosabatlari va o'zaro hamkorlikdagi harakatiga asoslangan o'qitish jarayonini yo'lga qo'yishdan iborat. Ta'lim oluvchilarda kreativlik qobiliyatlarini rivojlantiruvchi bir qator omillar mavjud bo'lib, quyida ayrimlarini keltirib o'tish mumkin: – kreativ fikrlash ko'nikmalarini rivojlantirish, kreativ faollikni shakllantirish, o'quv jarayonida izlanuvchilik hamda muammoli tadqiqotchilik yo'nalishlarini kuchaytirish; – ta'lim oluvchilarning muammolarni ijodiy yechish va yaratuvchilik faoliyatlarini rivojlantirish vaziyatlarini tashkil etish; – ta'lim oluvchilarning kreativ faoliyat tajribasiga kasbiy zaruriyat va istiqboldagi kasbiy faoliyat mazmunining tarkibiy qismi sifatida yondashishlariga erishish; – ta'lim oluvchilarning kasbiy ko'nikma va layoqatlarini rivojlantirish jarayonini interfaol metodlar va texnologiyalar ustida ishlash asosida rivojlantirishga yo'naltirish, ularda mustaqil ijodiy faoliyat ko'rsatish, mustaqil bilim olish, o'z-o'zini tarbiyalash, o'zo'zini bilish, o'z mavqeyiga ega bo'lish, ta'lim oluvchilarning mustaqil ishlash layoqatlarini faollashtirish, bu jarayonda ularning kreativ fikrlashlariga erishish; – ta'lim oluvchilarning kreativ layoqatlarini namoyon qilishlari uchun qulay ijodiy hamkorlik muhitini vujudga keltirish kabilar. Ta'lim oluvchilarda kreativlik qobiliyatlarini rivojlantirishda quyidagi ish shakllaridan foydalanish muhim ahamiyatga ega: • ma'lumotlarni tahlil etish, tezkor qarorlar qabul qilish, ijodiy fikrlash ko'nikmalarini rivojlantirishga xizmat qiluvchi treninglarni tashkil etish; • tasavvurlarni va obrazli qarashlarni shakllantirishga yo'naltirilgan ijodiy mashqlar, topshiriqlarni bajarish;

- keyslar bilan ishlash;
- guruhiy ish shakllari va dehatlarni tashkil etish;
- o'quv loyihalarini tayyorlash;
- portfoliolarni shakllantirish;
- kastinglar uyushtirish;



- to‘garaklar faoliyatini yo‘lga qo‘yish va hokazo.

Ta‘lim oluvchilardagi kreativlik qobiliyatlarining rivojlanganlik darajasini aniqlashning quyidagi mezonlari mavjud: kreativ faoliyatga nisbatan motivatsiyaning qaror topganligi; kreativ fikrlash ko‘nikmalarining rivojlanganligi; kreativ sifatlarning shakllanganligi; amaliy kreativ faoliyat jarayonini tashkil etish; ixtisoslashgan kreativlikning shakllanganligi va boshqalar. Kreativlikni ijodga intilish, hayotga ijodiy yondashish, o‘ziga doimiy tanqidiy nazar solish va tahlil etish deyish mumkin. Hozirgi zamon psixologiya va pedagogika lug‘atlariga asoslanib, o‘qituvchining kreativligi deb, uning fikrlaridagi, sezgilaridagi, muloqotdagi, alohida faoliyat turidagi, ijodiy yondashish, bilish darajasi deb ta‘riflash mumkin. O‘qituvchining kreativligi, bu uning qat‘iy, chegaralangan yoki sust chegaralangan sharoitlarda har xil original g‘oyalarni izlab topish layoqatidir. Ilmiy adabiyotlarni tahlil qilish quyidagi o‘zaro bir-biriga bog‘liq kreativlik tarkibiy komponentlarini ajratish imkoni beradi:

1. Intellektual (aqliy).
2. Axloqiy (o‘z-o‘zini boshqarish).
3. Motivatsion (maqsadli).
4. Emotsional (his-hayajonli).

Kreativ layoqat quyidagi o‘zaro bir-biriga bog‘liq bo‘lgan qismlardan iborat bo‘ladi:

1. Kreativ maqsad.
2. Ijodiy intilish.
3. Kreativ (ustanovka) qurish.
4. Kreativ yo‘nalish.
5. Kreativ ifodali akt.
6. Kreativ o‘z-o‘zini boshqarish.
7. Kreativ faollik.
8. Kreativ intilishlar darajasi.

O'qituvchining kreativligi uning ijodiy faoliyatida paydo bo'ladi va rivojlanadi. Kreativlik o'qituvchining ijodiy faoliyatida ijodiy intilishi, ijodiy qobiliyati, kreativ maqsadi, yo'nalishi va o'zini boshqara olishida ko'rinadi va uni o'zining faolligi, o'zini-o'zi boshqara olishi bilan yetuk rivojlanayotgan, o'sayotgan shaxsga aylanayotganini bildiradi. Pedagogning kreativ kompetentligi uning umumiy xususiyati sifatida aks etadi. U kreativ faoliyatning dastlabki sharti va natijasi sanaladi. Mazkur sifat shaxsning o'z-o'zini namoyon qilish layoqatiga egalikni va tayyorlikni ifodalaydi.

Kompetentlikka yo'naltirilgan ta'lim amerikalik tilshunos N. Xomskiy (1965-yil, Massachutes universiteti) tomonidan taklif etilgan "kompetensiya" atamasining umumiy ma'nosida shakllandi. Yevropa Kengashi dasturi bo'yicha Bern shahrida bo'lib o'tgan simpoziumda (1996-yil) "kompetensiya" tushunchasi "uquv", "kompetentlik", "qobiliyat", "mahorat" singari tushunchalar qatoriga kiritilgan. Yevropa davlatlarining ta'lim vazirlari Boloniya deklaratsiyasida (1999-yil) ta'lim islohotlarining konseptual asoslari sifatida kompetentli yondashuv e'tirof etildi. G.V. Nikitinaning fikricha, kompetentliklar tasnifida bir nechta asoslar mavjud:

- insonning umumiy kompetentligi (matematik, kommunikativ, informatsion, ijtimoiy, axloqiy va h.z.);
- faoliyat turlari bo'yicha kompetentlik (mehnat, o'quv, o'yin, kasbiy va boshqalar);
- faoliyat yo'nalgan obyektlar bo'yicha kompetentlik (inson-inson, inson-texnika, inson-tabiat, inson-badiiy timsol va h.z.);
- ijtimoiy hayot sohalari bo'yicha kompetentlik (maishiy, madaniy va boshqalar);
- ijtimoiy bilimlar tarmoqlari bo'yicha kompetentlik (matematikada, gumanitar fanlarda); – ishlab chiqarish tarmoqlari bo'yicha kompetentlik (transport, aloqa, mudofaa va boshqalar);



qobiliyatlar bo'yicha kompetentlik (pedagogika, psixologiya, ijtimoiy, ijodiy, texnik va boshqalar).

Zero, yuqorida aytilgan kompetentlik yo'nalishlari shaxs umummadaniy kompetentligining tarkibiy qismlari hisoblanadi. Pedagogning kasbiy kompetentligi tasnifi quyidagilarni o'z ichiga oladi:

- pedagogning ish sohasi bo'yicha kompetentligi
- uzluksiz ta'lim tizimini o'z ichiga oladi;
- ixtisoslik bo'yicha kompetentligi
- o'qituvchi, tarbiyachi, psixolog, defektolog, kasb ta'limi o'qituvchisi, ishlab chiqarish ustasi;
- pedagogning faoliyati yo'nalgan obyekt bo'yicha kompetentligi
- talabalar, otaonalar, sinf jamoasi, sotsium va boshqalar;
- pedagogning faoliyati turi bo'yicha kompetentligi motivatsion, gnostik, metodologik, metodik, informatsion, kommunikativ, reflektiv, prognostik, konstruktiv, texnologik, korreksion va boshqalar.

A.V. Xutorskiy o'qituvchining quyidagi kompetensiyalarini tavsiflaydi:

1. Dunyoqarash asosida, ya'ni qadriyat va o'zini anglash – o'qituvchining dunyoqarashi, tasavvuri va qadriyati bilan bog'liq ravishda namoyon bo'ladi. U atrof-muhitdagi voqea va hodisalarning mohiyatini ko'ra oladi va tushunadi, bunga o'zini yo'naltiradi, pedagog sifatida o'z fikrini asoslay oladi. Muammo yechimini topa oladi. Bu kompetensiyao'qituvchining o'quv va boshqa faoliyatlaridagi o'z-o'zini anglash mexanizmini ta'minlaydi.

2. Umummadaniy – milliy va umuminsoniy qadriyatlarga ega bo'lish; mamlakatning ijtimoiy hayotida ishtirok etish; oilasiga, urf-odatlariga hurmat; ijtimoiy ko'nimalarga ega bo'lish. Ilm-fanning inson hayotiga va dunyo rivojiga ta'sirini anglay olish va talaba yoshlarga tushuntira olish.

3. O‘quv va bilish jarayoni – o‘qituvchining mustaqil bilish faoliyati. Mantiqiy fikrlashi, o‘quv-biluv faoliyatini baholashi, bilim va ko‘nikmalarini tahlil qila olishi.

4. Ma‘lumotga ega bo‘lish – pedagogik faoliyat va o‘z faniga doir ma‘lumotlarni egallash ko‘nikmasi.

5. Muloqotchanlik – til bilishi, turli xil insonlar bilan muloqotda bo‘lishi, jamoada o‘ziga xos o‘rinda turishi.

6. Ijtimoiy – foydali mehnat, oilaviy munosabatlar va mas‘uliyat, jamiyat rivojidagi ishtiroki, ijtimoiy foydali mehnat qilishi. Iqtisodiy va huquqiy ko‘nikmalarga ega bo‘lish.

7. O‘z ustida ishlashi – jismoniy, ma‘naviy, intellektual jihatdan o‘z-turli axborot manbalari, shu jumladan ta‘lim muassasasidan tashqaridagi axborot manbalaridan bilimlarni mustaqil o‘zlashtirishga asoslangan bilish faoliyati sohasidagi kompetensiyalar: – ijtimoiy faoliyat sohasidagi kompetensiyalar (fuqaro, saylovchi, ijtimoiy guruh, jamoa a‘zosi rolini bajarish); – mehnat faoliyati sohasidagi kompetensiyalar (shu jumladan, mehnat bozoridagi holatni tahlil etish va undan foydalanish, o‘zining kasbiy imkoniyatlarini, o‘zini o‘zi uyushtirish ko‘nikmalarini baholash va takomillashtirish); – maishiy sohadagi kompetensiyalar (shu jumladan, oilaviy hayot aspektlarini, salomatlikni saqlash va mustahkamlashni ham qamrab oladi); – madaniy faoliyat sohasidagi kompetensiyalar (shu jumladan, shaxsning ma‘naviy va madaniy jihatdan boyishi uchun vaqtdan unumli foydalanish). O‘qituvchi kompetensiyasi – uning nazariy va amaliy bilim, ko‘nikma va malakasi, dunyoqarashi, e‘tiqodi va barcha shaxsiy individual, ijtimoiy-psixologik sifatlarining namoyon bo‘lishidir. Ta‘limning sifat va samaradorligini ta‘minlovchi muhim omillardan biri bu – o‘qituvchining o‘z fani bo‘yicha kompetensiyaga ega bo‘lishidir.

U pedagogik moslashuv tizimi asosida namoyon bo‘ladi. Bular: ilmiy bilish; gnoseologik bilish; pedagogik faoliyatni epchillik, omilkorlik, mohirlik bilan bajara olish; har qanday muammoli vaziyatlarning samarali yechimini topishga ijodiy-kreativ yondashish; ta‘limiy, tarbiyaviy ta‘sir

jarayonida yuksak ijtimoiy psixologik xususiyatlarni namoyon etish; o'zining intellektual, kognitiv, emotiv, axloqiy salohiyatini, o'rganish va ichki psixologik zaxirasidan samarali foydalanish orqali o'zini muttasil rivojlantirish; jamiyat va insonlarga, tabiatga, borliqqa ijobiy emotsional munosabatda bo'lish ijobiy pozitiv fikrlashga o'tish tajribasidan iborat. Kasbiy kompetensiyaga ega mutaxassis: – o'z bilimlarini izchil boyitib boradi; – yangi axborotlarni o'zlashtiradi; – davr talablarini chuqur anglaydi; – yangi bilimlarni izlab topadi; – ularni qayta ishlaydi va o'z amaliy faoliyatida samarali qo'llaydi . Pedagoglarda kreativ faoliyatni tashkil etishga imkon beradigan malakalar guruhlar:

- 1) bilishga oid (gnostik) malakalar;
- 2) loyixalash malakalari;
- 3) ijodiy-seminar (konstruktiv) malakalar;
- 4) tadqiqotchilik malakalari;
- 5) muloqotga kiruvchanlik (kommunikativ) malakalari;
- 6) tashkilotchilik malakalari;7) izchillikni ta'minlovchi (protsessual) malakalar;
- 7) texnik-texnologik malakalar .

Kreativ kompetentlik – pedagogik faoliyatga nisbatan tanqidiy va ijodiy yondoshish, o'zining ijodkorlik malakalariga egaligini namoyish eta olish.

XULOSA

Kreativlik uchun quyidagilar muhim bo'lib hisoblanadi: pedagogik masalalarning ko'p xilligi va ularni hal etishning variativligini tushunish, o'z mahoratining darajasi va tavsifini hamda uni rivojlantirish mumkinligini tushunish, uni takomillashtirish xohishi, yangi yechimlar zarurligini tushunishi va unga psixik tayyorgarlik hamda uni amalga oshirishga ishonch. Kreativlik shaxsni yaxlit holda yoki uning muayyan xususiyatlarini tavsiflaydi. Kreativlik iqtidorning muhim omili sifatida ham aks etadi. Qolaversa, kreativlik zehni o'tkirlikni belgilab beradi, "talabalar e'tiborini ta'lim jarayoniga faol jalb

etishni ta'minlaydi". Xorijiy mamlakatlarda barcha sohalarning mutaxassisleri kabi o'qituvchilar ham o'zlarida kreativlik sifatleri mavjudligi va uning darajasini aniqlab boradi. Buning uchun ular E.P. Torrens tomonidan 1987-yilda asoslangan va shaxsning kreativ tafakkurga egaligini aniqlovchi testdan o'tadi. Mazkur test shaxs kreativligi va uning darajasini ijodiy faoliyatni tashkil etishdagi faollik, tezkor fikrlash, o'ziga xos (original)lik va takomillashganlik kabi mezonlar bo'yicha baholash imkoniyatini yaratadi. Talaba tomonidan tavsiya etilgan savollarga beriladigan javoblar aynan mana shu to'rtta mezonni qanoatlantirishi lozim. E.P. Torrens fikricha, "kreativlik" tushunchasi negizida quyidagilar yoritiladi: – muammoni yoki ilmiy farazlarni ilgari surish; – farazni tekshirish va o'zgartirish; – qaror natijalarini shakllantirish asosida muammoni aniqlash; – muammo yechimini topishda bilim va seminar harakatlarning o'zaro qaramaqarshiligiga nisbatan ta'sirchanlik. Xulosa qilib shuni aytishimiz mumkinki, talabalarda kreativ qobiliyatni rivojlantirish mazmunini DTS talablari asosida tahlil etilib, bitiruv ishi doirasidagi "kreativlik", "kreativ qobiliyat", "pedagogik kreativlik", "interfaol o'qitish", "interfaol o'qitish sharoiti", "talabalarda kreativ qobiliyatni rivojlantirish" kabi asosiy tushunchalar mohiyati ochib berildi.

REFERENCES

1. Ахмадалиев, Б. Ж., Абдувалиев, Б. А., Қодирова, З. Н., Нугманова, К. И., Каримов, Р. А., & Зайлобидинов, Н. У. ТОМАТО MOSAIC TOBAMOVIRUS ИНФЕКЦИЯСИГА СПЕЦИФИК АНТИЗАРДОБ ОЛИШ ВА ТИТРИНИ АНИҚЛАШ. ЁШ ОЛИМЛАР АХБОРОТНОМАСИ.
2. Sodiqova Sh.A. "Maktabgacha pedagogika" "Tafakkur chashmalari" T.2013.
3. .Kayumova N.M. "Maktabgacha pedagogika TDPU" nashriyat T.2013.
4. Fayziev, V., Kadirova, Z., Chirkov, S., Jurayeva, U., Vakhobov, A., & Javlieva, D. (2020). Study of some biological properties necrotic isolat of potato virus x and phylogenetic analysis. International Journal of Psychosocial Rehabilitation, 24(9), 455-462.



5. Shonazarova, N. I., & Fayziev, V. B. (2021). UMUMTA'LIM MAKTABLARIDA BOTANIKA FANINI O'QITISH UCHUN ELEKTRON RESUSLARNI QO'LLASH. *Academic research in educational sciences*, 2(4), 1487-1494.
6. Хусанов, Т. С., Жураева, У. М., Файзиев, В. Б., & Вахабов, А. Х. (2016). ВЛИЯНИЕ ВИРУСА МОЗАИКИ ЛЮЦЕРНЫ (ВМЛ) НА МОРФОФИЗИОЛОГИЧЕСКИЕ СВОЙСТВА РАСТЕНИЙ ЛЮЦЕРНЫ. In *СОВРЕМЕННОЕ ЭКОЛОГИЧЕСКОЕ СОСТОЯНИЕ ПРИРОДНОЙ СРЕДЫ И НАУЧНО-ПРАКТИЧЕСКИЕ АСПЕКТЫ РАЦИОНАЛЬНОГО ПРИРОДОПОЛЬЗОВАНИЯ* (pp. 1187-1192).
7. Атабаева, Д., & Файзиев, В. Б. (2020). ЎҚУВЧИЛАРИНИНГ СОҒЛОМ ЎСИШИ ВА РИВОЖЛАНИШИДА УЎҚУНИНГ АҲАМИЯТИНИ ЎРГАНИШ. *Биология ва экология электрон журналы*, 4(2).
8. Zulkunor Shuxradovna Mirzayeva, & Voxid Vaxromovich Fayziev (2021). O'QUVCHILARDA MUSTAQIL TA'LIMINI TASHKIL ETISH YO'LLARI. *Academic research in educational sciences*, 2 (5), 362-366. doi: 10.24411/2181-1385-2021-00899.
9. Курбонов, Ш. Ш., & Рамазонов, Б. Р. (2021). ҚИШЛОҚ ХЎЖАЛИК ФАНЛАРИНИ ЎҚИТИШ МЕТОДИКАСИНИНГ ПЕДАГОГИКА ВА БОШҚА ФАНЛАР БИЛАН БОҒЛИҚЛИГИНИНГ ИЛМИЙ-АМАЛИЙ АҲАМИЯТИ. *Academic research in educational sciences*, 2(9), 51-59.
10. Ramazonov, B. R. (2018). Plant world of the drained bottom of the Aral Sea. Current ecological state of the environment and scientific and practical aspects of rational nature management. In *III International Scientific and Practical Internet Conference/Compilation NA Shcherbakova/FSBSI" Caspian Research Institute of Arid Agriculture"*, p. Salty Loan.-2018. S (pp. 716-718).
11. Alimova, X. B., & Ramazonov, B. R. (2021). "O'QUVCHI-O'QUVCHIGA USTOZ" TAMOYILI ASOSIDA TABIIY FANLAR DARSLARINI TASHKIL ETISHDA PEDAGOGIK

MUAMMOLAR. Academic research in educational sciences, 2(9), 940-945.

12. Рамазонов, Б. Р., & Курбонов, Ш. Ш. (2021). Формирование компетенции у студентов биологического направления вузов в обучении предмета почвоведение и биологические основы сельского хозяйства. Academic research in educational sciences, 2(4), 319-325.



POMIDOR O‘SIMLIGINI KASALLANTIRUVCHI VIRUSLAR TAVSIFI

Komila Isroiljon qizi Nugmanova

Chirchiq davlat pedagogika universiteti

komilanugmanova@gmail.com

ANNOTATSIYA

Ushbu maqola o‘simliklarda kasallik keltirib chiqaradigan viruslar va ularning turlari haqida so‘z yuritiladi. Bunda bu viruslar o‘simliklarga yuqqanidan so‘ng, ularda qanday o‘zgarishlar bo‘ladi va viruslar o‘simlikning hosiliga va o‘sib rivojlanishiga qanday ta‘sir o‘tkazishi haqida fikrlar berilgan.

Kalit so‘zlar: virus, mozaika, nekroz, barg deformatsiyasi, diagnostika, nukleoid, plastinka, latent, nekrotik chiziq, simmetriya, virion.

ABSTRACT

This article is about viruses that cause disease in plants and their types. After these viruses infect the plants, what changes occur in them and how the viruses affect the yield and growth of the plant.

Keywords: virus, mosaic, necrosis, leaf deformation, diagnosis, nucleoid, plate, latent, necrotic line, symmetry, virion.

KIRISH

Dunyo bo‘yicha pomidor (*Lycopersicon esculentum* Mill.) o‘simligining 30% hosili turli kasalliklar (bakteriya, zamburug‘ va virus) tufayli yo‘qoladi. Viruslar bilan kasallanish natijasida hosildorlik keskin kamayishi bilan bir qatorda pomidor sifatini buzilishi, saqlanish muddati kamayishi, transportabelligi va boshqa xususiyatlarini yo‘qotilishi aniqlangan. Pomidor o‘simligi kompleks viruslar bilan kasallanishi natijasida ziyon 100% ni

tashkil etib, katta-katta maydonlarda pomidor ekini o'sish davrini tugatmay qurib qolish hollari uchramoqda.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Sabzavotlar orasida aholi iste'mol qiladigan mineral moddalar, vitaminlarga boyligi bilan ajralib turadigan pomidor mahsulotlari alohida o'rin egallaydi. Uning mevalari yangi uzilgan, saqlangan va qayta ishlangan holda iste'mol qilinadi. O'zbekistonda ilg'or xo'jaliklar inson hayoti uchun zarur bo'lgan ushbu sabzavotdan juda yuqori hosil olmoqdalar. So'ngi yillarda pomidordan 850 ming tonna hosil yetishtirilmoqda. B. A. Rubinning ma'lumotlariga ko'ra pomidor tarkibida o'rta hisobda quyidagilar: quruq moddalar - 6,0-9,0%; uglevodlar (sellyulozasiz) - 3,99%, oqsil - 0,95%; yog'lar - 0,19%; selluloza - 0,84%; kul moddasi - 0,61%; 1 kg pomidorda 215 kkal energiya mavjud. Pishgan mevalar tarkibida 0,5% atrofida olma va limon kislotalar, shuningdek, C, A, B va B2 vitaminlari ham ko'p. Yana uning tarkibida kaliy, natriy, kalsiy, fosfor, temir, oltingugurt, kremniy, xlor va boshqalar bor. Pomidor yer yuzining hamma joyida yetishtiriladi.

Pomidorning virus kasalliklari o'tgan asrlardayoq aniqlangan bo'lib, ular soni hozirgi kunda 100 ga yaqinlashdi. Pomidorda virus kasalliklari keng tarqalganligi va hosildorlikka katta zarar keltirishi sababli barcha rivojlangan va rivojlanayotgan mamlakatlarda viruslar diagnostikasi va ularni o'rganish, virusga chidamli navlar yetishtirish va ularni nazorat qilishga katta ahamiyat berilmoqda. Tabiatda minglab o'simlik viruslari va ularning shtammlari tarqalgan. Har bir o'simlik bir yoki bip necha virus bilan kasallanishi mumkin. Masalan, pomidor o'simligida (*Lycopersicum virus*) eng ko'p tarqalgan quyidagi viruslarni keltirish mumkin:

1. Tamaki mozaikasi virusi - *Nicotiana virus*
2. Tomatni zarhallanishi virusi (virus bronzovosti tomatov) - *Lycopersicum virus*

3. Tomatni bepushtliligi virusi (virus aspermii tomatov) - *Lycopersicum virus*
4. Bodring mozaikasi – (Virus ogurechnoy mozaiki)- *Cucumis virus*
5. Bada mozaikasi virusi - (virus mozaiki lyusern) -*Medicago virus* (Viruslarni lotincha nomlari Smit bo'yicha berilgan).

Bu viruslardan tashqari pomidor o'simligi kartoshkani *M, X, Y viruslari* bilan kasalanadi. KMV – virus odatda latent (yashirin) holatda bo'ladi.

NATIJALAR

Pomidorlarda ToMV ning zarari juda katta. Tomat mozaika virusi – pomidorning issiqxonada ham, ochiq egatlarda ham uchraydigan xavfli kasalligidir. Bu kasallik belgilari juda ham turli xil bo'lib, o'simlik navi, virus virulentligi va o'sish sharoitiga bog'liq bo'lib, o'simlikni o'sishdan to'xtashi, gullash tezligining sustlashishi, transpiratsiyaning yomonlashuvi kabilar hisoblanadi. O'simlikni gullar va g'unchalari qurib qoladi, mekada shakar va organik kislotalar kam to'planadi. Mevalar kichkina va kam hosilli bo'lib qoladi. Mozaika alomatlariga qo'shimcha ravishda, bu virus, ma'lum sharoitlarda, pomidorda filamentli o'smalar va ichki meva nekrozining rivojlanishini keltirib chiqarishi mumkin. Pomidorning mozaika kasalligining asosiy sabablaridan biri ToMV: bargning deformatsiyasi, meva nekrozi, chiziqlanishi va boshqalar. Natijada pomidorlar qarib, nobud bo'lib boradi va ularning hosildorligi 15-20% ni tashkil qiladi. Mevalar standart shaklga ega bo'lmaydi va ta'mi o'zgaradi. Ba'zi navlarda poyada nekrotik chiziqlar hosil bo'ladi, tepa qismlari nobud bo'ladi. Mevalarda yumaloq sarg'ish yoki jigarrang dog'lar paydo bo'ladi.

Tomat mozaikasi virusi (ToMV) - *Tomato mosaic virus* (ToMV) *Tobamovirus* avlodiga mansub. Virioni - uzun 300 x 19 nm qattiq tayoqcha shaklida, RNK tuzilishi spiral simmetriyali bo'lib, gemoni 6383 nukleotiddan iborat. Harorat ta'sirida faolligini yo'qotish nuqtasi 92 - 98° C, OSD 10^{-7} , xona haroratida infeksiya 2 yildan ortiq -10° C haroratda muzlatilganda esa undan

ham ko'p vaqt o'z aktivligini saqlab qoladi. ToMV pomidor o'simligini kasallantirishi bilan bir qatorda qishloq xo'jaligining asosiy ekinlari kartoshka, baqlajon, achchiq va shirin qalampir, beda, rayxon va boshqa madaniy va yovvoyi o'simliklarni zararlab, ularda turli kasallik alomatlarini keltirib chiqaradi. ToMV xo'jayin o'simliklarning o'sishiga ta'sir ko'rsatib, natijada pakanalikka olib keladi. Bunday o'simliklarning barg shakllari o'zgaradi, ya'ni barg yuzasi deformatsiyalanib, chetlaridan boshlab qurib boshlaydi, muhim fiziologik jarayonlar (fotosintez, transpiratsiya) susayadi. Buning natijasida hosildorlik keskin kamayishi bilan bir qatorda pomidor sifatini buzilishi, saqlanish muddati kamayishi, transportabelligi va boshqa xususiyatini yo'qotiladi.

Uning kasallik alomatlari pomidorda turlicha bo'lib, ular mozaika, barg shaklining o'zgarishi, mevaning nekrozlanishi va oqarishidan iboratdir. Mozaika barg plastinkasida to'q va och yashil dog'lanish ko'rinishida bo'ladi. ToMV kasallangan pomidor o'simligi bargining ipsimon yoki paprotniksimon shakllanishiga, mevaning oqarishi, dog'lanishi va dag'allashishiga olib keladi. Bunday kasallik alomatlari o'simlik rivojlanishining so'ngi fazalarida ToMV bilan kasallanishida sodir bo'lib, o'simlik boshlang'ich fazalarida kasallanganda o'simlikning pakanaligi, meva tugmasligi yoki kichrayishi kuzatiladi. O'simlik faqat ToMV bilan kasallansa, "oddiy strik", kartoshkaning X, Y viruslari va bodring mozaikasi virusi (BMV) bilan birga kasallansa "murakkab strik" belgilari rivojlanadi. Bulg'or qalampiri ToMV bilan kasallanganda barg yuzasida mozaika, ya'ni to'q yashil, sariq chiporlanish hosil bo'lib, o'simlik o'sishi sustlashadi. Virusga chidamsiz ba'zi navlarda poyada nekrozlar paydo bo'lib, o'simlik qurishi kuzatiladi. Mevalarida sariq va jigarrang dog'lar paydo bo'ladi.

Bundan tashqari ba'zi bir virus shtammlari o'simlikni juda kuchli zararlaydi. Bunda o'simlik poyasi judayam nozik bo'lib, poya va barglarda 5-6 mm keladigan to'q-yashil va qora, birlashib yirik maydonchalarni hosil qiladigan, nekrotik chiziqlar paydo bo'ladi. Nekrozlar o'tkazuvchi

tizimni ham zararlashi mumkin. Zararlangan mevalarning o'lchami kattalashmaydi, ularda har xil shakldagi botib kirgan dog'lar paydo bo'ladi. Kasallangan o'simlik hujayralarida geksogonal plastinkalarga o'xshash birikmalar hosil bo'ladi.

Mozaika alomatlarining yuzaga kelishida pomidor o'simligining o'stirish sharoiti katta ahamiyatga ega. Qishda issiqxonalarda past harorat va past quyosh radiatsiyasi ta'sirida mozaika alomatlari kuchsiz rivojlanadi, biroq o'simlik va barglar o'sishdan to'xtashi mumkin. Barglardagi mozaikasi va buralish alomatlari yuqori haroratda yorqinroq yuzaga chiqadi. Yozda davomli quruq va iliq havoda kasallik latent (yashirin) shaklga o'tadi. Kechki zararlanishda mevalar ichki qismi 1-2 shodalarining qorayishi sodir bo'ladi.

Pomidor jigarrang burushgan mevasi virusi (ToBRFV) (Tomato brown rugose fruit virus)-yangi aniqlangan virus bo'lib, pomidor, qalampir kabi o'simliklarga ta'sir ko'rsatadi. ToBRFV birinchi marta Isroilda 2014-yilda paydo bo'lgan. O'shandan beri u boshqa bir qator mamlakatlarda, shu jumladan, Arizona va Kaliforniyada 2018 va 2019 yillarda issiqxonalar tarqalishi aniqlangan.

AQSh sanoatiga qo'shimcha tashvish tug'diradigan virus - TOBRFV AQShga pomidor va qalampir mevalarini eksport qiluvchi mamlakatlarda mavjud bo'lgan, bular qatoriga Meksika (bu erda 2018 yilda keng tarqalgan edi) va Gollandiya kiradi. Virus Kanadada topilmagan, ammo AQShga olib kirilgan ba'zi mevalar Kanadadan o'tadi. AQSh Qishloq xo'jaligi vazirligi (USDA) 2019 yil 22 noyabrdan boshlab importga cheklovlarni kuchaytirmoqda. Ushbu harakatlar virus mavjud bo'lgan mamlakatlarda urug'lik partiyalari va transplantatsiya sinovlari, shuningdek, ushbu mamlakatlar va Kanadadagi pomidor va qalampirni tekshirishni o'z ichiga oladi.

ToBRFV tamaki mozaikasi virusi (TMV) va pomidor (ToMV) mozaik virusi bilan bir xil guruhga kiradi. Biroq, ushbu ikki virusga chidamli pomidor o'simliklari ToBRFVga chidamli emas. Hozirgi vaqtda pomidorning tijorat navlari ToBRFVga chidamli emas.

ToBRFV ning barg belgilari ajinlar va pufakchalar bilan birga keladi. Mevasi sarg'ishlikka ega va qo'pol yuzasi bilan chegaralangan (rugoza burishgan degan ma'noni anglatadi). Meva nobud bo'lishi yuz berishi mumkin, qolgan meva rangsiz, och va jigarrang, nekrotik dog'larga ega bo'lishi mumkin.

ToBRFV TMV va ToMV bilan o'xshash bo'lganligi sababli, uning tarqalishi va boshqarilishi o'xshash. Barcha viruslar mexanik ravishda odamlar va uskunalar orqali yuqtirilgan o'simliklarga tegib, uni sog'lom o'simlikka o'tkazadi. TOBRFV juda barqaror va juda yuqumli. Pomidor va qalampir o'simliklari transplantatsiya, tikish, bog'lash, kesish va yig'ish orqali yuqori darajada ishlov berilganligi sababli yuqori mexanik infeksiyaga ega. TOBRFVning yuqori barqarorligiga ega. Issiqxona sharoitida arilar tarqalishi haqida ma'lumotlar mavjud. Biroq, shira, barg barglari yoki oq pashshalar tomonidan o'simlikdan o'simlikka yuqishi haqida ma'lumotlar yo'q.

Oldini olishga qaratilgan harakatlar quyidagilarni o'z ichiga oladi: Issiqxona ishchilarini qo'llarini va vositalarini tez-tez yuving va sterilizatsiya qiling. Issiqxonalar oralig'ida olib tashlanadigan bir martalik qo'lqoplarni yetkazib bering. Uskunalarni yaxshilab yuving va ishchilariga kiyim almashtirilishi lozim. TOBRFV - bu yuqori virusli, juda agressiv virus bo'lib, Tm-22 va shu qatorda L qarshilik genlariga ega bo'lmagan sezgir qalampir bilan pomidorga jiddiy infeksiyani keltirib chiqarishi mumkin. Ushbu virus, ayniqsa intensiv ishlab chiqarish amaliyotida, mexanik ravishda tez va oson tarqalishi mumkin.

Alomatlar xilma-xilligi bilan farq qilishi mumkin va ba'zi hollarda yuqtirilgan navlar asemptomatik bo'lishi mumkin. Odatda, virus yuqtirgan o'simliklar og'ir alomatlari bo'lgan mevalarga ega.

XULOSA

Bugungi kungacha o'simliklarni kasallantiruvchi 1000 dan ortiq fitoviruslar aniqlangan bo'lib, ularning har biri o'ziga xos



xususiyatlari bilan bir-biridan farqlanadi. Soʻngi yillarda olingan maʼlumotlarga qaraganda birgina pomidor oʻsimligini butun dunyoda 100 dan ortiq viruslar kasallantirishi aniqlangan boʻlib, ularning har biri morfologiyasi, tuzilishi, antigenligi, oʻsimlikda keltirib chiqaradigan alomatlari kabi bir qator xususiyatlari bilan bir-biridan farqlanadi.

1. Pomidor oʻsimligi kompleks viruslar bilan kasallanishi natijasida ziyon 100% ni tashkil etib, katta-katta maydonlarda pomidor ekini oʻsish davrini tugatmay qurib qolish hollari uchraydi.

2. Bu virusli kasallik belgilari juda ham turli xil boʻlib, oʻsimlik navi, virus virulentligi va oʻsish sharoitiga bogʻliq boʻlib, oʻsimlikni oʻsishdan toʻxtashi, gullash tezligining sustlashishi, transpiratsiyaning yomonlashuvi kabilar namoyon boʻladi.

3. Oʻsimlikni gullar va gʻunchalari qurib qoladi, mekada shakar va organik kislotalar kam toʻplanadi. Mevalar kichkina va kam hosilli boʻlib qoladi.

4. Pomidorning mozaika kasalligining asosiy sabablaridan biri bargning deformatsiyasi, meva nekrozi, chiziqlanishi va boshqalar. Natijada pomidorlar qarib, nobud boʻlib boradi va ularning hosildorligi 15-20% ni tashkil qiladi. Mevalar standart shaklga ega boʻlmaydi va taʼmi oʻzgaradi. Baʼzi navlarda poyada nekrotik chiziqlar hosil boʻladi, tepa qismlari nobud boʻladi. Mevalarda yumaloq sargʻish yoki jigarrang dogʻlar paydo boʻladi.

5. ToMV kasallangan pomidor oʻsimligi bargining ipsimon yoki paprotniksimon shakllanishiga, mevaning oqarishi, dogʻlanishi va dagʻallashishiga olib keladi.

6. TOBRFV juda barqaror va juda yuqumli. Pomidor va qalampir oʻsimliklari transplantatsiya, tikish, bogʻlash, kesish va yigʻish orqali yuqori darajada ishlov berilganligi sababli yuqori mexanik infeksiyaga ega.

7. TOBRFV - bu yuqori virusli, juda agressiv virus boʻlib, Tm-22 va shu qatorda L qarshilik genlariga ega boʻlmagan sezgir qalampir bilan pomidorga jiddiy infeksiyani keltirib chiqarishi mumkin. Ushbu

virus, ayniqsa intensiv ishlab chiqarish amaliyotida, mexanik ravishda tez va oson tarqalishi mumkin.

REFERENCES

1. Ауупов Р.Х. Pomidorni yetishtirish va qayta ishlash..Т.Молиа .2007 . 4 bet.
2. Амбросов А.Л. Вирусные болезни картофеля и методы выращивания здоровых клубней. –Минск: Урожай, 1964.199 с.
3. Adams M.J., Accotto G.P., Agranovsky A.A., Bar-Joseph M., Boscia D., Brunt A.A., Candresse T., Coutts R.H.A., Dolja V.V. & other authors. Genus Potexvirus. In Virus Taxonomy: Eighth Report of the International Committee on Taxonomy of Viruses, 2005. - P. 1091–1095.
4. Вахабов А.Х. Характеристика наиболее распространенных фитовирусов в экологических условиях Узбекистана: Дис....доктор. биол. наук. – Киев: Институт Микробиологии АН УР, 1989. - 254 с.
5. Bald JG; Paulus AO, 1963. A characteristic form of tobacco mosaic virus in tomato and *Chenopodium murale*. *Phytopathology*.N –P.627-629.
6. Власов.Ю.И.Сельскохозяйственная вирусология.1982. ст.74-75
7. Файзиев В.Б., Хусанов Т.С. Очистка X-вируса картофеля и приготовление антисыворотки// Международной молодёжный научный форум «Ломоносов»: Материалы VII Международная конференция студентов, аспирантов и молодых учённых «Ломоносов». 12-15 апреля 2010. –Москва, 2010. –С. –48.
8. Гнутова Р.В., Толкач В.Ф. Фитопатогенные вирусы и их штаммы, идентифицированные на азиатской территории России // Микробиологический журнал. –Москва. 2004.- Т. 66. - №4. - С. 48-55.
9. Kumar S,Udaya Shankar A.I.Nayaka S.C,Lund O.S,Prakash H.S.Detection of tobacco mosaic virus and Tomato mosaic virus in pepper and tomato by multiplex RT-PCR.Letters in applied microbiology. 2009-P.359-363

10. Ronald Goldy. Tomato brown rugose fruit virus.(ToBRFV); A new concern for tomato and pepper producers. Michigan state University. Extension-November.25.2019.-P.354.

11. Зейрук В.Н., Овэс Е.В., Абашкин О.В. и др. Изменение видового состава переносчиков вирусов картофеля по итогам многолетнего мониторинга // Картофелеводство (Минск). 2008. Т. 14. С. 391–396.

12. Crosslin J., Hamm P., Shiel P., Hane D., Brown C. and Berger P. Serological and Molecular Detection of Tobacco Veinal Necrosis Isolates of Potato Virus Y (PVY^N) from Potatoes Grown in the Western United States. Amer. J. Path. Res., 82: 2005. – P. 263-269.

13. Crowley NC. The use of skim milk in preventing the infection of glass-house tomatoes by tobacco mosaic virus. Journal of the Australian Institute of Agricultural Sciences, 24: -P.261-263.

14. Lanter JM, McGuire JM, Goode MJ. Persistence of tomato mosaic virus in tomato debris and soil under field conditions. Plant Disease. 1982;66(7):552-555.

15. Darzi E, Smith E, Shargil D, Lachman O, Ganot L, Dombrovsky A. The honey bee *Apis mellifera* contributes to Cucumber green mottle mosaic virus spread via pollination. Plant Pathology. 2018;67(1):244-251.

16. Норбобоева, Т., & Каримов, Г. (1978). Красильные растения—эдификаторы Узбекистана. *Эколого-биологические особенности важнейших сырьевых растений в культуре. Ташкент*, 139-148.

17. G. U. Suyunova, & B. Z. Usmonov (2021). BIOLOGIYA FANINI O'RGATISHDA AXBOROT-KOMMUNIKATSIYA TEXNOLOGIYALARI O'RNI VA VAZIFALARI. Academic research in educational sciences, 2 (3), 669-678. doi: 10.24411/2181-1385-2021-00453

18. Ахмадалиев, Б. Ж., Абдувалиев, Б. А., Қодирова, З. Н., Нугманова, К. И., Каримов, Р. А., & Зайлобидинов, Н. У. ТОМАТО MOSAIC TOBAMOVIRUS ИНФЕКЦИЯСИГА СПЕЦИФИК



АНТИЗАРДОБ ОЛИШ ВА ТИТРИНИ АНИҚЛАШ. ЁШ ОЛИМЛАР АХБОРОТНОМАСИ.

19. Yakubjonova, S. T., Norboboyeva, T., & Saidmurotov, S. X. (2021). "O'SIMLIKLARNING HAYOTIY SHAKLLARI" MAVZUSINI O'QITISHDA HAMKORLIKDA O'QITISH TEXNOLOGIYASIDAN FOYDALANISH SAMARADORLIGI. Academic research in educational sciences, 2(2), 1012-1017.

20. Zulxumor Shuxradovna Mirzayeva, & Voxid Baxromovich Fayziev (2021). O'QUVCHILARDA MUSTAQIL TA'LIMINI TASHKIL ETISH YO'LLARI. Academic research in educational sciences, 2 (5), 362-366. doi: 10.24411/2181-1385-2021-00899.



“AQLLI AVTOTURARGOH” MOBIL ILOVASI VA UNING SAMARADORLIGI

Gulira’no Xolmurot qizi Xalilova

Toshkent davlat transport universiteti, doktorant

ANNOTATSIYA

Ushbu maqolada, hozirgi kunda shaharlar uchun dolzarb muammolardan biriga aylangan avtoturargoh yetishmashli, bo’sh joy qidirishdagi yo’qotishlar va ularga yechimlar haqida so’z boradi. Maqolaning birinchi qismida, avtoturargoh uchun mobil ilova foydalanuvchilari fikrini o’rganish maqsadida o’tkazilgan so’rovnoma va uning natijalari tahlil qilingan. So’rovnomada haydovchilarning avtomobillarini to’xtatib qo’yishi uchun bo’sh joy izlashdagi yo’qotgan vaqtlari, ularning shahar markazlaridagi turar joylardan qanchalik ko’p foydalanishlari va mobil ilovadan foydalanishga hoxishlari haqidagi savollar berilgan.

Maqolaning ikkinchi qismida esa, mobil ilovaning nazariy dizayni, sxemalari, afzallik va kamchiliklari keltirilib, xulsa berilgan.

Kalit so’zlar: Mobil ilova, avtoturargoh tizimi, “smart city”, telematik vosita.

KIRISH

Rivojlangan va rivojlanayotgan davlatlarning markaziy shaharlarida hozirgi kunda avtoturargoh yetishmaganligi yoki qulayliklarning kamligi sababli tirbandlik, haydovchilarning joy qidirishdagi bekorga vaqt sarflashi, atmosferaga zararli gazlarning chiqishi va shu kabi muammolar yuzaga kelmoqda. Ko’pgina maqola va tezishlarda bu muammolarning yechimlari ko’rsatib o’tilgan [1-3]. Hozirgi kunda shaharlarimizda avtomobillarni to’xtatish uchun bo’sh joy topish qiyinlashmoqda. Zamonaviy texnologiya va jihozlar orqali avtoturargohlar yanada takomillashtirilishi va samaradorligini oshirish usullarini olimlar

o‘z izlanishlarida ko‘rsatib bergan. Masalan, sensor va kameralar o‘rnatilgan avtoturargohdagi ma‘lumotlarni olish, tahlil qilish va nazorat qilish mumkin. Ushbu texnologik jihozlar yuqoridagi muammolarni qisman bartaraf etishi aytib o‘tilgan [4-5].

Chiqindilar ishlab chiqilishining 75 foizdan ko‘prog‘i, emmissiyaning 80 foizi, elektr energiyasidan foydalanishning 75 foizi bugungi kun shaharlarimiz hisobiga to‘g‘ri kelmoqda. Yevropa bo‘yicha umumiy CO2 emmissiyasining taxminan 20 foizini avtomobil transportidan chiqayotgan gazlar, qolgan 40 foizini shahar mobilizatsiyasi tashkil qiladi. Ma‘lumotlardan kelib chiqib aytiladiki, urbanizatsiya yuqori bo‘lgan joylarda kundalik yo‘llardagi tirbandlikning 30 foizi avtomobil uchun bo‘sh turar joyi qidirish vaqtida yuzaga keladi [6]. Shunga ko‘ra, shaharlarimizdagi tirbandliklarni kamaytirish uchun avtoturargohlarni intellektual jihozlar, telematik vositalar va joy qidirish vaqtini kamaytirishga yordam beruvchi programmalar ishlab chiqish orqali erishish mumkin. To‘xtash joylari sohasida qo‘llaniladigan intellektual smartfon ilovalari “Aqlli shahar” loyihasining asosiy qismlaridan biridir [7-8].

Avtomobil turar joylari shahar hududining ko‘p qismini tashkil edi. Masalan, [9] ga ko‘ra, Los Angeles shahrining 81 % qismi to‘xtash joylari bilan ta‘minlangan. Ushbu ko‘rsatkich yevropa shaharlarida biroz kamroq. Parijda 23%, Myunxenda 23%, Kopengagen 19% va Gamburgda 18% umumiy hudud qismiga nisbatan avtoturar joylari bilan ta‘minlangan. Demak, biz avtoturargohlardan samarali foydalanishda ilmiy va amaliy jihatdan asoslangan usullarini tadbiq etishimiz kerak.

“Aqlli avtoturargoh” tizimini qo‘llash ko‘chalardagi tirbandliklarni kamaytiradi. Agarda haydovchi turar joyni qanchalik tez topsa, qidirishga ortiqcha vaqt va yonilg‘i sarflamaydi. Bu orqali atrof muhitning zararlanishi oldi ham olinadi.

Zamonaviy texnologiyalarsiz avtoturargohdagi muammolarning yechimini topib bo‘lmaydi. Maqolada avtoturargohlar muammolarini hal qilishda yordam

beruvchi yechimlar ko'rsatilgan. Shu bilan birga Toshkent shahridagi avtoturargohdan foydalanuvchilari fikri ham keltirilgan.

MATERIALLAR VA METODLAR

Maqolaning birinchi qismida "Smart parking" ilovasi uchun o'tkazilgan so'rovnoma berilib, yaratiladigan ilovaning so'rovnoma o'tkazilgan shaharda qanchalik darajada muvaffaqiyatli bo'lishi mumkinligi asoslangan. Ikkinchi qismda esa avtoturargoh ilovasi haqida, uning afzallik va kamchiliklari keltirib o'tilgan.

1.1. "Smart parking" ilovasi uchun so'rovnoma

Har bir yangi jamoat proyeksi uchun foydalanuvchilarining fikri muhim ahamiyatga ega hisoblanadi. Ushbu onlayn so'rovnoma Toshkent shahrida harakatlanuvchi haydovchilar o'rtasida o'tkazildi. 41 nafar haydovchilar o'zlarining savollarga javoblarini berib fikr bildirishdi.

So'rovnoma 10 ta savoldan tashkil topgan bo'lib, ular quyidagilardir:

1- Savol: Avtomobilingizni turargohga joylashtirish uchun ko'p joylarni izlashingizga to'g'ri keladimi yoki birinchi martada osongina joy topa olasizmi?

2- Savol: Joy topish uchun qancha vaqt sarflashingizga to'g'ri keladi?

3- Savol: Shahar markazidagi avtoturargohlardan qanchalik tez-tez foydalanasiz?

4- Savol: Qanchalik tez-tez avtoturargohdan joy izlashingizga to'g'ri keladi?

5- Savol: Avtoturar joyini ko'p vaqt izlashingiz davomida rejalashtirgan ishingizdan voz kechib, rejangizni o'zgartirganmisiz(masalan bozorga yoki turli xil ko'ngil ochar maskanlarga kirish kabilarda)?

6- Savol: Avtoturargohda ro'y bergan YTH(yo'l transport hodisasi) ga guvoh bo'lganmisiz?

7- Savol: Siz avtoturargohlardagi bo'sh joylar sonini ko'rsatuvchi hamda to'xtash joyiga olib boruvchi smartfon ilovasidan foydalanishni xohlaysizmi?

8- Savol: Avtoturargohdan avtomobilingiz uchun smart ilova orqali oldindan joy band qilishni xohlaysizmi?

9- Savol: Yuqoridagi xususiyatlarga ega bo'lgan "Smart Parking" ilovasini smartfoningizga yuklab olishni xohlaysizmi?

10- Savol: GPS navigatoridan foydalanasizmi? Qanday turidan?

“Smart parking” ilovasi uchun takliflar.

Shaharlarda transport telematik vositalarining mavjudligi, real vaqt rejimida doimiy ma'lumotlar bilan ta'minlanish imkoniyatini beradi. Agarda avtoturargohlar to'g'risida, undagi bo'sh joy haqida ma'lumot haydovchiga to'g'ridan to'g'ri yetkazilsa, joy izlash natijasida yuzaga keladigan yo'qotishlarni bartaraf etishga erishish mumkin.

Alohida bino yoki ko'cha chetida bo'lmagan avtoturargoh tashkil etish ko'p mablag' talab etadi. Bundan tashqari shahar dizyniga ham o'z ta'sirini o'tkazadi. Ko'cha chetida avtomobillarning to'xtab turishi esa tirbandlikni keltirib chiqarishi mumkin.

Shaharlarni rejalashtiruvchi D. Shoup aytganidek, ko'cha chetida turar joylarning bepul bo'lishi ko'chada avtomobillar ko'payib ketishiga va tirbandlikka olib keladi.

“Smart paking” tizimini joriy qilishda internet tarmog'i, telematik vositalar, intellektual texnika va texnologiyalar yetishmasligi kamchiligi hisoblanadi. Ammo, mobil ilova orqali avtoturargoh haqida real vaqt rejimida ma'lumot olishimiz, joylarni oldindan band qilish va joy uchun pul to'lash imkoniyati bo'ladi. Bu tizimni tashkil qilishdagi xarajatlardan, avtoturargoh qidirishdagi xarajatlar yuqori bo'lishi mumkin.

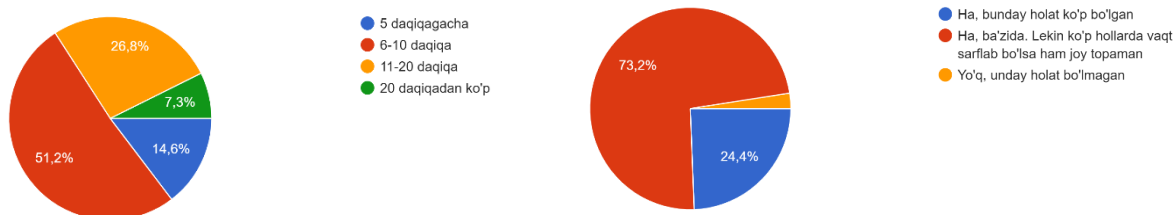
NATIJALAR

Yuqoridagidek natijalar ham 2 qismdan tashkil topgan. Birinchi qismda so'rovnoma natijalari to'g'risida ma'lumot

berilgan. Ikkinchi qismda esa “Smart parking” ilovasi nazariy sxemasi keltirilgan.

Haydovchilarning savollarga javoblari tahlili

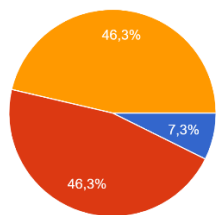
So‘rovnoma o‘tkazilgandan keyin javoblar tahlil qilinganda ko‘pchilik haydovchilar (95,1%) avtomobili uchun turar joy topishda qiyinchilikka uchrashi aniqlandi. To‘xtash uchun bo‘sh joy topishga esa haydovchi quyidagicha vaqt sarf qilishiga to‘g‘ri kelar ekan (1-rasm).



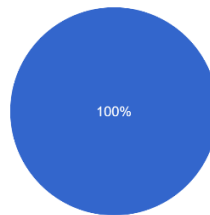
1-rasm. Bo‘sh joy izlashga sarflanadigan vaqt. **2-rasm.** Haydovchilarning bo‘sh joy qidirish davomida rejalarini o‘zgarishi

1-rasmdan ko‘rinib turibdiki, o‘rtacha haydovchilar bo‘sh joy izlashlariga 6-10 daqiqa sarflashar ekan. Ushbu haydovchilarning ko‘pchiligi shahar markazidagi avtoturargohlardan har doim yoki odatda tez tez foydalanishadi. Bo‘sh joy qidirishda ba’zi (24,4%) haydovchilar rejalashtirgan ishlaridan voz kechishini, ko‘pchiligi esa ko‘p vaqt sarf qilinsa ham joy topishlarini aytishgan (2-rasm).

Shu bilan birga shaharlarda bo‘sh joy qidirishda tirbandlik yanada ko‘proq kuzatiladi. Haydovchilar esa joy izlashda atrofga yetarlicha e‘tibor bermasligi oqibatida turli xil ko‘ngilsiz hodisalar yuzaga kelishi mumkin. So‘rovnomada qatnashganlarning 19 nafari turargohardagi YTH lariga guvoh bo‘lganini, 3 nafar haydovchi bu hodisa o‘zlari bilan sodir bo‘lganini ko‘rsatishgan (3-rasm).



● Ha, o'zim bilan sodir bo'lgan
 ● Ha, guvohi bo'lganman
 ● Yo'q duch kelmaganman



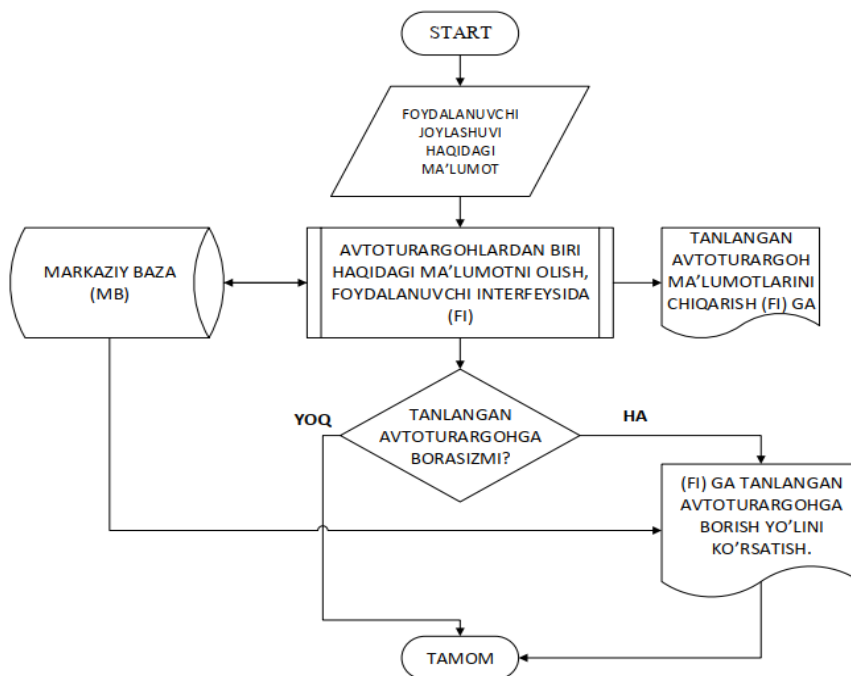
● Ha
 ● Yo'q

3-rasm. Avtoturargohda YTH 4-rasm. Mobil ilovadan foydalanishni xohlash

Ushbu ko'rsatilayotgan muammolarning yechimi sifatida "Smart parking" ilovasini smartfon ilovasiga yuklab olish va undan foydalanish yuzasidan berilgan savollarga barcha haydovchilar (100%) ijobiy javoblarni berishgan (4-rasm). GPS navigatoridan barcha haydovchilar smartfoni ilovasidan foydalanishadi.

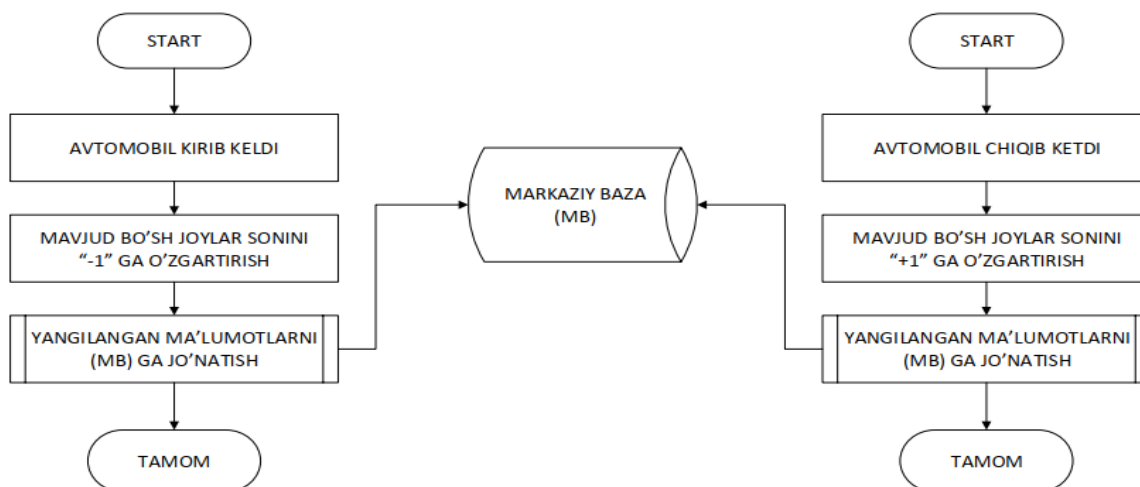
O'tkazilgan so'rovnoma savollariga javoblardan shuni aytishimiz mumkinki, avtoturar joy izlashdagi yo'qotishlarni kamaytirish va haydovchilar vaqtini tejashda ushbu mobil iova samarali yechim hisoblanadi.

1.2. "Smart parking" ilovasining nazariy dizayni quyidagi sxemalarda ko'rsatilgan. 1-sxemada haydovchi interfesida beriladigan ma'lumotlar keltirilgan.



1-sxema. Avtoturargoh qidirish va borish yo'lini ko'rsatish sxemasi

2-sxemada esa avtomobillar avtoturargohga kelish va chiqib ketish ma'lumotlarini markaziy bazaga jo'natilishi keltirilgan.



2-sxema. Avtomobil avtoturargohga yetib kelishi va jo'nab ketishi sxemasi

XULOSA

O'tkazilgan tadqiqotlar natijasida shuni aytishimiz mumkinki, "smart parking" tizimini qo'llash orqali shaharlardagi tirbandlik muammosini qisman hal qilish, bo'sh joy qidirishdagi yo'qotishlardan kelib chiqadigan zararlarni oldini olish mumkin bo'ladi. Bunda mobil ilova yordamida samaradorlik yanada oshiriladi.

REFERENCES

- Samatov, R. (2023). AVTOTURARGOH QIDIRISHDAGI MUAMMOLAR VA YECHIMLAR. *Development and innovations in science*, 2(4), 19-21.
- Kalašová, A., Čulík, K., Poliak, M., & Otahálová, Z. (2021). Smart parking applications and its efficiency. *Sustainability*, 13(11), 6031. <https://doi.org/10.3390/su13116031>.
- Saltzman, R. M. (1994). Three proposals for improving short-term on-street parking. *Socio-Economic Planning Sciences*, 28(2), 85-100. ISSN 0038-0121, [https://doi.org/10.1016/0038-0121\(94\)90008-6](https://doi.org/10.1016/0038-0121(94)90008-6).

4. Shao, W., Salim, F. D., Gu, T., Dinh, N. T., & Chan, J. (2017). Traveling officer problem: Managing car parking violations efficiently using sensor data. *IEEE Internet of Things Journal*, 5(2), 802-810.
5. Ali, G., Ali, T., Irfan, M., Draz, U., Sohail, M., Glowacz, A., ... & Martis, C. (2020). IoT based smart parking system using deep long short memory network. *Electronics*, 9(10), 1696.
6. Mangiaracina, R., Tumino, A., Miragliotta, G., Salvadori, G., & Perego, A. (2017, September). Smart parking management in a smart city: Costs and benefits. In *2017 IEEE International Conference on Service Operations and Logistics, and Informatics (SOLI)* (pp. 27-32). IEEE.
7. TJB, D. D., Subramani, A., & Solanki, V. K. (2017). Smart city: Iot based prototype for parking monitoring and management system commanded by mobile app. *Annals of Computer Science and Information Systems*, 10, 341-343.
8. Samatov, R., & Xalilova, G. (2022). AQLLI AVTOTURARGOHLAR TASHKIL QILISHDA PYTHON DASTURIDA YARATILGAN PROGRAMMA ORQALI SAMARADORLIKNI OSHIRISH. *Евразийский журнал академических исследований*, 2(13), 916-918.
9. Manville, M., & Shoup, D. (2005). Parking, people, and cities. *Journal of urban planning and development*, 131(4), 233-245.

PATIENT SAFETY CULTURE AMONG HEALTH CARE PROVIDERS AT KABUL UNIVERSITY OF MEDICAL SCIENCES ABU ALI IBN SINA EDUCATIONAL HOSPITALS

Zaker Hussain, Hussain Pour

Faculty member, Department of Maternal and Child Health, Kabul University of
Medical Science, Afghanistan

Ainullah Masoomi

Faculty member, Department of Histology, Kabul University of medical science,
Afghanistan

Abdul Rahim Raheen

Professor at the Department of Neonatology, Kabul University of Medical
Science, Afghanistan

Muhamad Farid Barnayar

Professor at the Department of Pathology, Kabul University of Medical Science,
Afghanistan

Shahrabano, Taheri

Faculty member, Department of Midwifery, Kabul University of medical science,
Afghanistan

ABSTRACT

Background: In the field of healthcare, the well-being of patients is often compromised by instances of unsafe care or medical errors, leading to additional costs for both individuals and healthcare systems. Enhancing and fostering a culture of patient safety within the healthcare industry plays a crucial role in enhancing the quality of care provided to patients.

Aim: to assess the current state of patient safety culture among health care providers at Kabul University of Medical Sciences Abu Ali Ibn Sina educational hospitals.

Design and methods: A descriptive cross-sectional study was conducted from June 2023 to September 2023 at the Kabul University of Medical Sciences Abu Ali Ibn Sina educational hospitals. The data were collected using the Persian version of the standard Patient Safety

Culture Survey questionnaire, which consisted of 12 dimensions; the collected data were analyzed using the statistical packages for social science version 22.

Results: Among 282 health care workers, 270 completed the study, with a response rate of 95.74%. From the respondents, 205 (75.9%) were males, and the mean age was 33.3 (\pm 9.2) years. According to 12 aspects of patient safety culture, two indices of teamwork within hospital units and organizational learning (continuous improvement) were among the high-level positive responses, with average positive response rates of 78% and 64%, respectively. On the other hand, non-punitive responses to errors and hospital handoffs and transitions were at the lowest levels, with average positive response rates of 35.8% and 36.7%, respectively. The total mean patient safety culture in understudy hospitals was 51.78; in this study, 53.3% never reported at least one event in the last 12 months.

Conclusions: In the hospitals under investigation, patient safety was at an average level. It is suggested that hospitals emphasize patient safety issues more. The areas that had the lowest average ratings should receive special attention in order to strengthen them.

Keywords: patient safety, patient safety culture, Educational hospital, Kabul University of Medical Science.

INTRODUCTION

Human interactions in modern systems of providing health services, along with the use of complex technologies and new treatments, bring unwanted injuries, which are referred to as medical errors or harmful accidents [1]. After the publication of the United States Health Institute (Institute of Medicine, IOM) in 1999, based on the prevalence of health errors in this country, the category of patient safety received the attention of researchers and health experts [2]. The right to be safe while receiving health services is one of the most obvious human rights, and this issue is one of the concerns of any health service delivery system. Currently, most developed countries have realized that only having management systems and new and advanced technology in hospitals and health service systems is not enough to achieve sustainable development, but improving safe behaviors in employees, values, beliefs and attitudes They are concerned with safety and the organization's attitude towards safety, which basically forms their safety culture, is the way to prevent accidents [1]. Patient safety is a fundamental principle of health care and is now being recognized as a large and growing global public health challenge. Global efforts to reduce the burden of patient harm have not achieved substantial change over the past 15 years, despite pioneering work

in some health care settings. Patient safety is a framework of organized activities that creates cultures, processes, procedures, behavior's, technologies and environments in health care that consistently and sustainably lower risks, reduce the occurrence of avoidable harm, make error less likely and reduce its impact when it does occur. Every point in the process of care-giving contains a certain degree of inherent unsafely Clear policies, organizational leadership capacity, data to drive safety improvements, skilled health care professionals and effective involvement of patients and families in the care process, are all needed to ensure sustainable and significant improvements in the safety of health care, Patient safety in health care is an urgent and serious global public health concern. Patient harm exerts a very high burden on all health care systems across the world. Every year, an inadmissible number of patients suffer injuries or die because of unsafe and poor quality health care. Most of these injuries are avoidable. The burden of unsafe care broadly highlights the magnitude and scale of the problem. Patient harm due to adverse events is likely to be among the 10 leading causes of death and disability worldwide. It is commonly reported that around 1 in 10 hospitalized patients experience harm, with at least 50% being preventable. Around two-thirds of all adverse events resulting from unsafe care and the years lost to disability and death occur in LMICs [3].

Research design: Hospital-based descriptive cross-sectional study design was employed in Kabul University of Medical Sciences Abu Ali Ibn Sina educational hospitals.

Research Setting: The research study was conducted in the teaching hospitals of Kabul University of Medical Sciences Abu Ali Ibn Sina (Ali Abad, Institute of Cardiovascular Diseases, Stomatology Hospital, Mayvand, Eye Hospital, and Shahre Ara).

Study population

Source population: The target populations are all the health care providers working in the teaching hospitals of Kabul University of Medical Science, Abu Ali Ibn Sina.

Study population: Selected health care providers from the teaching hospitals of Kabul University of Medical Science, Abu Ali Ibn Sina.

Eligibility criteria

Inclusion criteria

- Health care providers, including doctors, nurses, midwives, librarians, anesthesia legists, and radiology technicians, have at least six months of work experience and are willing to participate in the study.
- Those health care providers who were full-time workers.

Exclusion criteria

- New employees with less than 6 months of experience in teaching hospitals and employees who are not interested in participating in this study.
- Those health care providers who were on annual leave at the time of the study.
- Staff who appeared in more than one staffing category or hospital area or unit.

Sample size determination and sampling technique: According to information from the Human Resource Department of KUMS, 672 health care workers have been working in six hospitals. Based on this sampling unit, a sample size of 245 out of 672 was calculated using the Cochran online formula:

- Based on the above formula, it gave a minimum sample size of 245; with a 15% nonresponse rate, the final sample size was 282.
- Using a stratified sampling technique based on the proportion of health care providers in teaching hospitals.

Research Materials

Research Tool: The Persian version of the Hospital Survey on Patient Safety Culture (HSOPSC) was used to assess patient safety culture. Among health care providers, Although originally developed in the USA, the HSOPSC has been widely used internationally (including in countries in the Middle East region) to study and evaluate perceptions about patient safety culture in hospital settings. The HSOPSC is comprised of 42 items, and the participants respond to the items on a 5-point Likert scale ranging from 'strongly disagree' to 'strongly agree' or from 'never to always'. The HSOPSC measures patient safety culture in Afghanistan's hospital in order to support teamwork and collaboration to improve patient safety. There are no measurement devices for patient safety in Afghanistan's national language. Afghanistan is also part of the international community and has similar health problems as most countries. Therefore, we used the HSOPSC tools to raise staff awareness about patient safety and assess the status of patient safety culture.

Data Collection: A hospital survey on patient safety culture (HSOPSC) questionnaire Translated and used to determine the culture of patient safety among health care providers in the teaching hospitals of Kabul University of Medical Sciences, Abu Ali Ibn Sina. This form includes two (2) sections and is filled out by the applicants according to their work experience and understanding and from Computer (Excel program, SPSS22) used for analysis.

Data Analysis Procedures: All section forms were checked cautiously. All variables of the form were entered into the Statistical Package for Social Sciences (SPSS) version 22. All the variables, which are included in the form, were checked for every mistake. Descriptive statistics, including means and standard deviations, were used to describe participants'

characteristics and dimensions of patient safety cultures. Frequency distributions were used to organize the data and present the responses obtained. The guidelines proposed by AHRQ were first used to analyze and interpret the respondents' perceptions of patient safety culture composites.

Ethical issues: In order to carry out this research, the relevant committees and councils of Abu Ali ibn Sina University of Medical Sciences, Kabul, discussed all aspects of the mentioned issue and then gave permission to carry out this research. By conducting this research, no problems were caused to patients or health care workers. In order to implement the plan as best as possible and comply with the ethical principles of the research, a brief explanation about the importance of the mentioned study has been presented to the health care workers, and if they agree with their participation, a questionnaire has been provided to them to complete. They could leave and keep confidentiality. The questionnaire was anonymous. It has been reviewed for approval by the Ethical Review Committee (ERC) of Kabul University of Medical Sciences. Participants' privacy and confidentiality were maintained by assigning codes to each of the key informants, and their anonymity was maintained throughout the research process.

Result

Background characteristics of the respondents: Out of the 282 healthcare workers who were given the questionnaire, 270 completed and returned it, resulting in a response rate of 95.7%. From the respondents, more than half of them were male (217; 54.1%), and the mean age of the workers was 33.13 (\pm 9.24) years. Regarding the professions of the respondents, most of them, 111 (41.1%), were doctors, followed by nurses, 95 (35.18%). The majority of the participants 130 (48.1%) had working experience ranging from 1 year to 5 years, and 282 (89.6%) of the workers had direct contact with the patient.

Table 1; Socio-demographic and professional characteristics of respondents

Age (years)	Minimum	Maximum	Mean	Std. Deviation
	21	65	33.133333	9.248169
Characteristics			Frequency	Percentage %
Gender				
	Male		205	75.9
	Female		65	24.1

Marital Status		
Single	95	35,2
Married	175	64.8
Hospital name		
Ali Abad hospital	114	42.2
Maiwand hospital	78	28.9
Shahr Aara	24	8.9
Heart Institute	24	8.9
Stomatology hospital	17	6.3
Eye hospital	13	4.8
Years of Work Experience		
1-5years	130	48.1
6-10years	110	40.7
11-15years	20	7.4
16-20 years	5	1.9
>20	5	1.9
Education level		
Specialist	56	20.7
Master	28	10.37
MD	16	5.9
DMD	11	4
Bachelor	120	44.4
Diploma	39	14.4
Professional Category		
Doctor	111	41.1
Nurse	95	35.18
Midwife	10	3.7
Technician	30	11.11
Pharmacists	11	4.1
Anesthetists	13	4.81

Hospital Work Unit		
Medical ward	90	33
Surgical ward	50	18.5
Pediatrics ward	34	13
ENT	20	7.4
Dermatology	12	4.4
Obstetrics ward	23	8.5
Laboratory/Radiology unit	30	11
Pharmacy unit	11	4
Direct contact with the patient		
Yes	242	89.6
NO	28	10.4
Attended Continuous medical Education		
Yes	118	43.7
NO	152	56.3
Attended workshop regarding quality control		
Yes	125	46.3
NO	145	53.7

Patient Safety Culture Dimensions

The twelve dimensions were examined to determine areas of strength (those where percent positive rating exceeds 75%) and those requiring improvement (scoring below 50 %). The proportion of positive responses for the dimensions of the patient safety culture varied from 35.8% for ‘frequency of Non-punitive response to error’ to 78% for ‘Teamwork within hospital units’ and the average positive response for all dimensions were 51.78% (table 2).

Table 2: Composite scores (mean % positive) for dimensions of patient safety culture

Dimensions	No of Items	% positive response
Organizational learning - continuous improvement	3	64

Teamwork within hospital units	4	78
Staffing work conditions	4	52.55
Supervisor/manager expectations & actions promoting safety	4	51.7
Feedback & communication about error	3	41.1
Teamwork across hospital units	4	62.5
Communication openness	3	39.1
Overall perception of safety	4	58
Adverse event reporting & recording	3	42.7
Hospital management support for patient safety	3	59.3
Hospital handoffs & transitions	4	36.7
Non-punitive response to error	3	35.8
Overall	42	51.78

Patient safety grade and numbers of events reported

In this study, the highest shared degree of patient safety was reported as 31.1% acceptable; in the same way, 27.4% were excellent, 19.6% were very good, 16.7% were poor, and 5.2% failed

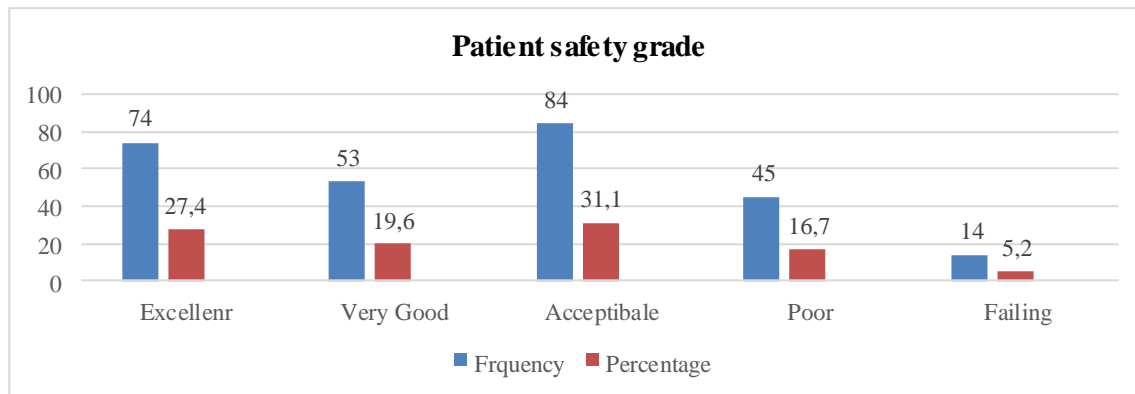
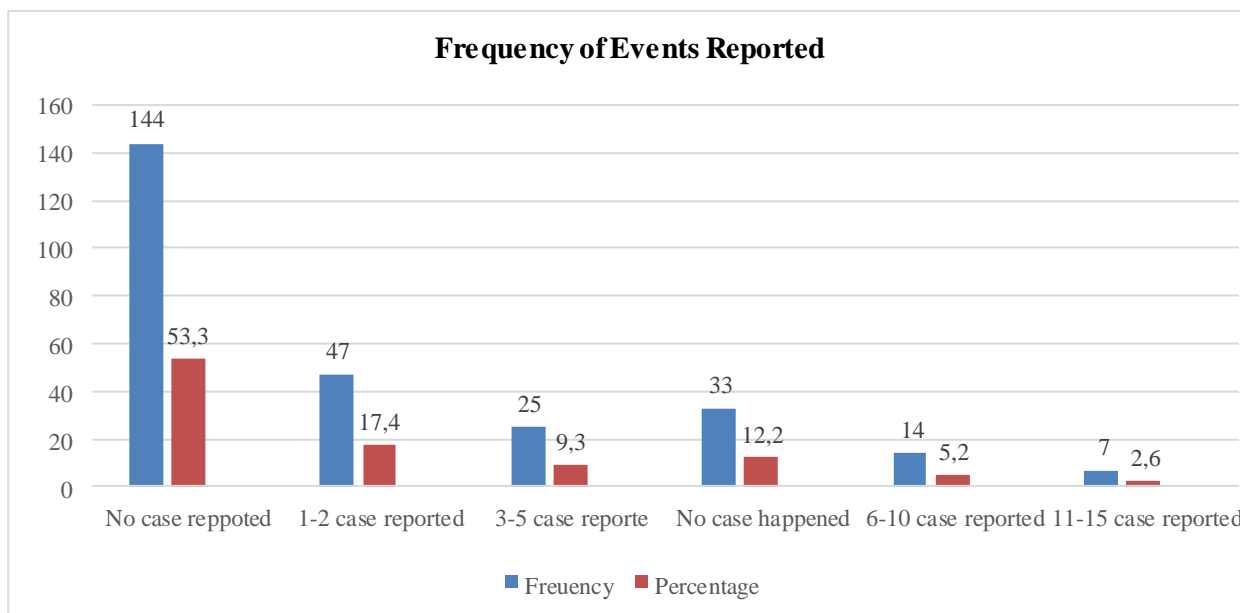


Figure 1: Percentage of health care professionals who gave their work area or unit a patient safety grade in Kabul University of Medical Sciences Abu Ali Ibn Sina educational hospitals.



In this study, the majority of respondents, 53.3%, have never reported an event. 17.4% reported 1-2 events, 12.2% stated that no events had occurred, while 9.3% reported 3-5 events. Similarly, 5.2% reported 6-10 events, and 2.6% reported 11-15



events.

Figure2: Percentage of health care professionals reporting events in the past 12 months in Kabul

University of Medical Sciences Abu Ali Ibn Sina educational hospitals.

DISCUSSION

This study assessed the status of patient safety among health care providers at Kabul University of Medical Sciences Abu Ali Ibn Sina educational hospitals. Using the Persian version of AHRQ's Hospital Survey on Patient Safety Culture tool. Based on the result the average positive result for all dimensions in this study was 51.78%, which is comparable with studies done in Netherlands 52.2% and Tehran 52%, a study assessing patient safety culture in 30 Lebanese hospitals reported an average score of 52.4%, similarly, a study of 12 Malaysian public hospitals obtained an average of 52.5% [16,17,25,26], Whereas it is lower than studies done in USA 65%, China 65%, Taiwan 64%, Palestine 62% and 62.7 % in Srilanka[18,19,20], This difference might be due to the difference in the socioeconomic status, the difference in participants' perception, the difference in staffing and hospital infrastructure, But it is Higher than a local study in Esteqlal hospital[3], The result indicates only one dimension "Teamwork within hospital units" was fit the criteria of good patient safety culture or area of strength which is ≥ 75 ; whereas dimensions "frequency of events reported and handoffs

and transitions”, non-punitive response to errors, , communication openness, feedback and communication about error, were fall below 50% of percent positive results that is poor/low patient safety culture area that needs improvement[21], Punitive culture was experienced in these hospitals which was evidenced Non-punitive response to error(35.8%) feel like their mistakes are held against them and worry about mistakes they made are kept in their personnel file. This view was supported by only 17.4% of participants’ report events ‘most either of the time or always’ and about53.3% of participants did not report any event in the last 12 months. Together this value indicates that staffs were scared to report errors and there may be a strong blame culture in the institutions that errors are not seen as an opportunity. This is in line with a study done in the Ethiopia[22]. The score for “supervisor/manager expectations and actions promoting patient safety” and “management support for patient safety” in the study area were 51.7% and 59.3% respectively. Which is lower than studies done in USA hospitals, Taiwan and Saudi Arabia[16,23].These may be their superiors are open to staff ideas; they are encouraged to say alternative viewpoints or express disagreement, may be managers are providing a good environment in which it is safe to admit errors and understand why the errors occurred. Regarding communication in the hospitals, the results were 39.1% for “communication openness” and 41.1% for “feedback and communication about error” in the study area. Which indicates majority of staffs were afraid to ask questions if they see something that may negatively affect patient care and did not get feedback about changes put into place based on their event reports. It is in line with studies done in Taiwan[16], whereas lower than USA and Netherland hospitals[16], This may be due to cultural differences especially communication styles. Western countries tend to be direct in communication, expect people to speak frankly and in a straightforward manner. With regard to the hospitals overall grading on patient safety, very few of the respondents, 47% either grades their hospitals as excellent or very good. It is much fewer when compared with that in the Palestine (63.8%), Saudi Arabia (69.6 %), Netherlands (63%), Taiwan (51%) and the USA 76 % [16, 20]. On the other hand, with respect to the number of events reported over the past 12 months, most of the respondents 53.3% never reported at least one event. That is lower when compared with studies done in Palestine 57.5 %, Saudi Arabia 57% and USA 45% of participants report at least one event [16, 20, 24].

5.1. Conclusion

There was a medium status of patient safety culture in Kabul University of Medical Sciences Abu Ali Ibn Sina educational hospitals, the reported dimensions, including "non-punitive



response to errors, hospital handoffs and transitions, communication openness, feedback and communication about errors, and frequency of events reported," were poor or low patient safety culture areas that need improvement, this research characterized the initial state of safety attitudes and behaviors within the university hospital system. The findings can guide targeted strategies to further strengthen a culture in which continuous quality improvement, open communication, and organizational learning from errors is promoted. This, in turn, should help elevate patient outcomes throughout Kabul University of Medical Sciences.

Recommendations

Based on our findings, we recommend that hospitals prioritize the variables we identified as crucial in our study and take action to enhance them in order to create a culture that values patient safety. Prioritized actions must focus on improving the institution's communication infrastructure, encouraging event reporting behavior, and bolstering support for patient safety from senior hospital administrators if they are to improve general impressions of patient safety. which calls for collective accountability from the government, healthcare organizations, managers, professionals, decision-makers, and researchers.

- The government needs to be required to appoint sufficient medical personnel to those facilities and create a setting that is suited for them.
- Hospitals must conduct ongoing evaluations of their organizations' patient safety cultures.
- Hospitals should develop and implement a robust non-punitive error reporting policy and system to address a low non-punitive error response score. This encourages employees to report mistakes without fear.
- Hospital leadership should provide targeted training to all employees, focusing on teams and units that score lower on specific dimensions such as "feedback and communication about errors." Empowering frontline employees is key.
- Managers should encourage staff ideas and debates and give them the freedom and confidence to report mistakes in order to foster a learning culture.
- A clear understanding of the status of safety culture requires further research using mixed methods to better explore professional attitudes toward patient safety culture, another variable (such as training, the presence of guidelines and protocols in hospitals), additional study participants (including patients), and data collection techniques (interviews, checklists).
- Hospitals should establish a formal mechanism for organizational learning from reported events so that they can



be analyzed and used to make changes that prevent future harm.

- Standardization of safety protocols and checklists across teaching hospital units is recommended to reduce variability in understanding and grading patient safety.
- Designate at least one clinical patient safety officer or champion in each hospital to lead focused improvement efforts based on their areas.

Limitations of the study

- **Generalizability:** The study was conducted in university hospitals. Caution is needed when extrapolating to other contexts with different characteristics.
- **Lack of patient perspectives** - Only gathering provider views neglects an important dimension of the safety culture.
- **A declaration bias** may be present in the quantitative evaluation of patient safety culture utilizing a self-administered questionnaire. In fact, a self-administered survey may affect the response of persons who, out of concern for retaliation or legal action, will give social replies that don't accurately reflect reality.

Author's contribution

All authors equally contributed, Z.H& AM drafted the manuscript and analyzed the data, ST data collection, MFB & AR translated the initial manuscript from Persian to English, intensively reviewed the manuscript, and responded to the reviewer's comments. **Conflicts Of Interest:** "The author(s) declare(s) that there are no conflicts of interest regarding the publication of this paper." **Acknowledgments:** The authors of this article would like to thank Kabul University of Medical Sciences, Educational hospitals, Directorate of EDC, the officials of Teaching Hospitals, Participants, without the cooperation of this institution; this research would not have been possible.

REFERENCES

1. Farid, M., Zamankhani, F., & Ataollahi, S. (2020). Safety Culture Provision of Healthcare Recipients among Healthcare Providers of Primary Health Centers in Karaj. <https://www.who.int/health-topics/patient-safety>.
2. Shamsadini Lori A, Osta A, Atashbahar O, Ramazani S, PourAhmadi MR, Ahmadi Kashkoli S. Patient Safety Culture from the Viewpoint of Nurses of Teaching Hospitals Affiliated with Shahid Beheshti University of Medical Sciences. *Journal of Health Based Research* 2016; 2(1): 81-92.
3. Jabarkhil, A. Q., Tabatabaee, S. S., Jamali, J., & Moghri, J. (2021). Assessment of patient safety culture among doctors,



nurses, and midwives in a public hospital in Afghanistan. *Risk Management and Healthcare Policy*, 1211-1217.

4. Patient safety [Internet]. World health organization. 2018 [cited 2018 Feb 12]. Available from: <http://www.who.int/patientsafety/about/en>

5. Malekzadeh, R., Abedi, G., Sarafraz, S., Ranjbar, M., & Assadi, T. (2021). Assessment of Patient Safety Culture in Hospitals Affiliated with Mazandaran University of Medical Sciences, 2020. *Journal of Mazandaran University of Medical Sciences*, 30(194), 127-133.

6. Mohebbifar, R., & Alijanzadeh, M. (2015). Studying patient safety culture from the viewpoint of staffs in educational hospitals in Tehran City. *Journal of health and safety at work*.

7. Tomazoni et al A. Patient safety culture at neonatal intensive care units : perspectives of the nursing and medical team. *Rev Lat Am Enfermagem*. 2014;22(5):755–63.

8. Ballangrud R, Hedelin B, Hall-lord ML. Nurses ' perceptions of patient safety climate in intensive care units : A cross-sectional study. *Intensive Crit Care Nurs* [Internet]. 2012;28(6):344–54. Available from: <http://dx.doi.org/10.1016/j.iccn.2012.01.001>.

9. Asma Ben Cheikh,&, Nabih Bouafia, Mohamed Mahjoub, Olfa Ezzi, Amel Nour MN. Patient's safety culture among Tunisian healthcare workers: results of a cross sectional study in university hospital. *Pan Afr Med J* [Internet]. 2016;24:299. Available from: <http://www.panafrican-med-journal.com/content/article/24/299/full/>

10. Wami SD, Demssie AF, Wassie MM, Ahmed AN. Patient safety culture and associated factors : A quantitative and qualitative study of healthcare workers ' view in Jimma zone Hospitals , Southwest Ethiopia. *BMC Health Serv Res*. 2016;16:495

11. Danielsson, M., Nilsson, P., Rutberg, H., & Årestedt, K. (2019). A national study of patient safety culture in hospitals in Sweden. *Journal of patient safety*, 15(4), 328.

12. Al-Mandhari, A., Al-Zakwani, I., Al-Kindi, M., Tawilah, J., Dorvlo, A. S., & Al-Adawi, S. (2014). Patient safety culture assessment in Oman. *Oman medical journal*, 29(4), 264.

13. Rajalatchumi, A., Ravikumar, T. S., Muruganandham, K., Thulasingham, M., Selvaraj, K., Reddy, M. M., & Jayaraman, B. (2018). Perception of patient safety culture among health-care providers in a tertiary care hospital, South India. *Journal of natural science, biology, and medicine*, 9(1), 14.

14. Abu-El-Noor, N. I., Abu-El-Noor, M. K., Abuowda, Y. Z., Alfaqawi, M., & Böttcher, B. (2019). Patient safety culture among

nurses working in Palestinian governmental hospital: a pathway to a new policy. *BMC health services research*, 19, 1-11.

15. Stock GN. An Empirical Analysis of Patient Safety Culture and Hospital Performance Using the AHRQ Survey on Patient Safety Culture. 2015. p. 1–16.

16. Amiran P, Pour riba M, Fatemi Mehr A. Evaluation of Patient Safety Culture Based on the Viewpoint of Nurses and Physicians Employed in a Military Hospital. *Military Caring Sciences*.2018; 5(1). 26-33.

17. Wagner C, Smits M, Sorra J, Huang CC. Assessing patient safety culture in hospitals across countries. *Int J Qual Heal Care*. 2013;25(3):213–21.

18. Nie Y, Mao X, Cui H, He S, Li J, Zhang M. Hospital survey on patient safety culture in China. *BMC Health Serv Res* [Internet]. 2013;13(1):1. Available from: BMC Health Services Research

19. Amarapathy M, Sridharan S, Perera R, Handa Y. Factors Affecting Patient Safety Culture In A Tertiary Care Hospital In Sri Lanka. *Int J Sci Technol Res*. 2013;2(3).

20. Abu-hamad B, Hamdan M, Al-saqqa H. Assessment of Patient Safety Culture in the Gaza strip Hospitals. *Int J Dev Res*. 2016;6(6):8135–40.

21. Westat, Rockville, Joann Sorra, Laura Gray, Suzanne Streagle, Theresa Famolaro, Naomi Yount JB. AHRQ Hospital Survey on Patient Safety Culture: User's Guide [Internet]. 540 Gaither Road Rockville, MD 20850: U.S. Department of Health and Human Services; 2016. Available from: <http://www.ahrq.gov>

22. Mekonnen AB, Mclachlan AJ, Brien JE, Mekonnen D, Abay Z. Hospital survey on patient safety culture in Ethiopian public hospitals : a cross-sectional study. *Saf Heal*. 2017;3(11):1–11.

23. Fadi E, Farheen S, A GN, Diana J, Ayman A. Patient safety culture in a large teaching hospital in Riyadh. *BMC Heal Serv Res* 2014 [Internet]. 2014;14(122). Available from: <http://www.biomedcentral.com/1472-6963/14/122>

24. Al-nawafleh AH, Nawafleh AA-, Abu-helalah MA, Hill V, Masoud MI, Al-mahasneh A, et al. Patient Safety Culture in Jordanian Hospitals. *iMedPub Journals*. 2016;10(55).

25. Kabakian-Khasholian, T., Khoury, J., & Rassi, R. (2017). Measuring and comparing safety culture among Lebanese hospitals. *Journal of Multidisciplinary Healthcare*, 10, 91–102. <https://doi.org/10.2147/JMDH.S136192>

26. Suliman, R. M., Din, C. J. C., Shaari, R., & Naing, L. (2019). Patient safety culture assessment in 12 Malaysian public hospitals. *International journal of health care quality assurance*, 32(4), 717-730. <https://doi.org/10.1108/IJHCQA-01-2019-0010>

OLIV HARBIY TA'LIM MUASSALARIDA KURSANTLARNI O'QITISHDA PEDAGOGIK TEXNOLOGIYALARNING ROLI

Alisher Musinovich Muinov

Chirchiq oliy tank qo'mondonlik muhandislik bilim yurti Gumanitar fanlar kafedrası
katta o'qituvchisi, dotsent

ANNOTATSIYA

Mazkur maqolada harbiy kadrlarni o'qitishda pedagogik texnologiyalar to'g'risida umumiy tushuncha, ulardan foydalanish masalalari, pedagogik texnologiyalarni qo'llashda ta'lim beruvchilarning roli hamda kursantlardning nutqini rivojlantirish haqida so'z yuritilgan.

Kalit so'zlar: pedagogik texnologiya, dars, interfaol metodlar, kursant, ofitser-pedagog, nutq, ta'lim, tarbiya.

ABSTRACT

This article discusses the general understanding of pedagogical technologies in the training of military personnel, the issues of their use, the role of educators in the use of pedagogical technologies, and the development of cadets' speech.

Keywords: pedagogical technology, lesson, interactive methods, cadet, officer-pedagogue, speech, education, upbringing

KIRISH

Mamlakatimizda olib borilayotgan harbiy islohotlar tufayli Qurolli Kuchlarimiz uchun yuqori malakali mutaxassislarni, yuksak intellektual, ma'naviy-axloqiy salohiyatga ega bo'lgan ofitser kadrlarni tayyorlashga alohida e'tibor qaratilmoqda. Harbiy sohada bosqichma-bosqich olib borilayotgan islohotlarning pirovard maqsadi – Qurolli Kuchlarimiz nafaqat infrastrukturning tuzilmasi, qurol-yarog', harbiy texnika hamda miqdor jihatdan hozirgi zamon talablariga javob beradigan harbiy xizmatchilar, balki mamlakat mudofaa qobiliyatini belgilab beruvchi muhim omillardan bo'lmish shaxsiy tarkibning ta'lim-tarbiyasiga ham katta e'tibor qaratilmoqda. Prezidentimiz – Qurolli Kuchlar Oliy Bosh Qo'mondini Sh.M.Mirziyoyev o'z ma'ruzalarida “Ayni vaqtda, aytish joizki, ko'rilayotgan chora tadbirlarga qaramasdan, harbiy kadrlarni tayyorlash tizimi zamon talablariga to'liq javob bermaydi. ...harbiy o'quv yurtlaridaz amonaviy shart-sharoitlarni xo'ja ko'rsinga yaratganimiz yo'q. ...Aksincha, kursantlarimiz va tinglovchilarimiz ta'lim sohasida eng ilg'or,

innovatsion bilim va ko'nikmalarga ega bo'lishi zarur. Mana, bizning asosiy maqsadimiz", - deb harbiy kadrlarni tayyorlashga alohida e'tibor qaratgan edi. 2022-2026 yillarga mo'ljallangan Yangi O'zbekistonning taraqqiyot strategiyasida ham "zamonaviy jang va harbiy mojarolar hamda xorijiy armiyalarning ilg'or tajribasini o'rganish asosida qo'shinlar jangovar shayligi va tayyorgarligini rivojlantirish, qo'shinlar tayyorgarligi intensivligi va sifat darajasini oshirish, mashq va mashg'ulotlarni tungi sharoitlarda o'tkazishni bosqichma-bosqich ko'paytirib borish, qo'shinlarning rahbar lavozimlarida xizmat qiladigan harbiy xizmatchilar uchun malaka talablarini zamon talablariga mos ravishda ishlab chiqish, qo'shinlarning rahbar lavozimlariga nomzodlarni tanlash, kadrlar zaxirasini yaratish, ularni maqsadli ravishda tayyorlash tizimini yanada takomillashtirish bo'yicha takliflar ishlab chiqish" kabi muhim vazifalar belgilangan [1].

Harbiy xizmatchilarning yurtimizda va uning tashqarisida sodir bo'layotgan ijtimoiy-siyosiy hodisalarga, millatlararo munosabatlar xususiyatlariga, umuminsoniy hamda milliy qadriyatlarga nisbatan munosabati ijtimoiy muhitni harakatlantiruvchi kuchni o'zida mujassamlashtiradi. Ayni damda harbiy xizmatchilarimizning jamiyatga, yakka shaxsga nisbatan munosabati ehtiyojlarida, hohish-istaklarida, qiziqishlarida, xulq-atvor motivlarida, iymon-e'tiqodda, qarashlarida, g'oyalarida, eng muhimi kursantlarimizga ta'lim va tarbiya berishlarida, o'qitishning sifat va samaradorligini oshirish jarayonlarida, o'quv mashg'ulotlarini yangi zamonaviy pedagogik texnologiyalar asosida o'qitishda, ularning ijtimoiy-siyosiy ongi va madaniyatini shuningdek, muomala madaniyati hamda nutq madaniyatini o'stirishda o'z ifodasini topadi. Bo'lajak ofitser, kursantlarning har qanday nutqi ma'lum bir maqsadga qaratilgan tashqi ko'rinishi hisoblanadi. Albatta, bu nutq kursantlarga yetib borib, ma'lum bir ta'sir ko'rsatsagina, uni yaxshi nutqqa ega bo'lgan inson desa bo'ladi.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Harbiy ta'lim muassasalarida har bir pedagog-o'qituvchi nutqining har tomonlama tekis bo'lishi uchun o'z oldiga ma'lum talablarni, ya'ni nutqning asosiy sifatlarini, xususiyatlarini egallashni maqsad qilib qo'ymog'i lozim. Ularni egallash esa aslida har bir pedagog-o'qituvchining, shaxsiy tarkib bilan ish olib borayotgan ofitser-murabbiylarning madaniy saviyasiga, ongiga, ruhiyatiga va bevosita bilimiga bog'liqdir. Ofitser, proffesor-o'qituvchi dars jarayonida zamonaviy pedagogik texnologiyalarni qo'llagan holda mazmunan boy, kursantlar uchun aniq va to'liq ifodalangan, ravon nutq bilan ular ongiga yetkazib bera olsa, kursantlarning qiziquvchanliklarini har

tomonlama rivojlantirishga qaratilsa, o'qitishning sifat va samaradorligi yanada yuksak darajaga ko'tariladi. Umuman zamonaviy pedagogik texnologiyalar o'quv jarayoni, ya'ni ofitser-pedagogning pedagogik faoliyati bilan, uning tarkibi, vositalari, usullari va shakllari bilan eng ko'p darajada bog'langan [2].

Shu sababli zamonaviy pedagogik texnologiyalar asosida dars o'tish jarayonida kursantning ijodiy qobiliyatlarini o'stirishi, ularning aqliy salohiyatini kengaytirishi, ilmiy va ma'naviy dunyoqarashini tarkib toptirishi va har bir yangilikni to'g'ri qabul qila olish qobiliyatini shakllantirishi, eng muhimi, ularning nutqini o'stirishga ham alohida e'tibor qaratilishi lozim. Zamonaviy dars qiziqarli va mazmunan boy bo'lishi uchun ofitser-o'qituvchi va talaba-kursant o'rtasidagi o'zaro hamkorlikka asoslangan ijobiy munosabatlar, dars mashg'ulotida foydalaniladigan metod va vositalarning to'g'ri tanlanishida muhim ahamiyat kasb etadi. Dars mashg'ulotini samarali tashkil etish va boshqaruv o'quv metodik ta'minot to'liq va talab darajasida bo'lishini taqozo etish bilan birgalikda mashg'ulot jarayonida unumli va mohirona foydalanishi lozim bo'lgan metod va vositalarning to'g'ri tanlanishi bilan xarakterlanadi.

Ayni davrda ta'lim va tarbiyada innovatsion pedagogik texnologiyalar – tizimli yondashuvlar asosida o'qitishning shakllarini qulaylashtirish, uning natijasini kafolatlash va obyektiv baholash uchun zarur bo'lgan inson salohiyati hamda texnik vositalarning o'zaro hamkorligini namoyish qiladi. Ta'lim maqsadlarini oydinlashtirish, o'qitish va o'zlashtirish jarayonlarida qo'llaniladigan usul, metod va vositalarlarni xilma-xillash, ta'lim va tarbiya jarayonlari mazmunini chuqurlashtirish-bular hammasi ta'lim muassasalari faoliyatini takomillashtirish demakdir. Vaholanki, takomillashtirishning chegarasi, ya'ni oxiri yo'q, deyiladi. Shunday bo'lgach, pedagogik texnologiyalar ham, pedagogik mahorat ham sarhadsiz tushunchalardir. Bu borada qancha ko'p izlanilsa va qanchalik tashabbuskorlik bo'lsa-shunchalik kamdek tuyulaveradi.

Oliy harbiy ta'lim muassasalarida yuqori malakali mutaxassislar tayyorlashda zamonaviy o'qitish usullar, innovatsion texnologiyalarning o'rni va roli benihoya kattadir. Pedagogik texnologiya va pedagogik mahoratga oid bilim, tajriba va interfaol usullarning qo'llanilishi o'quvchi-kursantlarni chuqur bilimli, yuksak intellektual salohiyatga ega bo'lgan yuqori malakali mutaxassis bo'lib yetishishlarida muhim ahamiyat kasb etadi.

Ma'lumki har bir dars, mavzu, o'quv predmetining o'ziga xos texnologiyasi mavjuddir, ya'ni o'quv jarayonidagi pedagogik texnologiya-bu yakka tartibdagi jarayon bo'lib, o' o'quvchi-kursantning ehtiyojidan kelib chiqqan holda bir maqsadga yo'naltirilgan, oldindan loyihalashtirilgan va kafolatlangan natija berishiga qaratilgan pedagogik jarayondir.



Bugungi kunda barcha ta'lim muassasalarida o'qitishning sifat va samaradorligini yanada oshirish va takomillashtirish maqsadida turli xildagi faol va interfaol metodlardan foydalanish mutaxassislar tomonidan turlicha talqin qilinib, tegishli tavsiyalar berilmoqda. Shu bois ham, an'anaviy ta'lim metodlari bilan birga noan'anaviy ta'lim metodlaridan – faol va interfaol metodlardan foydalanish dars samaradorligini oshirishning muhim shartlaridan biridir. Interfaol metodlar talabada ijodiy qobiliyatni shakllantirish yanada erkin fikrlashga, va eng muhimi talabakursantlarning nutq faoliyatini o'stirishda xizmat qiladi [3]. Kursantlar bunday turdagi faol va interfaol metodlardan foydalanganda, yangi bilim va tushunchalarni tez va mustaqil o'zlashtirib oladilar hamda o'z nutqini doimiy va muntazam ravishda boyitib borishga, o'zini-o'zi nazorat qilishga, nutq faoliyatiga jiddiy e'tibor berish lozimligini anglab yetadilar. Ko'p yillik pedagogik tajriba hamda ilmiy psixologik tadqiqot natijalarilari shu narsani ko'rsatadiki, faol va interfaol metodlardan mashg'ulot jarayonida keng foydalanishda qo'yidagi asosiy elementlarga va muhim talablarga amal qilish lozim bo'ladi:

- dars o'quv dasturi asosidagi ta'limiy, tarbiyaviy va rivojlantiruvchi maqsad hamda vazifalarni hal qilishga qaratilgan bo'lmog'i lozim;
- darsning maqsadi va vazifalari amaliyotdagi tajribalarga asoslanib tanlangan, sinovlardan o'tib, o'zini oqlagan metodlar qo'llanilganda to'liq hal qilinishi muhim ahamiyat kasb etadi;
- metod axloq-odob meyorlariga mos kelishi barkamol shaxsni tarbiyalash mezonlariga asoslangan bo'lishi zarur;
- metodning tarkibiy qismlari mantiqiy ketma-ketlikka ega bo'lishi kerak;
- interfaol metodlardan foydalanganda didaktik tamoyillarga amal qilgan holda eng kam vaqt sarflashga erishish lozim.

Demak, har bir o'qituvchi innovatsiyalarning mohiyatini to'la tushungan holda o'z faoliyatiga izchil tatbiq eta olsa ta'lim jarayoni ham sifat ham samaradorlik nuqtai nazardan taraqqiy etadi. Bu esa o'z navbatida ta'lim tizimining rivojini ta'minlaydi va bilim berishda ta'limning eng muhim jabhalaridan hisoblanib, Oliy harbiy ta'lim muassasalarida yetishtirilayotgan kadrlar, har jihatdan yetuk, salohiyatli va mukammal bilimga ega bo'lishi jamiyat va davlatning, unda istiqomat qiluvchi fuqarolarning xavfsiz yashashi, faoliyat yuritishida munosib o'rin tutadi.

Harbiy pedagog yoki ofitser kursantlarning ta'lim-tarbiyasiga, huquqiy ongi va huquqiy madaniyatining qay darajada rivojlanganligiga, ularning ongiga milliy istiqol ruhini singdirishlarida, Vatan to'y'g'usini yanada mustahkamlagan holda tarbiyalanishiga jiddiy e'tibor berish bilan birgalikda ularda nutqning aniqligi, mantiqiyli va

ifodalanganligiga ham e'tiborni qaratishlari muhimdir. Kursantlar nutqning aniqligi bu qo'yidagi o'ziga xos tomonlarida namoyon bo'ladi:

- mustaqil fikrini to'g'ri ifodalashi;
- nutqda ravonlikning mavjud bo'lishi;
- fikr sodda va tushunarli tilda bayon etilishi;
- kursantlarning nutqida aniqlik, ya'ni – bu so'zning o'zi ifodalayotgan – voqelikka mutlaqo mos va muvofiq kelishidir.

Kursantlar nutqining mantiqiyliги esa qo'yidagi holatlarda namoyon bo'ladi:

- nutqning mantiq qonunlariga mos bo'lishi;
- nutqda mazmuniy bog'liqlik mavjud bo'lishi;
- nutqda qo'llanayotgan har bir so'z o'z ma'nosida va o'rnida qo'llanilishi;
- nutqning mantiqiyliги, ya'ni kursantlar nutqida bayon etilgan fikrning qismlari va alohida fikrlarning o'zaro mutanosibliги.

Yuqoridagilarni inobatga olib, mashg'ulot jarayonida kursantlar imkon darajasidan kelib chiqqan holda yakka tartibda yoki guruhchalarga bo'lingan holda ishlashlari ular o'rtasida ma'lum bir mavzu asosida bahs-munozaraga yoki o'z fikrini erkin ifoday olishga undaydi. Darsning bu tarzda tashkil qilinishi kursantlarda nutqning xususiyatlaridan aniqlik, mantiqiylik va ifodalanganlik kabi xususiyatlari bo'yicha mustaqil ravishda xulosalar chiqarishlariga imkon yaratadi.

XULOSA

Shunday qilib, shuni ta'kidlash kerakki, harbiy pedagog o'ziga xos kasbiy bilim, ko'nikma hamda pedagogik mahoratga ega bo'lsagina dars jarayonida qo'llanilayotgan zamonaviy pedagogik texnologiyalar kursantlarning fikrlash va anglash qobiliyatiga, nutqning ravon, ifodali, sodda mazmunlilikiga zamin yaratadi. Shuning bilan birga, ularning kasbiy faoliyatlariga yanada qiziqish uyg'otadi hamda o'qishiga, ilm-fan chuqqilarini mukammal darajada egallashlariga harbiy va kasbiy qobiliyatlarini shakllantirishlariga va jamiyat taraqqiyotining rivojlanishiga ijobiy ta'sir ko'rsatishi muqarrar.

REFERENCES

1. O'zbekiston Respublikasi Prezidentining 2022 yil 28 yanvardagi PF-60-sonli "2022-2026 yillarga mo'ljallangan Yangi O'zbekistonning taraqqiyot strategiyasi to'g'risida"gi Farmoni // www.lex.uz.
2. Yo'ldoshev J.G', Usmonov S.A. Pedagogik texnologiya asoslari. – T.: "O'qituvchi", 2004. – 248 b.



3. Bepalko V.P. Pedagogika i progressivniye texnologii obucheniya. – M.: Izd. Instituta professionalnogo obrazovaniya Ministerstva obrazovaniya Rossii, 1995. – 68 b.
4. Abdullayeva R.M, Ochilova G.O, Musaxanova G.M. Pedagogika. Psixologiya. O‘quv qo‘llanma. T.TDIU. 2019. – 172 b.



KOMPLEKS HOSIL QILISH REAKSIYALARINI SIFAT ANALIZDA QO‘LLANILISHI

Abbosjon Azimov

Jizzax politexnika instituti, talaba

Quvonchbek Nishonov

Jizzax politexnika instituti, talaba

Feruza Sattarovna Karimova

Jizzax politexnika instituti, katta o‘qituvchi

ANNOTATSIYA

Kompleks reaksiyalar va koordinatsion birikmalarning turli jihatlarini tasvirlash uchun ishlatilishi mumkin bo‘lgan yondashuvlar mavjuddir. Ushbu yondashuvlarning barchasini kompleks funksiya yordamida olish mumkin. Bu esa mavzuni to‘liqroq yoritishga imkon beradi va shu usullar bilan birgalikda analitik kimyoda ishlatiladigan komplekslar ligandlarning tabiati, xossalari, zaryadi bir biridan keskin farq qilinishini aniqlasak bo‘ladi.

Kalit so‘zlar: Donor–akseptor bog‘lanish, kovalent bog‘lanishi, ligandlar, konstanta.

KIRISH

Analitik kimyoda kompleks hosil qilish reaksiyalari ionlarni va moddalarni topish, ajratish, niqoblash, aniqlash, kislota-asos xossalarni kuchaytirish, oksidlanish qaytarilish potensialini o‘zgartirish cho‘kmalarni eritish va boshqa maqsadlarda keng qo‘llaniladi. Analitik kimyoda kompleks birikmalar ko‘pdan buyon ishlatilini kelinmoqda. Ushbu mavzu ya’ni kompleks reaksiyalarni tushuntirishga asoslangan bir nechta yondashuv va parametrlar mavjud. Masalan, A.Vernerning koordinatsion nazariyasi, L.A Chugayevning dimetilglioksimni, G.Ley ichki kompleks birikmalari va boshqalar. Lekin hech biri ushbu mavzuning global izohini bera olmaydi. Ushbu maqolada kompleks funksiyasini tashkil qilamiz, bu asosiy manba bo‘lib, kompleks reaksiyalarning barcha turlarini tushuntirishga yordam[1] beradi.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Analizda faqat anorganik ligantli komplekslar emas, balki organik ligandli komplekslar ham keng qo‘llaniladi. Kompleks birikmalarning analizda qo‘llanilishi uch davrga bo‘linadi[2].

1) A. Vernergacha bo'lgan davr. Bu davrda komplekslarning tabiati noma'lum bo'lgan bo'lsada, Cu ni kolorimetrik aniqlash uchun ammiakatlar hosil bo'lishidan, temirni aniqlash uchun yong'oqdagi oshlovchi moddalar ishlatilgan.

2) A. Vernerning koordinatsion nazariyasi paydo bo'lishi bilan komplekslanishning tabiati oydinlashdi, komplekslarning hosil bo'lish jarayoni tushuntirildi. Bu davrda ko'plab yangi reaksiyalar va reagentlar taklif etildi. Masalan, L.A.Chugayev dimetilglioksimni, N.S.Kurnakov tiomochevinani va guadiaminni G.Ley ichki kompleks birkmalarini analizda qo'lladilar.

3) Eritmalarda komplekslarni fotometrik va boshqa usullar yordamida tekshirish davri. Bugungi kunda "**kompleks**" yoki "**koordinatsion**" birikma atamalariga ko'plab ta'riflar bor, bular faqat shaklan farq qiladi, mazmunan esa bir xil ma'noga ega. Masalan, A.A Grinberg komplekslarga quyidagicha ta'rif bergan: kompleks birikmalar kristall holatida ham, eritmada ham musbat va manfiy zaryadli murakkab ionlar bo'lib tarkibiy qismlarning qo'shilishidan hosil bo'ladi. Ularning o'ziga xos jihati shundaki, birinchisida; kompleks birikma molekular birikma deb qaraladi, ikkinchisida; komplekslar faqat kristall holda emas balki balki eritmada ham mavjud.

Analitik kimyoda ishlatiladigan komplekslar to'rt turga bo'linadi[2].

1)Komplekslarga kovalent va donor-akseptor bog'lanish bitta yagona atom orqali amalga oshiradigan komplekslar kiradi. Bularning ko'pchiligi kovalent bog'lanish **-OH, -SO₃H, -COOH** singari funksional guruppalaridagi vodorodning almashinish hisobiga to'g'ri keladi

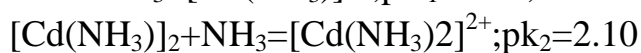
2)Komplekslarda kovalent va donor-akseptor bog'lanish turli atomlar orqali ro'yobga chiqadi. Bularda kovalent bog'lanish yuqoridagi guruppalar atomlari bilan, donor-akseptor bog'lanish esa yulduzchalar bilan ko'rsatilgan **>NH, -NOH, -OH, -CO, >S** atomlar orqali amalga oshadi.

3)Komplekslarga donor-akseptor bog'lanish bir necha yoki har xil atomlar bilan amalga oshadigan atomlar kiradi. Masalan bu guruppaga azotli komplekslar mos keladi.

4)Komplekslarda donor-akseptor bog'lanish bir xil turdagi atomlar bilan amalga oshadi. Bu guruppaga kompleksning zaryadi markaziy atom zaryadiga mos keladigan ammiakat, akvo, organik aminlar, NO va boshqa komplekslar kiradi[3].

Ikkinchi va uchinchi tur komplekslariga ichki komplekslar kirib, analitik kimyoda qo'llaniladigan komplekslarning aksariyati ikkinchi turga taaluqlidir. Birinchi tur komplekslari esa, ko'pincha, niqoblash maqsadida ishlatiladi. Kompleks hosil bo'lishida donor-akseptor (koordinatsion) bog'lanish muhim hisoblanadi. Ko'pchilik komplekslar bir necha bosqichda bo'ladi.

Bu jarayonni kompleks hosil bo'lish konstantasi yordamida ifodalash mumkin. Masalan, kadmiyning ammiakat kompleksi quyidagicha[4]:



XULOSA

Bundan ko'rinadiki, eng avvalo, koordinatsion soni birga teng bo'lgan eng oddiy kompleks, keyin koordinatsion soni ikki, uch, to'rt va hakozo bo'lgan komplekslar hosil bo'ladi[5].

1-jadval

Liagand	Liagand radiusi, nm	Cd ²⁺	Hg ²⁺	Bi ³⁺	Zn ²⁺	In ³⁺	Sn ²⁺
F ⁻	0.133	0.30	1.56	4.70	1.26		4.85
Cl ⁻	0.181	2.05	6.75	2.43	-0.19	1.00	1.51
Br ⁻	0.196	2.23	9.05	2.26		1.30	0.90
I ⁻	0.220	2.17	12.87	2.89	-0.47	1.64	

REFERENCES

1. Ochildi Fayzullayev "Analitik kimyo". Darslik. Nashr yili 2006. Toshkent yangi avlod nashiriyoti
2. Turobov N.T. Analitik kimyo. Darslik. Toshkent: "Go To Print" 2020.
3. <https://library.pharmi.uz>
4. Sobirovna K. D., Sattarovna K. F., Baxodirovna J. U. ELECTROCHEMICAL METHODS FOR THE DETERMINATION OF MERCURY IONS //E Conference Zone. – 2022. – С. 41-43.
5. Мусаев Х. Б., Каримова Ф. С., Жўраева У. Б. Қ. Co-Cr-TiO₂ нанокомпозитининг золь-гель синтези //Academic research in educational sciences. – 2021. – Т. 2. – №. 10. – С. 831-835.

WHAT IS THE ANTONYMIC TRANSLATION?

Nohida Suratovna Mukhtorova

ESP teacher of Foreign Languages Department, Tashkent State University of Law

ABSTRACT

This article is dedicated to the translation process, specifically one widely used type of translation – antonymic translation, along with its definition and classification. This type of translation can be applied in both oral and written translation, making it relevant across various translation contexts. The article discusses the place of antonymic translation, its complexity in the translation process, and provides recommendations on how to handle such challenges. Additionally, famous linguists and translators' opinions on antonymic translation are mentioned. Beyond that, the article includes considerations, methods, and examples related to antonymic translation.

Keywords: antonyms, antonymic translation, negative form, negative form of the verb, lexical transformation

INTRODUCTION

The current state of the translation profession indicates that it is not possible to separate the literature of any nation from other literary traditions and study it independently. This is because world literature functions as a unified organism, incorporating the reciprocal influences of various national literatures of different scales. People, living in diverse regions of the globe, draw firm attention from the peculiarities of their native landscapes, allowing them to appreciate each other's spiritual wealth, indulge in artistic expressions, and mutually enrich their hearts and souls with the artistry and revelations of others.

Translation plays an essential role in establishing direct spiritual connections among nations. This is because it introduces the rich cultural patterns, historical traditions, and aspirations of individuals that are encapsulated in centuries-old artistic works to other language communities, providing a glimpse into the emotional diary of the people.

Masterpieces of world literature, created in various languages across the globe, are often brought together through the significant path of translation. Without translation, the "pure" national civilization, which develops solely based on its internal resources and remains indifferent to the



diverse cultural achievements of distant and close nations, lacks the vibrant and unchanging "fresh language" of literary culture.

If there were no translation, the great treasures of national cultures and the universal achievements of humanity would have remained isolated and unreachable. The absence of translation would have resulted in the solitary existence of "stale" national cultures, unaware of the dynamic and ever-evolving world of literature and art.

METHODS

Translation serves as the bridge for internationalism and fosters friendship among nations. Through the path of translation, national cultures communicate with each other. In language, thought, cultural literary life, and art, its unique influence is felt everywhere. Translation, especially in the realm of verbal art, occupies a significant place in literary literature.

The fact that the literary works of fraternal nations and world progressive literature are translated into the Uzbek language is evidence of the great success of our translation activity. It contributes to the convergence of the best traditions of our national culture with the cultures of the world's peoples, the strengthening of friendship among nations, and the pride of Uzbek writers in the examples of world progressive literature.

Moreover, many global events in the fields of science, culture, and technology unfold directly through immediate translation. The educational, political, social, and aesthetic importance of artistic translation, as well as its role in fostering awareness, further transcends the demands of the era and zeitgeist.

The significant achievements in the fields of global knowledge, technology, culture, and social thought require translation to bring them closer to our people, nurture the spirit of friendship among nations, and fulfill the sacred duty of educating. The role of translation is paramount in achieving these noble objectives.

The content, characteristics, and fundamental conditions of artistic translation are crucial. In our view, the perfect and ideal work of translation can be both correct and charming. Such translation is an art form in itself. This art demands mastery in both making an accurate translation in the process of creating a charming translation and achieving proficiency in making an accurate translation in the process of creating a charming translation.

In the practice of translation, the following nuances are observed.



1. Experience, Skills, and Ethical Differences Resulting in Variances Among Translators:

The disparities arising from the serious differences in the experience, skills, and ethical approaches of translators can lead to distinct outcomes.

2. Variances Resulting from the Diverse Adoption of Translation Principles by Translators:

Differences in the adoption of translation principles by translators through various imitation methods can result in variations.

3. Variances Arising from the Influence of Translator's Style on the Author's Style:

Natural differences may emerge due to the influence of the translator's style on the author's style, manifesting itself in the translation process.

For instance, a particular work translated by one individual may have significant differences from another translation of the same work, especially if the translator adapts it to their own language. These differences can be attributed to the impact of the translator's individual style.

In literary translation, each translator tends to align the author's style with their unique approach, contributing to these variations observed in translation practices. When the author's style is not accurately conveyed in the translation, it may not resonate with the original text. In such cases, the translator might impose their own style onto the work, and the translated version may deviate from the original text. A translator's proficiency in mastering two languages, their cultural experience, artistic skills, and ability to fully grasp and reproduce the author's style play a crucial role in rectifying and improving such variations in translation.

The term "style" encompasses a range of meanings when used in the context of translation. When a text is paraphrased in a literal sense, the unique style of the narrative is discernible. However, understanding the stylistic features of words, beyond simply consulting a dictionary, becomes crucial in artistic texts. The stylistic characteristics of words are revealed in the combination of words within the text, each having its own stylistic nuances.

For example, the word "death" may have a unique stylistic meaning in phrases like "departed from the world," "flew away," "closed its eyes," "entered eternal sleep," etc. Each of these combinations carries its own stylistic significance. The ability to utilize each stylistic variant in its appropriate context holds great practical importance. For instance, replacing "departed from the world" with "opened its eyes" might not be appropriate

(G. Salomov. Introduction to Translation Theory. Educational Publishing. Tashkent, 1978. Pages 109-143).

Translating literary works requires familiarity with the language's vocabulary, synonyms, and homonyms, professional terminology, dialects, archaic and colloquial words, expansion and contraction, repetition, metaphors and idioms, as well as the musicality, rhythm, and expressiveness of words. Additionally, understanding the phonetic norms of the language, eloquence, exaggeration, and the various forms of humor, wit, and irony are essential.

Discussion and Debate: The Three Stages of Recreating Literary Works in the Process of Translation

The esteemed translator and literary scholar, Ghaybulla Salomov, articulates his perspective on the three crucial stages involved in the process of re-creating a literary work:

How the Translator Should Approach the Original Text:

Salomov emphasizes the importance of how a translator should perceive and comprehend the original text. This involves not just understanding the literal meaning but delving into the essence and nuances of the source language.

Capturing the Realism, Author's Intent, and Unique Style of the Work:

The second stage involves how a translator should convey the realism, the author's purpose, and the distinctive style of the original work. It requires a deep understanding of the author's intent and a skillful adaptation of their unique literary style.

Recreating the Art of Language in the Translator's Native Tongue:

Salomov underscores the significance of the translator acquiring the necessary tools to recreate the artistic aspects of language in their native tongue. This involves not merely translating words but capturing the meaning, rhythm, and stylistic elements to provide a faithful representation of the original work.

Salomov argues that the process of literary translation requires a meticulous approach where the translator is not just a linguist but an artist. The translator must navigate the intricate elements of language, including the play of words, metaphors, and humor, to truly convey the essence of the original text.

Furthermore, he distinguishes the artistic translation from other types, stating that it goes beyond a literal conversion of words, phrases, or entire texts. In artistic translation, the translator becomes an artist themselves, ensuring a harmonious transformation that captures the spirit of the original work.

Salomov also notes the vital role of translators in bringing the most significant and socially, aesthetically, and educationally

valuable books from other national literatures into their own language. This process, often referred to as "mutual enrichment," involves introducing the works of other cultures to one's own, fostering a dynamic interaction.

In conclusion, Salomov's insights shed light on the complexity of literary translation, emphasizing the artistic responsibility of the translator in recreating the work in a way that preserves the author's intent and unique style while making it accessible and meaningful in the target language.

Translation Transformations: Enhancing Linguistic Expressions

The process of translation involves various transformations aimed at adapting the source language content into the target language. The most crucial transformations include:

Modification of Word Order:

Adjusting the order of words to maintain coherence and meaning in the target language.

Lexical Modifications:

Synonymous Replacements: Substituting words with synonyms to enhance variety and expressiveness.

Antonymous Replacements: Introducing words with opposite meanings to convey nuances effectively.

Word Class Transformation: Changing the part of speech of a word to suit the target language.

Abbreviation Expansion or Reduction: Providing or omitting abbreviated forms based on the target language norms.

Syntactic Modifications:

Simple to Compound Sentences: Converting simple sentences into compound ones to convey complex ideas.

Compound to Simple Sentences: Simplifying complex sentences for clarity.

Adding or Omitting Connectors: Inserting or removing conjunctions to improve flow and coherence.

Inverting Sentence Structure: Reversing the word order for emphasis or stylistic effect.

Adding or Removing Parenthetical Phrases: Introducing or eliminating additional information within sentences.

Analogical Transformation in Syntactic Structure:

Simple to Simple Transformation: Conveying sentences with similar structures and grammatical forms.

Antonymic Transformations in Syntactic Structure:

Creating Opposing Structures: Expressing sentences with contrasting structures to convey opposing meanings.

Synonymous Transformations in Syntactic Structure:

Diversifying Structures: Using varied syntactic structures to convey synonymous meanings.

Compensation:

Adjusting one part of the translation to compensate for changes made in another part, ensuring overall coherence.

Additions:

Intentional Additions: Including elements for clarification, emphasis, or cultural relevance.

Unintentional Additions: Adding information inadvertently during translation.

Deletions:

Necessary Omissions: Removing elements that are redundant or culturally irrelevant.

Unnecessary Omissions: Accidentally omitting information critical to the original meaning.

Equivalence (Adopting a Different Writing System):

Altering Script: Changing the script of the source language to the script of the target language.

Transliteration: Representing the sounds of one language with characters of another.

Literal Translation:

Word-for-Word Translation: Providing a direct, literal translation, often maintaining the original word order.

These transformations illustrate the intricate nature of translation, requiring linguistic expertise and creative adaptability to faithfully convey meaning while ensuring cultural appropriateness in the target language.

Explanatory Translation (Tushuntirish) and Antonymic Translation

In cases where a direct translation from the source language to the target language is not possible, explanatory translation, also known as tushuntirish, is employed. This type of translation aims to retain the meaning of the original source by providing additional explanations or synonyms in the target language.

Example:

The NATO general gave a green light to the military actions in Afghanistan.

Original: НАТО генерали Афғонистондаги ҳарбий

харакатларга катта йул очиб берди.

Explanation: (to give a green light) йўлдаги светофор кўк чирок.

Antonymic Translation involves rendering a unit of meaning in the target language by replacing it with another unit that is its opposite, while still maintaining coherence in the target language. This can be illustrated as follows:

Example:

Original: He is old.

Antonymic Translation: у ёш эмас

Example:

Original: We are no experts.

Antonymic Translation: биз бошқа соҳа мутахассисларимиз.

Antonymic translation inverts the meaning of the original unit into its opposite in the target language. This technique can be observed in various linguistic structures, including the use of prefixes indicating negation in English or the inversion of meaning through specific expressions.

Example:

Original: The United States did not enter the war until April 1917.

Antonymic Translation: Қўшма Штатлар урушга 1917 йилнинг апрел ойидагина кўшилди.

In this case, the English prefix "not" indicating negation is mirrored in the Uzbek translation as "қўшма" to convey the opposite meaning.

Antonymic translation can also be applied to phrases involving conditional relationships, emphasizing the importance of maintaining coherence in the target language.

Antonymic translation plays a crucial role in conveying opposites, contrasts, and negations, ensuring that the target language accurately reflects the intended meaning of the source language.

The railroad Unions have been a hotbed of Jim Crow – even the American Railroad Union, headed by Eugene V. Debs, excluded negroes from its membership.

CONCLUSION

One of the most challenging aspects that students face in the translation process is the inability to apply translation transformations. Students who are unfamiliar with the methods of translation transformations tend to rely on literal meanings of the original words and expressions. Consequently, when translating from English to Uzbek or vice versa, their sentences lack fluency and artistic expressiveness. On the contrary, those who have

mastered translation transformations can handle the translation process more adeptly, enhancing the quality of their translations. Therefore, learning translation transformation techniques is essential for mastering the translation process and obtaining practical skills in this field.

REFERENCES

1. Mustafakulovich, R. M., Shokirovich, T. O., & Ishnazarovna, M. N. (2020). SIMULTANEOUS INTERPRETING AS A SPECIAL INTERPRETER ACTIVITY. PROS AND CONS OF SIMULTANEOUS INTERPRETING. *Oriental Art and Culture*, (V).
2. Ruzibaeva, N. (2019). PECULIARITIES OF THE ANTITHESIS IN THE LITERARY TEXT. *European Journal of Research and Reflection in Educational Sciences* Vol, 7(11).
3. Miraziz, R., & Oybek, T. (2020). INGLIZ, FRANSUZ VA O‘ZBEK SHE’RIYATINI TARJIMA QILISHDA QO‘LLANILADIGAN TRANSFORMATSIYALAR. *Oriental Art and Culture*, (V).
4. Raufov, M. M. (2021). ELEMENTARY TRANSFORMATIONS IN SIMULTANEOUS TRANSLATION. *Academic research in educational sciences*, 2(1).
5. Mamadayupova, V. S. (2015). Application of information technologies in the course of training in the foreign language. *European Journal of Education and Applied Psychology*, (1), 6-8.
6. Shonazarovna, M. V. (2019). Some ways of learning foreign language at an early age. *European Journal of Research and Reflection in Educational Sciences* Vol, 7(10).
7. Mirgiyazova, M. M. (2021). THE ROLE OF DISCOURSE ANALYSIS IN TEACHING FOREIGN LANGUAGES. *Academic research in educational sciences*, 2(2).
8. Mahbuba, R. (2022). IMPLICATING TASK-BASED LEARNING IN TEACHING LEGAL ENGLISH. *Евразийский журнал социальных наук, философии и культуры*, 2(2), 55-62.
9. Usarova, D. A. (2021). Pragmatic aspects of interpretation. *Academic research in educational sciences*, 2(1), 410-414.



THE ROLE OF PROVERBS IN HUMAN LIFE AND THEIR NATIONAL-CULTURAL CHARACTERISTICS

Ziyada Amangeldi kizi Jumanazarova

ESP teacher of Foreign Languages Department, Tashkent State University of Law

ABSTRACT

This article examines the national-cultural and universal characteristics of English and Uzbek proverbs in both languages and their role in people's lives. In this article, the conclusions of famous writers and scientists in their work on proverbs and the role and importance of proverbs in human life are mentioned. When we compared proverbs in different languages, we found differences and similarities between them.

Keywords: proverbs, translation, culture, lexical resource, nation

INTRODUCTION

The whole of the spiritual culture created by the people is definitely the proverbs of that people. Let's take the oral or personal memory of each nation, in it we will see the myths and legends that are vividly preserved in the memory of mankind, the primitive ideas and concepts from the depths of long history, the cream of life wisdom derived from observations over the centuries - the reflection of the experience of human thought. English and Uzbek folk proverbs have been collected and refined over thousands of years as a product of scientific and artistic thinking, spoken and studied among the people, and passed down from generation to generation as one of the best spiritual heritages. The best proverbs created and used in the past, as examples of folk wisdom, are still of great educational value. Such proverbs and wise words constitute a valuable treasure of the spiritual wealth of every nation.

LITERATURE REVIEW

Poets and writers such as Alisher Navoi, Babir, Muqimi, Furqat, Zavqi, Lutfiy used folk art effectively to make it easier for people to understand. The writer M. Gorky also gave a high assessment to the sayings: "The greatest wisdom is in the simplicity of words." Proverbs and songs are always short. They will have thoughts and feelings equal to the contents of all the books."

Deeper analysis of proverbs and their reflection of national-cultural and universal values in different languages is an urgent problem of modern linguistics. If we study in comparison, we can



see that all the languages of the world have their own characteristics, and it is this phenomenon that separates different languages from each other. But it is known that language learners acquire a foreign language based on a certain connection between the mother tongue and this language. These languages are united under certain categories. These categories include grammatical categories, lexical-semantic categories, linguistic signs similar to functional categories. Thus, generalizing categories provide universality in languages. At the same time, proverbs are a unique linguistic unit found in every language, and they also have something in common. About this G. L. Permiakov thinks as follows: the feature of generalizing situations, that is, combining the same or similar situations, is found in proverbs of different peoples. This uniformity in proverbs provides universality, and in many cases they have a special logical meaning. It follows that the proverbial world is related to world civilization, it is completely wrong to say that it belongs to only one nation. Universality in proverbs is the main edge of paremiology, which summarizes similar and identical situations in proverbs and occurs even in unrelated languages, regardless of their history, ethnicity [3, 47].

DISCUSSION AND RESULTS

It should be mentioned that many proverbs can be found similar in form and meaning or in their general functions in different language forms. Some Uzbek proverbs are functionally equivalent to English proverbs. For example, the alternative version of the proverb "First think, then speak" in the Uzbek language corresponds to the proverb "Avval o'yla - keyin so'yla", because this proverb has exactly the same meaning in both languages, and its grammatical system is also very close.

At the same time, it is difficult to find the exact equivalent of proverbs in translations from one language to another. Then reference is made to comments or a second adequate option. It is very difficult to find an alternative version of Uzbek proverbs in English or English proverbs in Uzbek, in this regard, commenting on proverbs when appropriate does not harm the translation, but rather complements and enriches it.

If the speaker is ignorant, let the listener be wise, as there is no exact English version of the proverb, this proverb can be given with its closest equivalent. However, if it is translated as 'If speaker is a fool listener should be wise', its Uzbek quality will be preserved and it will be understandable to everyone. The same words should be applied to the proverb The butcher grieves for bacon, and the goat - for its life. If the proverb "Who has a daughter that has a whim" is translated into English, an English student who is



not familiar with the traditions of the peoples of Central Asia, especially the Uzbeks, may not understand it completely. There is no other way to translate it into English as Parents of the bride may be capricious (they can expose their own terms). Another way: we believe that it is necessary to find another proverb that gives the meaning of this proverb.

They correspond to each other in terms of meaning and stylistic function, rarely match in word order, rarely differ in number, alternative options that differ in terms of lexical content. Most of them are national in form and international in content. If they confirm their belonging to a certain national language with their form, they show that they are a product of world culture and civilization with their content.

Pigeon's milk	Анқонинг уруғи
Every dog is a lion at home	Хўроз катагида қичқиради
All bread is not baked in one oven	Беш қўл баравар эмас
No pleasure without pain	Гул тиконсиз бўлмас

A rare, precious, unattainable thing is called "pigeon's milk" by Englishmen, Russians call it «Птичье молоко», Uzbeks call it "анқонинг уруғи" (legendary bird's egg).

It is known that every nation has its own beliefs, national characteristics, its own fantastic images, and examples of various district mobile manoli combinations.

The above aspects are also expressed in proverbs and poems in the works of V. Shakespeare. The basis for the possibility of translation from one language to another is that, although the peoples of the world speak different regional languages, their laws of thought are the same.

The proverbs and sayings of V.Shakespeare's era also embody the concepts that the life of his time was formed based on the people's thinking.

E. V. Kukhareva conducted research on Arabic and Russian proverbs and concluded that most proverbs have a common theme and situation. Paremiologists base this commonality in different ways: one group of scientists bases the similarity in proverbs on ethnic origin and kinship, other scientists say that it is the introduction and adoption of new domestic and cultural relations, and the third group of scientists says that it is the result of the steps of historical development and the harmony of ideas.

K. Y. Alibekov emphasizes that nowadays proverbs are studied not only as an example of folk art, but as a unit of linguistic culture. By comparing the concepts of "health" and "hygiene" in Russian, Uzbek and Kazakh languages, he comes to the conclusion that while in Russian culture the concepts of "health" and "hygiene" are precious necessities, in Uzbek and Kazakh



languages these concepts are equated with wealth. It can be seen from the above that in the national culture of the three nations, this concept has almost similar meanings.

K. Tumanishvili, proverbs are the result of the historical thoughts of the nation, and he calls them the "autobiographical" memory of a certain group. Proverbs are examples of national forms, and are located in harmony in the mind of the nation and on the basis of the national system of thought. This naturally shows the features of the ethnic group. And it is built as a result of genetic information.

CONCLUSION

Therefore, many studies have been conducted on the possession of universal and national characteristics of proverbs. If the universal characteristics are manifested in the structure, monosyllabicity and multisyllabicity of proverbs, as well as their themes, the reason for this is historical development, the strengthening of international relations and the growth of universal values. National characteristics are a reflection of national character, national spirit, and are characteristics of a specific ethnic group. It is absolutely impossible to understand the essence and meaning of a certain ethnos without knowing the necessary aspects such as its place of residence, history and nationality.

Therefore, in order to inculcate the idea of national independence in the minds of young people, to educate them as a perfect generation, it is appropriate to decorate our conversations with proverbs containing wise thoughts so that they are easy to understand.

REFERENCES

1. Пермяков Г.Л. Основы структурной паремиологии. – Москва, 1988
2. Кухарева Е. В. Типологически-универсальное и национально-специфическое в арабских пословицах и поговорках. Ч.2.- М.: РУДН,2003.
3. Алибекова К. Е. Обучение трюкоязычных студентов медицинской лексике и пословицам русского языка с базовыми концептами “здоровье”, “гигиена”. – Ташкент, 2006.
4. Tumanishvili. The specific and the Universal in the Proverb Genre / Rustaveli Institute of Georgian Literature. Volume1, 2007.
5. Мирзаев Т. Ўзбек халқ мақоллари.- Тошкент: Шарк, 2012.
6. Рўзибаева, Н. Р. (2021, June). ИНГЛИЗ ТИЛИ ДАРСЛАРИДА МАҚОЛ ВА МАТАЛЛАРДАН САМАРАЛИ ФОЙДАЛАНИШ УСУЛЛАРИ. In *Conferences*.
7. Рауфов, М. М. (2021). РЕАЛИЯЛАР, МИЛЛИЙ ХОС СЎЗЛАРНИ ТАРЖИМА ҚИЛИШНИНГ ЎЗИГА ХОС ХУСУСИЯТЛАРИ. Евразийский журнал академических исследований, 1(9), 574-583.



FAST AND SIMPLE IDENTIFICATION AND MEASUREMENT OF PHOSALONE USING ION MOBILITY SPECTROSCOPY

Abdul Sattar Danishyar

Department of chemistry, Faculty of education, Ghor Institute of Higher Education, Afghanistan

Mohammad Nabi Karimi

Department of physics, Faculty of education, Alberoni University, Afghanistan

Sayed Ali Aqa Sadat

Department of chemistry, Faculty of education, Alberoni University, Afghanistan

*Corresponding author email: sattardanishyar92@gmail.com

ABSTRACT

Phosalone is a chemical compound used as a pesticide in agriculture and horticulture. Phosalone can be identified and measured with different devices in all kinds of agricultural and horticultural products. Despite the various methods of spectroscopy with various applications in the fields of chemistry and physics, it can be used to identify and measure a variety of chemical compounds. But the ion mobility spectrometer is a simple, low-cost method that does not require complex extraction methods to identify and measure organic compounds. With this research, the possibility of measuring Phosalone pesticide by ion mobility spectrometer in positive polarity was investigated. This test was performed without the need for complicated sample preparation steps. At first, the Phosalone standard sample was identified by the IMS device and the optimal conditions for its measurement were determined. The data was analyzed with SigmaPlot software. The optimal temperature of the tube was 200°C and the optimal temperature of the injection chamber was 260°C. The linear range for measuring Phosalone ppm was determined to be 0.5-20. The detection limit of 1.4 ppm and determination limit of 4.7 ppm was obtained.

Keywords: Phosalone, ion mobility spectrometer, detection, measurement, optimization, detection limit and determination limit

INTRODUCTION

The world's population is expanding, which makes the need for food more pressing[1, 2]. It is essential and important to

increase and sustain agricultural and food output in the near future [1, 3, 4]. Among these are compounds that shorten the shelf life of agricultural and food items. Plant pesticides are one of the main things that lower food [5, 6].

Chemical or non-chemical substances known as pesticides are used to eradicate or manage a variety of pests and nuisance organisms, including animals, plants, fungi, weeds, and aquatic creatures as well as bacteria, viruses, and microbes [7, 8]. These chemicals kill plant pests but also severely harm agricultural crops [6, 9, 10]. The aforementioned article states that because pesticides have the ability to produce goods that are not hazardous to human health, several studies have been carried out to evaluate, extract, identify, and quantify them. For testing organic molecules, an ion mobility spectrometer is an appropriate, straightforward, and affordable tool [11, 12]. An organophosphorus insecticide called Phosalone is used in agriculture and horticulture to get rid of several plant pests [13]. Overuse of Phosalone has a negative impact on human and other living things' health. The purpose of this study is to present a low-cost, straightforward technique for measuring and identifying the pesticide Phosalone without the need for intricate extraction and separation procedures. The ion mobility spectrometer is a valuable method for identifying and measuring organic compounds, and especially for measuring and identifying agricultural pesticides and food. Fusalon residues in agricultural products are also harmful to humans, and how identifying these residual pesticides in fruits and vegetables requires comprehensive research on various laboratory devices. And how to test the pesticides in the device and how to optimize the devices, in this sense, this research is an urgent need. The ion mobility spectrometer device used in this research was made in Isfahan University, Iran, by Taf Technology Company [12, 14].

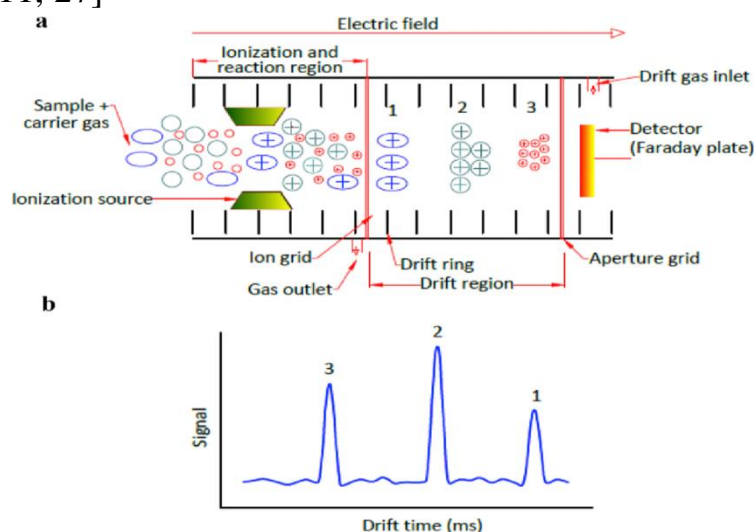
In the sample preparation and analysis section, the various methods introduced in scientific sources for pesticide analysis show the importance of this issue at the world level [15-17]. Sample preparation can be considered as one of the most important stages of pesticide measurement, which includes sample pre-concentration and cleaning [18, 19]. In most cases, sample preparation is necessary for the analysis of various chemical compounds in complex tissues. So far, various sample preparation technologies include liquid-liquid extraction (LLE), solid phase extraction (SPE), hanging drop micro extraction (SDME), solid phase micro extraction (SPME) and liquid phase micro extraction (LPME), have been presented

Chromatographic methods require long times for separation in the column, which leads to a decrease in the speed of the analysis flow [13, 20, 21]. In addition, one of the main requirements of HPLC is the use of high-purity washing solvents. On the other hand,

identification methods by GC are limited to the analysis of volatile compounds or require time-consuming and laborious derivatization methods before sample analysis. Additionally, IMS doesn't require a vacuum system like MS does. This device's mobility, fast reaction time, great sensitivity, and simplicity of use are further benefits[13]. Analyzing genuine samples with intricate textures is one of the IMS device's issues, particularly when analyzing real samples

Liquid-liquid micro extraction and negative corona discharge ionization have been integrated for the purpose of detecting and measuring pesticides[22, 23]. The practical application of the suggested technology has demonstrated its efficacy.

The ion mobility spectrometer device consists of four main parts, including the detector, the drift region of the ion source, and the ion grid[24, 25]. Carrying out chemical reactions of the sample with reactant ions (in positive polarity) or electrons (in negative polarity) in the ionization region, turns the sample vapors into desired ions[26]. The pulse injection of ions from the ionization zone to the thrust zone is done through the ion network. Ions move to the drift region under the influence of the applied electric field and hit the detector at different times based on the difference in size and mass. The signal resulting from the impact of the ions on the detector, after being amplified with the help of an amplifier, creates the ion mobility spectrum. Figure (1. a and b) shows the principle of operation of the ion motion spectrometer. The ion source is one of the main and important parts of the IMS device. In order to ionize the sample molecules in the IMS device, different ionization sources can be used[11, 27]



Figure(1) Schematic of ion mobility spectrometer[28]

Materials and methods

1- Solubilization of Phosalone

In this research, Phosalone of Merck company was used, 10 mg of Phosalone powder was weighed and transferred to a 100 ml flask and made up to 100 ml with methanol. A solution of 100 ppm Phosalone was prepared and to measure Phosalone by an ion mobility spectrometer under different conditions, one microliter was injected into the device with a 10 microliter Hamilton syringe, and its ion mobility spectrum was recorded..

2. Phosalone injection and recording peaks

In this practical work, the input gas to the ion mobility spectrometer to produce interacting ions is compressed air. The interacting ions in the ionization region and the presence of air thrust gas include $(H_2O)_nH^+$, $NH_4^+(H_2O)_n$ and $NO^+(H_2O)_n$.

The first peak at 4 milliseconds corresponds to protonated ammonia. The second peak at 4.6 milliseconds corresponds to NO^+ and the third peak at 5.2 milliseconds corresponds to H_3O^+ ions (protonated water vapor).

In the ionization zone, Phosalone molecules take protons from interacting ions and become ions. Phosalone ions enter the thrust area of the IMS device from the electrical network in a pulsed manner and move under the influence of an electric field of about 500 V/cm and reach the detector in 12.5 milliseconds.

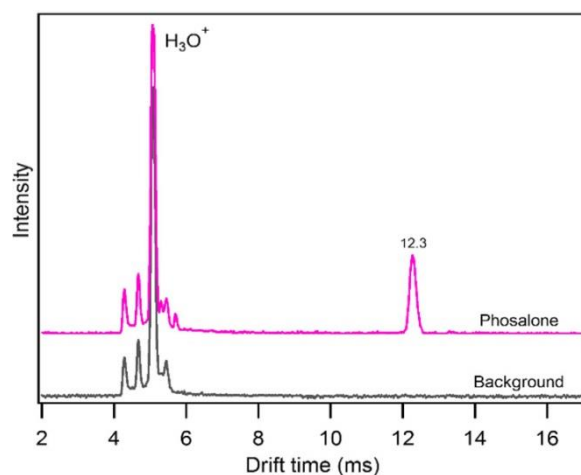


Figure (2) background and the peak of Phosalone to the ion mobility spectrometer injection at 200 C temperature

3- The temperature of the thrust tube and the injection chamber to measure Phosalone

As can be seen in Figure (3), with the increase in the temperature of the cell, the peaks of Phosalone are shifted to a shorter time and its intensity increases. Finally, the peak intensity of Phosalone has increased at high temperatures, so the temperature of 200°C was chosen as the

optimal temperature for measuring Phosalone. In figure (4), the maximum peak intensity of Phosalone at each temperature is plotted in terms of temperature.

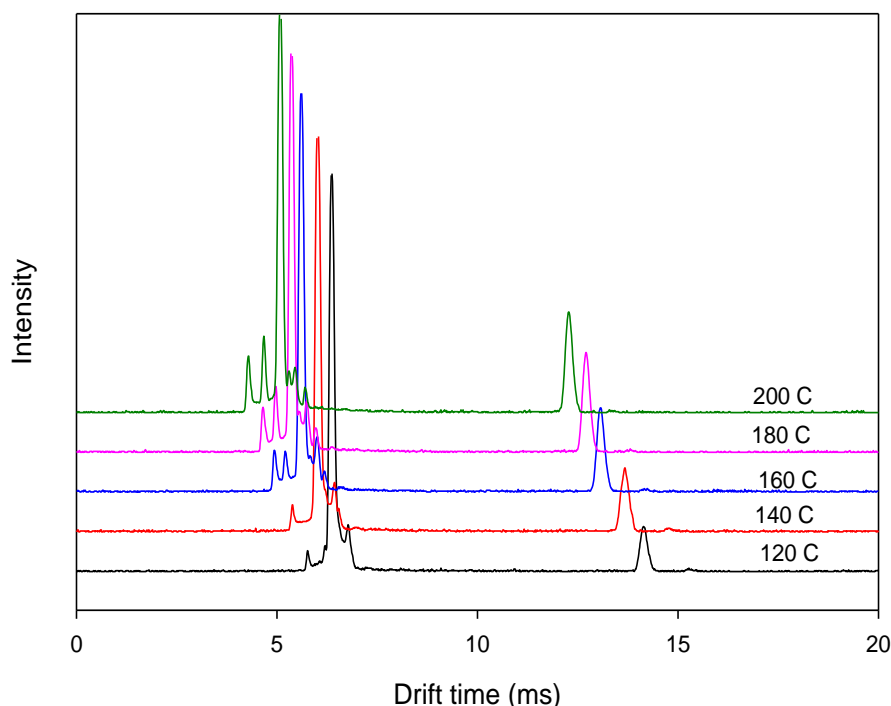


Figure (3) Ion mobility spectrum resulting from the injection of two microliters of 100 ppm Phosalone at different temperatures of the thrust tube

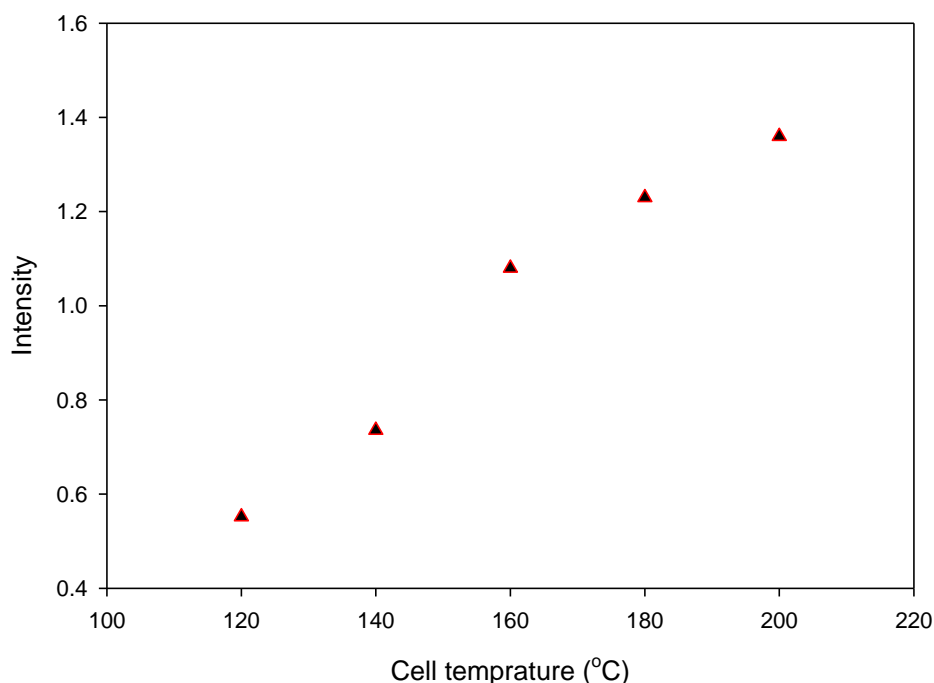


Figure (4) The maximum intensity of Phosalone signal at each temperature according to the temperature of the thrust tube

To check the temperature of the injection area, two microliters of 100 ppm Phosalone solution were injected into the

device at different temperatures of the injection area and the optimum temperature of the cell (200 degrees Celsius) and their spectrum was recorded as seen in Figure (5) with Increasing the temperature of the injection area, the peak intensity of Phosalone increased. The temperature of 260 °C was obtained as the optimal temperature. In fact, the increase in the intensity of the Phosalone signal can be attributed to the increase in its evaporation rate and the increase in the sample input to the ionization zone. Other optimized parameters are listed in Table (1).

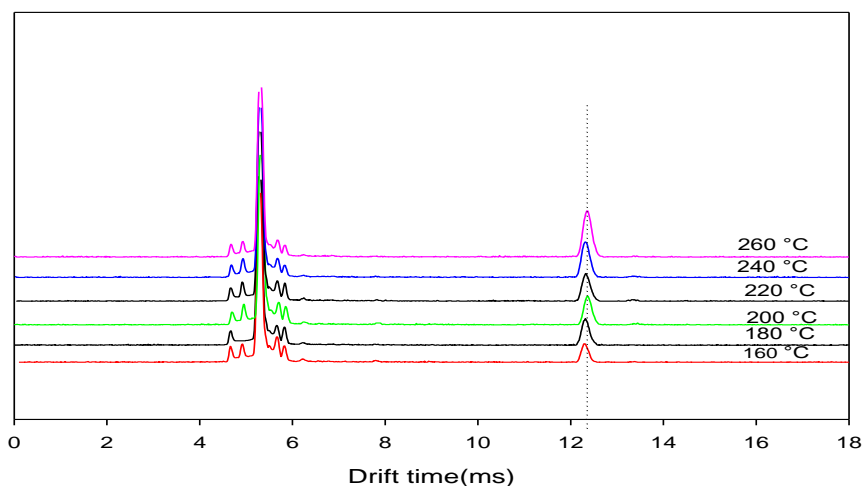


Figure (5) ionic mobility spectrum of Phosalone at different temperatures of the injection chamber

Table (1) optimal parameters of the ion mobility spectrometer device for the measurement of Phosalone

parameter	Settings
Corona voltage	2300 V
Thrust area voltage	8000 V
Thrust tube field	500V/cm
Buoyancy gas flow rate (compressed air)	600 ml/min
Carrier gas speed (compressed air)	300 ml/min
The temperature of the injection chamber is	260 °C
The temperature of the thrust tube is	200 °C
Pulse width	50 μs
device polarity	Positive

Research findings

4- Calibration curve and figures of merit

In order to obtain the calibration curve, different concentrations of Phosalone 0.5-100 ppm were prepared in methanol solvent. Then, in the optimal conditions obtained for the measurement of Phosalone (Table 1), the amount of two microliters of different concentrations of Phosalone was injected three times into the IMS device and their spectrum was recorded.

To obtain the calibration curve, the area under the peak was plotted against the concentration. Figure (5) shows the calibration curve of Phosalone. In this graph, the Y-axis is the sub-peak level and the X-axis is the concentration of Phosalone. In the line equation $y=ax+b$, a is the slope of the calibration curve and b is the width from the origin. In Figure (6), there is a linear range (0.5-20 ppm) and a saturation range. In the linear range of Figure (7), with increasing concentration, the area under the peak increases linearly. Therefore, its line equation can be obtained. In the saturation range, the level below the peak does not change with increasing concentration. In fact, the maximum signal that the device can show does not increase from the saturation concentration onwards.

In quantitative and accurate measurement, the linear range of the calibration graph is important because the area under the peak indicates the specific concentration. By obtaining the linear equation, the unknown concentration can be calculated.

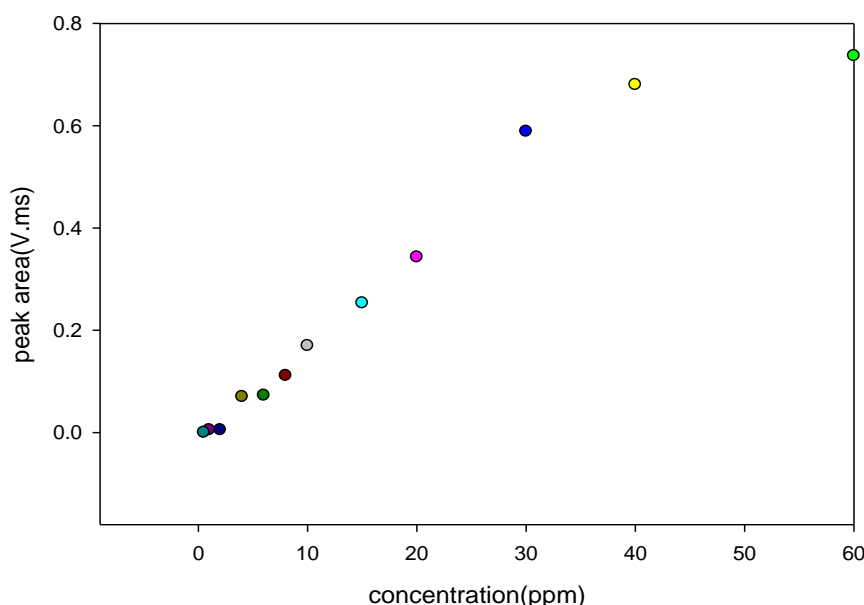


Figure (6) Phosalone calibration curve at 0.5-100 ppm concentrations

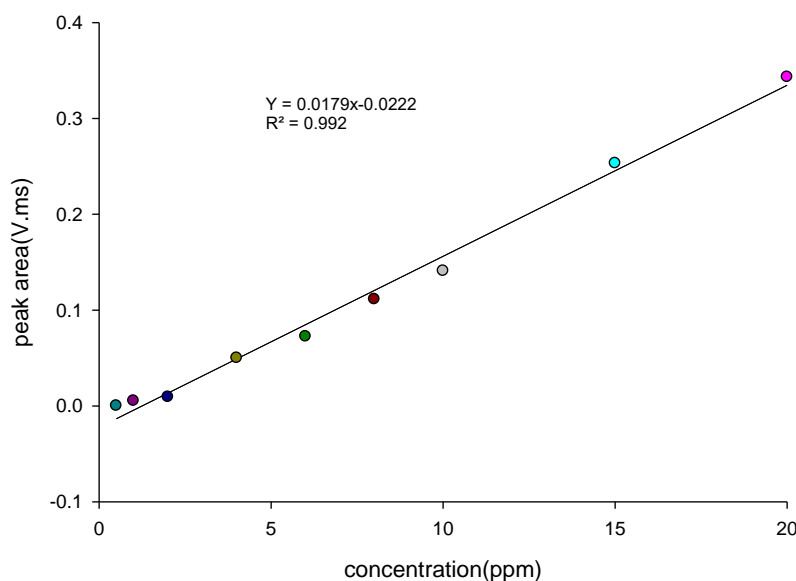


Figure (6) The linear range of Phosalone calibration curve

5. detection limit of ion mobility spectrometer (LOD)

The minimum concentration that a method can detect with a certain degree of confidence (Gosciny, Séverine, et al. 2015). In general, the detection limit is the concentration in which the device signal has a significant difference from the background signal. To calculate the detection limit, equation (1) is used (Ali Dini, Ali Alizadeh Spring 2018. .), where S_b is the standard deviation for the control sample and m is the slope of the calibration curve. To calculate the detection limit, the sample was injected into the device 12 times and the standard deviation was calculated. The detection limit for Phosalone in optimal conditions was 1.412 ppm.

$$LOD = 3/3 \left(\frac{0/00621}{0/0222} \right) = 1/412$$

6- limit of quantification (LOQ)

The limit of quantification of a method is the smallest sample concentration that can be determined with an acceptable uncertainty. In fact, it is the limit in which the difference between two different values can be reasonably recognized. The reduction limit is obtained from relation (2). In equation (2), S_b is the standard deviation of the control sample, m is the calibration slope, and LOQ is the limit of determination. The detection limit is 3 times the standard deviation of the control sample and the quantification limit is 10 times the standard deviation of the control sample.

The minimum concentration that the analytical method can determine and measure with a certain certainty is calculated from the following equation and its value is obtained.



$$LOQ = \frac{10S_b}{m} \quad (Y)$$

$$LOQ = 10 \left(\frac{0/00621}{0/0132} \right) = 4/731$$

REFERENCES

1. Satterthwaite, D., G. McGranahan, and C. Tacoli, *Urbanization and its implications for food and farming*. Philosophical transactions of the royal society B: biological sciences, 2010. 365(1554): p. 2809-2820.
2. Conway, G., *One billion hungry: can we feed the world?* 2012: Cornell University Press.
3. Byrnes, B.H. and B.L. Bumb, *Population growth, food production and nutrient requirements*. Journal of crop production, 1998. 1(2): p. 1-27.
4. Pretty, J., *Agricultural sustainability: concepts, principles and evidence*. Philosophical Transactions of the Royal Society B: Biological Sciences, 2008. 363(1491): p. 447-465.
5. Godfray, H.C.J., et al., *Food security: the challenge of feeding 9 billion people*. science, 2010. 327(5967): p. 812-818.
6. Mahmood, I., et al., *Effects of pesticides on environment*. Plant, soil and microbes: volume 1: implications in crop science, 2016: p. 253-269.
7. Sundh, I. and M.S. Goettel, *Regulating biocontrol agents: a historical perspective and a critical examination comparing microbial and macrobial agents*. BioControl, 2013. 58: p. 575-593.
8. Ahmad, G., et al., *Biological control: a novel strategy for the control of the plant parasitic nematodes*. Antonie van Leeuwenhoek, 2021. 114(7): p. 885-912.
9. Hill, D.S., *Agricultural insect pests of the tropics and their control*. 1987: Cambridge University Press.
10. Tudi, M., et al., *Agriculture development, pesticide application and its impact on the environment*. International journal of environmental research and public health, 2021. 18(3): p. 1112.
11. Armenta, S., M. Alcala, and M. Blanco, *A review of recent, unconventional applications of ion mobility spectrometry (IMS)*. Analytica chimica acta, 2011. 703(2): p. 114-123.
12. Kaur-Atwal, G., et al., *Chemical standards for ion mobility spectrometry: a review*. International Journal for Ion Mobility Spectrometry, 2009. 12: p. 1-14.
13. Sadat, S.A.A., V. Ilbeigi, Y. Valadbeigi, and M. Soleimani, *Determination of pesticides phosalone and diazinon in pistachio using ion mobility spectrometry*. International Journal for Ion Mobility Spectrometry, 2020. 23: p. 127-131.
14. Tabrizchi, M. and V. ILbeigi, *Detection of explosives by positive corona discharge ion mobility spectrometry*. Journal of hazardous materials, 2010. 176(1-3): p. 692-696.
15. Muir, D. and E. Sverko, *Analytical methods for PCBs and organochlorine pesticides in environmental monitoring and*



surveillance: a critical appraisal. Analytical and bioanalytical chemistry, 2006. 386: p. 769-789.

16. Lehotay, S.J. and J.M. Cook, *Sampling and sample processing in pesticide residue analysis*. Journal of agricultural and food chemistry, 2015. 63(18): p. 4395-4404.

17. Zhang, C., *Fundamentals of environmental sampling and analysis*. 2007: John Wiley & Sons.

18. Zhang, L., et al., *A review of sample preparation methods for the pesticide residue analysis in foods*. Central European Journal of Chemistry, 2012. 10: p. 900-925.

19. Nasiri, M., H. Ahmadzadeh, and A. Amiri, *Sample preparation and extraction methods for pesticides in aquatic environments: A review*. TrAC Trends in Analytical Chemistry, 2020. 123: p. 115772.

20. Szultka, M., P. Pomastowski, V. Railean-Plugaru, and B. Buszewski, *Microextraction sample preparation techniques in biomedical analysis*. Journal of separation science, 2014. 37(21): p. 3094-3105.

21. Khademi, S. and S. Mohammad, *Direct immersion-solid phase microextraction arrow-Corona discharge ion mobility spectrometry for determination of pesticides in environmental samples*. Dissertation, Duisburg, Essen, Universität Duisburg-Essen, 2021.

22. Ilbeigi, V., Y. Valadbeigi, L.u. Slováková, and S. Matejcik, *Solid Phase Microextraction–Multicapillary Column–Ion Mobility Spectrometry (SPME–MCC–IMS) for Detection of Methyl Salicylate in Tomato Leaves*. Journal of Agricultural and Food Chemistry, 2022. 70(49): p. 15593-15601.

23. Valadbeigi, Y., V. Ilbeigi, W. Mamozai, and M. Soleimani, *Rapid and simple determination of gabapentin in urine by ion mobility spectrometry*. Journal of Pharmaceutical and Biomedical Analysis, 2021. 197: p. 113980.

24. Eiceman, G.A., Z. Karpas, and H.H. Hill Jr, *Ion mobility spectrometry*. 2013: CRC press.

25. Hill Jr, H.H., W.F. Siems, and R.H. St. Louis, *Ion mobility spectrometry*. Analytical Chemistry, 1990. 62(23): p. 1201A-1209A.

26. Vestal, M.L., *Methods of ion generation*. Chemical reviews, 2001. 101(2): p. 361-376.

27. Wittmer, D., Y.H. Chen, B.K. Luckenbill, and H.H. Hill, *Electrospray ionization ion mobility spectrometry*. Analytical Chemistry, 1994. 66(14): p. 2348-2355.

28. Gabelica, V. and E. Marklund, *Fundamentals of ion mobility spectrometry*. Current opinion in chemical biology, 2018. 42: p. 51-59.

ЯНГИ ЗАМОН АДАБИЁТИ ВА ИЖТИМОЙ ВОҚЕЛИК

Гуландом Жуммаевна Тоғаева

Чирчиқ давлат педагогика университети доценти, филология фанлари номзоди

АННОТАЦИЯ

Мақолада жадид адабиёти вакилларининг ўз давридаги ижтимоий-сиёсий бухронларга муносабати, янги замон адабиёти шаклланиши қийинчиликлари, жадидларнинг ўз олдига қўйган улкан вазифаларни чин дилдан ҳис этиши ва элни маърифат, кенг дунёвий илмга чақириши, истибдодга қарши маърифат билан курашиш зарурлигини англаб, ўз асарларида интеллектуал руҳни намоён этиши илмий жиҳатдан асослаб берилди.

Калит сўзлар: миллат, маънавий-интеллектуал қиёфа, илм олиш, ўз тилининг луғат бойлиги, адабий-эстетик ҳодисалар, матбуот, ижтимоий воқелик, жадидчилик ҳаракати, комил инсон.

КИРИШ

Адабиёт ҳамма замонларда инсоният тафаккурининг маҳсули, жамиятдаги мавжуд ахлоқий тарбиянинг меҳвари сифатида камол топади. Шу билан бирга у ўша давр воқелигининг маълум маънодаги бадиий ифодаси ҳамдир. Айни шу маънода XX аср бошларида янги ўзбек адабиёти шаклланишининг ўз ижтимоий-сиёсий ва адабий сабаблари бор. Албатта масаланинг бу жиҳатлари Б.Қосимов, Ш.Юсупов, У.Долимов, С.Аҳмедов, Н.Абдуазизова, Н.Каримов, Д.Алимова, Н.Жабборов, Р.Тожибоев, Ҳ.Болтабоев, Б.Дўстқораев, Ш.Ризаев, Р.Холматов, Р.Тожибоев каби олимлар томонидан ўрганилган.[1]

Маълумки, чор Россияси томонидан Туркистон худудининг босиб олиниши аҳоли мустамлакачилик зулми остида эзилишига сабаб бўлди.

АДАБИЁТЛАР ТАҲЛИЛИ ВА МЕТОДОЛОГИЯ

Император Николай II 1905 йил 17 октябрда Манифест эълон қилди. Унга кўра, Россияда сўз эркинлиги таъминланиши маълум қилинган эди. Албатта бу ҳодиса барча ўлкалар қатори Туркистонда матбуот ва китобат ишлари анча жонланиб кетишига сабаб бўлди. Натижада китоб ва газета чоп этувчи ишбилармонлар сони кўпайди.

Тошкентда Ильин, Яковлев, Орифжонов, Наманганда Ибрат, Самарқандда Слиянов, Газаров, Қўқонда Шумаков,



Вайнерларга қарашли матбаахоналарда босма ишлари ривожланди. Шунинг баробарида газетачилик иши ҳам авж олиб юқори ўринга чиқди. 1906-1913 йилларида юртимизда “Турон”, “Тараққий”, “Хуршид”, “Шухрат”, “Тужжор”, “Осиё”, “Самарқанд” каби газеталар чоп қилинди. Зеро, матбуот-катта фикр майдони, у ўзаро фикр алмашиш, дунё, фан, адабиёт, санъат борасидаги эришилган билимларни жамлаш жамиятни ислоҳ этувчи ғояларни кенг намоён этишга имкон берувчи кўзгудир. Бу кўзгу қанчалар равшан, ёруғ бўлса, фикр ва ақл ҳам шунча пешланади. Ғоя ғояга сабаб бўлади, уни ривожлантиради, ақл ақлни топади. Яъни матбуотнинг ижтимоий институтлик вазифаси бу ерда кенг аҳамият касб этади.

Айни ана шу долғали кезларда янги адабиёт, янги адабий йўналиш ва турфа жанрлар эҳтиёжи пишиб етилди. Демакки, Шарқ ва Ғарб маданиятининг ўзига хослиги, янгиланиш эҳтиёжи, ўзаро уйғунлашув заруратини тақозо қилди. Бу зарурат чўғланиб маънавий зиёга айланди.

Жадидчилик ҳаракати ўлкамиздаги зиёли қатламларнинг -рухий тараққиёти самараси эди. Бу фан, адабиёт ва санъатда ўзига хос акс-садо берди.

Таниқли олим Б.Қосимовнинг айтишича, “жадидчилик ғоялари эрта баҳорнинг шиддатли шамоллари сингари пўпанак босиб, билжираб кетган ўрта асрчилик турмушининг энг пастки қатламларигача очиб ташлади... Хусусан, жадидларимиз миллатнинг яшамоғи, тараққий топмоғи учун биринчи навбатда, озод, мустақил бўлмоғи лозимлигини англаб етдилар ва кенг халқни уйғотишга алоҳида эътибор бердилар.”[2.] Туркистон зиёлларининг маънавий дунёсида пайдо бўлган янгиланишларнинг моҳияти золимларга қарши онгли фикрлаш, кенг интеллектуал билимлар асосида жамиятни ислоҳ қилиш ғоясига асосланган эди.

Жадид атамасининг вужудга келиши ҳақида олим Б.Қосимов шундай уқтиради: “Туркия туркларидида илк марта Султон III Салим ҳукмронлиги (1789-1802) даврида пайдо бўлди. Австрияга элчи қилиб юборилган Абубакр Ратиб афанди шоҳга ёзган билдирувларида у ерда кўрган идора тизимини “низомии жадид” деб тушунтиради. Шу йиллари “низомии жадид” тор маънода аскарий тизимни овруполаштиришни, кенг маънода, илм-фан, маориф, саноат ва қишлоқ хўжалигини замонавийлаштиришни кўзда тутарди. Жадид ва қадим ибораси кейинги асрларда майдонга келган бўлса-да, у моҳиятан эскилик ва янгилик, тараққиёт ва турғунлик ўртасидаги эски курашдир”. [3.]

И.Гаспринский, М.Абдурашидхонов, А.Фитрат, М.Бехбудий, А.Авлоний, Чўлпон, Ҳамза, Сиддиқий-Ажзий, М.Шермухаммедов каби ўнлаб прогрессив тафаккур эгалари

учун муштарак мақсад-юрт ободлиги, хурлиги, маърифатли инсонлар жамиятни барпо қилиш ғояси эди.

М.Бехбудий “Самарқанд” газетасининг 1913 йил 42-сонида “Фан раҳбарларига, олимларга” номли мақоласида шундай дейди: “Биз мусулмонлар фан ва фалсафанинг ривожланишида сўнги беш юз йил давомида жуда ҳам орқада қолиб кетдик. Ана шу вақт ичида бошқа мамлакатларда қандай ўзгаришлар бўлиб ўтганлигига бир назар ташлангиз, бу мамлакатлар халқларининг дунёқарашлари ўзгарганини кўрасиз. Материализмга, атеистларга, социал-демократларга (иштирокиюнчиларга) қарши муваффақиятли курашмоқ мақсадида фан ва фалсафанинг янги ютуқлари билан қуроллансак ёмон бўлмас эди”. Жон куйдириб айтилган бу сўзлардаги маъно ва мақсад тубида озодлик ғояси яширинганини пайқаш қийин эмас.

Мамлакатни хур ва озод кўриш орзуси янги ўзбек адабиётига тамал тошлари қўйди. У ҳам жанр ҳам услуб ва мавзу жиҳатдан янги йўналишларга эга бўлди. Бу йўналишларда аждодларимиз бадиий мероси ва ривожланган мамлакатлар адабиёти эришган ютуқларининг синтези акс этган эди. Бунда лирик турлар, наср билан бирга драматик асарлар ривожини ҳам кузатиладики, бу маълум маънода жамиятда катта маънавий ҳодиса эди. Биргина шеърятда бармоқ вазидаги ижоднинг кучайиши ҳам янги-янги ижодий йўлларнинг кашф этилишига сабаб бўлди. А.Фитрат, Чўлпон, А.Авлоний, Ҳамза каби ижодкорлар нафаси билан адабиёт гулшанида янги ва ўзига хос чаманзорлар яратилди. Бунда анъанавийлик ва замонавийликнинг ўзаро таъсири кучли бўлди.[4.]

Энг аввало, шунини айтиш лозимки, жаҳид зиёлилари ижтимоий ҳаётда ҳам адабиётда ҳам Русия Оврупо маданиятига кўр-кўрона эргашиш, ундаги барча янгиликдек туюлган анъана ва одатларни шаклан қабул этиб, тақлид қилиш йўлидан бориш оқибатларини яхши англари эдилар.

Бу ҳақда “Таржимон” газетасининг 1907 йил 10 март сонида И.Гаспринский шундай дейди: “Петру замониндан юз саная қадар рус зиёлилари овруполиларга кулгили даражада тақлид этардилар...Шунча орқада бўлишларига қарамай, эркин фикрда Руссолик, Вольтерлик санарлар, асирликни хушҳол кўрмоқ ила баробар маршрутдан, жумҳуриятдан дам урарлар эди. Тақлидда ифрод даражалара воруб, русча сўзлашмоқни айб ва нодонлик ўйлаб, французча ярим-ёрти сўзлашишни вожиб билурлар эди. Лекин сўнг рус адабиёти илгарилаб кетгач, тақлидчилик озайди.”...

Шу маънода фан, санъат, адабиётда ҳам ҳар бир кириб келган янгиликнинг яхши томонларини олиб, ёмон

томонларидан воз кечишлик фазилатлари жаид зиёлилари учун устивор вазифаларга айланди.

Шу билан бирга жаид адабиёти вакиллари ўлкада янги технологияларга асосланган, дунёвий ва диний илмлар кадрланадиган таълим-тарбия усулларини ўзида жо этган мактаблар очишни ҳам йўлга қўйдилар. Зеро, “Садойи Туркистон” газетаси бир ўринда “Жаиднинг маъноси динга ривож бермоқ ва миллати исломни тараққий қилдирмоқ усулидир” деб ёзган эди.(1914,12-сон)

Биргина янги шаклланиб келаётган ўзбек адабиётида янги жанрлар кириб келишида, ижтимоий воқелиқдаги миллатни қийнаб келаётган муаммо ва ҳодисаларни адабий оламга, бадий образлар силсиласига киритиш борасида жаид ижодкорларининг ўрни катта бўлди.[5.]

Энди пайдо бўлган янги адабиёт мавзу қўламлари жиҳатидан бутунлай ўзига хос ва ҳаётий эди, у халқ руҳига яқин ва унинг дардини ифода қилиш воситаларини бадий асарлар руҳига сингдириб юбора олган эди.[6.] Масалан, вақтли матбуотнинг фаоллашуви, унда пайдо бўлган миллий ўзликни англаш туйғусининг кучлилиги, драматургиянинг шаклланиши, шеърятда бармоқ вазнининг устивор ҳодисага айланиши, янги тимсол ва кенг билимли қаҳрамонларнинг бадиияти-булар ҳаммаси янги ўзбек адабиёти юксак паллага кираётганидан далолат эди. Фитрат “Бармоқ вазнидаги биринчи шеърни мен ёздимми, Чўлпон ёздими-эслолмайман, аммо бармоқни назарий жиҳатдан ёқлаб чиққанлардан мен эдим”, дейди.[5.]

Олим Б.Қосимов таъкидича, бу борада А.Авлонийнинг ҳам ҳиссаси беқиёс бўлган.

Маълумки, минг йиллик классик шеърятимиз аруз вазнида ёзилган. Лекин халқ оғзаки ижоди ҳосилалари бўлмиш асарлар –бармоқ вазнида яратилган. Мураккаб, бухронли даврнинг гоҳ шиддаткор, гоҳ бўғиқ, гоҳ тугёнли нафасини акс эттиришда, уни оммага етказишда бармоқ вазнининг ихчамлиги, вазн талабларининг халқ кўнглига яқинлиги кўл келди. Биргина А.Авлонийнинг бармоқдаги илк шеърлари халқ кўшиқларига мослаб ёзилди:

Отма мани тошлар билан, ёр-ёр, ёр-ўв,

Учуб кетай қушлар билан, ёр-ёр, ёр-ўв...

Янги вазн кириб келиши билан адабиётда бутунлай ўзгача бадий тимсол ва характер, бадий ифода йўсинлари ҳамда сўзни талқин этишдаги маҳорат пиллапоялари ҳам кенгайиб кетди.

А. Авлонийнинг “Ер тарихи” номли беш бўғиндан иборат шеърига эътибор беринг:

Эй, Ернинг шари,
Сен аллақанча
Минг йил илгари,
Сон-саноксиз
Асрлар бурун
Қуёшдан чакнаб
Чикқан ўт парча.

Бу ўзига хос программ шеър бўлиб, Ер шари тарихинг асрий силсилалари акс этган. Уни тасвирлаш орқали шоир инсон қалбига назар ташлайди Ер шари бадий образ даражасига кўтарилади. Шу Ер шарида юз бераётган қонли тўқнашувлар, халқлар ва миллатлар ўртасидаги муаммолар калитини излаш туйғуси поэтик қахрамоннинг дунёсини бетинч этаётир. Барибир инсон боласи қанча гуноҳ қилмасин, Ер шари мисоли онадек унга доимо шафқат этади. Бу образ тимсолида ижтимоий масалаларга ҳам жавоб қидиради шоир.

Ёки “Очлар ҳолидан “ шеърида:

Боғда булбул сайрама,
Гул ишқида йиғлама,
Бежо бағринг доғлама,
Сайра булбул, йиғлаб-йиғлаб очлар ҳолина”-

каби сатрларни ишлатиш асносида давр воқеаларига муносабат билдиради, ўз даври ижтимоий воқелигига лоқайд қарай олмайди.[7.]

ХУЛОСА

Алалхусус, А.Авлоний, А.Фитрат, Ҳамза, Чўлпон каби адабиёт фидойиларининг меҳнатлари эвазига янги ўзбек адабиётида вазн янгиланиши, поэтик жанрларнинг янгиланиши, насрнинг пайдо бўлиши, таржима адабиёти кенг миқёсда ривожланиши, ўрганиб қолинган Гул, Булбул, бевафо ёр каби образларнинг фаоллашуви ва ўзгача маъно юкини кўтариши, шеърятда ижтимоий ҳодисалар ўз бадий қиёфасини топиши, поэтик образлар хилма-хиллиги, хатто шеърларнинг сарлавҳаланиши, публицистик адабиёт камолга етиши теран заминга эга бўлган тафаккур тарақиётининг маҳсули бўлди.

REFERENCES

1. Каримов Н. Ўзбекистонда катта қирғин бошланиши. // “Ўзбекистонда совет давлатининг қатағон сиёсати: келиб чиқиши сабаблари ва фожиали оқибатлари” илмий мақолалар тўплами. – Тошкент, 2012, 27-41-бетлар.
2. Қосимов Б.Миллий уйғониш.-Т.: Маънавият, 2002. Б-9.
3. Қосимов Б.Маслакдошлар.-Тошкент.:Шарқ,1994 йил.
4. Тоғаева, Г. Ж. (2023). ҲАМЗА ҲАКИМЗОДА НИЁЗИЙ ИЖОДИДА МИЛЛАТНИНГ ЛИРИК СИЙМОСИНИ ЁРИТИШДА РАҚАМЛИ ТЕХНОЛОГИЯЛАРНИ ҚЎЛЛАШ. *Academic research in educational sciences*, 4(CSPU Conference 1), 543-547.
5. Jummayevna, T. G. (2023). The Charm of Words in the Creation of Mirzo Kenjabek. *Eurasian Journal of Humanities and Social Sciences*, 16, 84-87.
6. Jummayevna, T. G. (2022). LYRICAL IMAGE OF THE PEOPLE IN THE WORKS OF KHAMZA HAKIMZODA. *Confrencea*, 7(7), 242-245.
7. Тоғаева, Г. (2023). *Тасаввуфга оид адабий-фалсафий қарашларнинг матбуотда акс эттирилиши*. <https://uza.uz/uz/posts/tasavvufga-oid-adabiy-falsafiy-qarashlarning-matbuotda-aks-ettirilishi> 476328
8. Jummayevna, T. G. (2022). LYRICAL IMAGE OF THE PEOPLE IN THE WORKS OF KHAMZA HAKIMZODA. *Confrencea*, 7(7), 242-245.



KIMYO DARSLARIDA INNOVATSION TEXNOLOGIYALARDAN FOYDALANISHNING AHAMIYATI

Feruza Sattarovna Karimova

Jizzax politexnika instituti, katta o'qituvchi

Ziyoda Jahongir qizi Abdurashidova

Jizzax politexnika instituti, talaba

ANNOTATSIYA

Ushbu maqolada kimyo darslarida virtual laboratoriya ishlaridan foydalanishning samarali yo'llari haqida fikr yuritilgan.

Kalit so'zlar: Virtual laboratoriya, axborot-kommunikatsion vositalari, interfaol uslublar.

KIRISH

Kimyoni o'qitish samaradorligini oshirishda kompyuter vositalaridan foydalanishga bag'ishlangan ishlar juda kam, bor manbalarda ham axborot texnologiyalarining o'quv jarayonidagi imkoniyatlari yetarlicha ochib berilmagan. Respublika Prezidenti Sh.M.Mirziyoyev ta'limni rivojlantirish, yosh avlodga jahon andozalariga mos bilim, iqtidor va ko'nikmalar berish, ularni ona - Vatanga, milliy istiqlol g'oyalariга sadoqat ruhida tarbiyalash borasida ko'rsatayotgan doimiy g'amxo'rliги tufayli ta'lim-tarbiya ishlarining bugungi qiyofasi tubdan o'zgardi. U mustaqillikka erishib, taraqqiyot yo'lidan dadil borayotgan mamlakatimiz ruhini, g'oyalari va intilishlarini o'zida aks ettirgan ta'lim tizimiga aylanmoqda. Eng asosiysi, mamlakatimizda ta'limning hali jahon amaliyotida kam uchraydigan betakror milliy modeli yaratildi.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Ta'lim va tarbiya, ilm-fan, sog'liqni saqlash, madaniyat va san'at, sportni rivojlantirish masalalari, yoshlarimizning chuqur bilimга ega bo'lishi, chet tillarini va zamonaviy axborot-kommunikatsiya texnologiyalarini puxta egallashini ta'minlash doimiy ustuvor vazifamiz bo'lib qoladi. Jamiyatimizda korrupsiya, turli jinoyatlarni sodir etish va boshqa huquqbuzarlik holatlariga qarshi kurashish, ularga yo'l qo'ymaslik, jinoyatga jazo albatta muqarrar ekani to'g'risidagi qonun talablarini amalda ta'minlash bo'yicha qat'iy choralar ko'rishimiz zarur. Shu maqsadda Hukumatning, tegishli vazirlik

va idoralar hamda butun ta'lim tizimining, hurmatli domlalarimiz va professor-o'qituvchilarning eng muhim vazifasi-yosh avlodga puxta ta'lim berish, ularni jismoniy va ma'naviy yetuk insonlar etib tarbiyalashdan iboratdir. Innovatsiya (inglizcha innovation) - yangilik kiritish, yangilik demakdir. Innovatsion texnologiyalar pedagogik jarayon hamda o'qituvchi va o'quvchi faoliyatiga yangilik, o'zgarishlar kiritish bo'lib, uni amalga oshirishda asosan interfaol uslublardan foydalaniladi. Kimyoni o'rganishda axborot-kommunikatsion vositalaridan foydalanish samaradorligini o'rganishga bag'ishlangan ishlar juda kam. Bor manbalarda o'quv tarbiyaviy jarayondagi qonuniyatlari yetarlicha to'liq ochib berilmagan. Kimyo kursini, xususan, kimyoviy elementlarning "Davriy qonuni va davriy jadvali" bo'limni yangi metodlardan foydalanib, kompyuter texnologiyasi bilan birga o'tish dasturlari ishlab chiqarilmagan. Kimyo o'quv predmetini elektron qo'llanmalardan foydalanib o'qitish va umuman mavzu yuzasidan elektron qo'llanmalar bo'yicha qator maqola va internet saytlari mavjud. Bu borada xorijda yaratilgan P.A. Fresh- neyning "Education Periodic Table" elektron qo'llanmasi kimyoviy elementlar davriy jadvali elektron ko'rinishda bo'lib, har bir kimyoviy elementning qachon va kim tomonidan kashf qilingani, ularning tabiatda ko'rinishi, ularning birikmalari, xossalari, dunyo xaritasida elementlarning joylashgan o'rni, element atomlarning fazoviy tuzilishining harakatli holati to'liq ma'lumot olish imkonini beradi. Kimyo fani sohasida kompyuterdan foydalanish mavzular bayoni tasvirlardagi animatsion harakatlar, tabiatdagi ko'z bilan ko'rish imkoni bo'lmagan kimyoviy jarayonlarni o'ziga xos tarzda namoyish etish juda katta amaliy ahamiyatga ega ekanligi ko'plab tadqiqotchi olimlar tomonidan isbotlab berilgan. O'quv mashg'uloti davomidagi faol faoliyat asosan talaba va o'qituvchi tomonidan tashkil etiladi. Buning uchun ular orasidagi o'zaro bog'liqlik, ko'p hollarda dars jarayonida qo'llaniladigan metodik qo'llanmalar vositasida tashkil etiladi.

Ayniqsa, kimyo faniga endigina qadam qo'yayotgan o'quvchilarga didaktik o'yinlarni o'zida mujassam etgan noan'anaviy mashg'ulotlar, texnik vositalar bilan tashkil etilgan dars jarayonining o'ziyoq "ajoyib" tuyuladi. Anorganik kimyoda kimyoviy elementlarning "Davriy qonuni va davriy jadvali" mavzusini uslubiy jihati mukammal bo'lishida zaruriy ko'rgazmalar va o'qitish vositalaridan samarali foydalanish juda muhim. Fandagi ba'zi yangi atamalarni izohlashning usulublarini ishlab chiqish talab etiladi. Mavzu bibliografik xarakterga ega bo'lib, darslikdagi ma'lumotlar chegaralanishi darsni "zerikarli" holatga olib kelishi mumkin.

Kimyodan o'quv dasturining asosiy vazifasi o'qituvchiga ayni fanning zaruriy tushunchalari va qonunlari asosida kimyoviy jarayonlarni olish va ulardan nafaqat sanoat, boshqarish,



zamonaviy usullar bilan yangi-yangi moddalar qishloq xo'jaligi miqyosida, shuningdek kundalik turmushda, oilada foydalanishning umumiy yo'nalishlarini ko'rsatib berishdan iborat bo'lishi kerak. D.I.Mendeleyevning davriy qonuni va elementlarning davriy sistemasi kimyo o'qitish metodikasi fanining nazariy asosi hisoblanadi.

Группа ↓Период	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	1 H																	2 He
2	3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne
3	11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
4	19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
5	37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
6	55 Cs	56 Ba		72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
7	87 Fr	88 Ra		104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Cn	113 Nh	114 Fl	115 Mc	116 Lv	117 Ts	118 Og
Лантаноиды				57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
Актиноиды				89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr

1-rasm: D.I.Mendeleyevning davriy elementlarning davriy sistemasi.

Hozirgi kunda elektron o'quv metodik qo'llanmalarni yaratish va ta'limda qo'llash asosida bilim saviyasini ko'tarish va dunyoqarashini kengaytirish usullarini takomillashtirishga va yangi tipdagi elektron o'quv metodik qo'llanmalardan foydalanishga harakat qilinmoqda.

	1-guruh	14-guruh	17-guruh	18-guruh
1-davr (1n to'lyapti)				
2-davr (2n to'lyapti)				
3-davr (3n to'lyapti)				

2-rasm: Davriy jadval va ekelektron pog'onalarining elektron ko'rinishi.



XULOSA

Barkamol avlodni tarbiyalashda innovatsion texnologiyalar asosida kimyo darslarini o'qitishda elektron darsliklar yaratish, ularni akademik litsey va oliy ta'lim muassasalarining ta'lim tizimiga qo'llash o'quvchilarni mahoratini sakllantirishda yordam beradi. Kimyo fanining kimyoviy elementlarning "Davriy qonuni va davriy jadvali" bo'limidan mavzular olindi va ushbu asosda elektron qo'llanma bir necha tarkibiy qismlardan tashkil topdi. Xususan, "Elementlar davriy jadvali" mavzusini elektron qo'llanma yordamida o'rganishda jadval joylashtirilgan tugmani bosish orqali bajariladi. Umuman olganda ta'lim jarayonlarida innovatsion texnologiya va metodlardan foydalanish nafaqat kimyo fani, balki barcha fanlar taraqqiyotiga sezilarli samaradorlik beradi.

REFERENCES

1. Ochildi Fayzullayev "Analitik kimyo". Darslik. Nashr yili 2006. Toshkent yangi avlod nashriyoti
2. Turobov N.T. Analitik kimyo. Darslik. Toshkent: "Go To Print" 2020.
3. Sobirovna K. D., Sattarovna K. F., Baxodirovna J. U. ELECTROCHEMICAL METHODS FOR THE DETERMINATION OF MERCURY IONS //E Conference Zone. – 2022. – C. 41-43.
4. Sattarovna, Karimova Feruza, Khakberdiev Shukhrat Makhramovich, and Juraeva Umida Bakhodirovna. "Technologies Of Disposal Of Industrial Waste With Harmful Chemicals." *Eurasian Journal of Engineering and Technology* 7 (2022): 42-46.
5. Sattarovna K. F., Bahodirovna J. U., Sharofovich J. O. Chemical Comparative Study of the Chemisorption of Carbon Dioxide in Non-Aqueous and Aqueous Systems //Eurasian Scientific Herald. – 2023. – T. 16. – C. 25-30.
6. Feruza Sattarovna Karimova, Ziyodabonu Sayfulla Qizi Mullajonova KIMYO FANINI O'QITISHDA MODUL DARSLARINI REJALASHTIRISH // Academic research in educational sciences. 2021. №CSPI conference 1. 01.12.2023).



TURLI ORGANIK O'G'ITLARNI QOLLASHNING TUPROQ UNUMDORLIGI VA POMIDOR HOSILDORLIGIGA TA'SIRI

Bayrambay Aydosovich Jumashev

Qoraqalpog'iston qishloq xo'jaligi va agrotexnologiyalari instituti assistenti

Gulayxan Reyimbay qizi Djanabaeva

Qoraqalpog'iston qishloq xo'jaligi va agrotexnologiyalari instituti
4-bosqich talabasi

Husan Soli ógli Hojiev

Qoraqalpog'iston qishloq xo'jaligi va agrotexnologiyalari instituti
2-bosqich talabasi

Dilfuza Erkebaevna Madreymova

Qoraqalpog'iston qishloq xo'jaligi va agrotexnologiyalari instituti dotsenti

ANNOTATSIYA

Maqolada Qoraqalpog'iston sharoitida pomidorga NPK+Qoramol go'ngi, NPK+Biogumus va NPK+Kompostlar ta'sirini aniqlash bo'yicha ilmiy ishlar olib borilgan. Bu bo'yicha o'g'itlarni qo'llash texnologiyasini hamda foydalanish me'yerlarini aniqlashda ilmiy izlanishlar natijalari keltirilgan.

Kalit so'zlar: qurg'oqchilik, sovuq, sho'rланish, nav, hosildorlik, abiotik, sifat.

ABSTRACT

The article carried out scientific work on the impact of NPK+cattle manure, NPK+Biogumus and NPK+composts on tomatoes in Karakalpakstan sharoit. The results of scientific research are presented in determining the technology of application of these fertilizers as well as the norms of use.

Keywords: drought, frost, salinity, variety, yield, abiotic, quality

KIRISH

Hozirda dunyoda ekologik toza mahsulot yetishtirish, tuproq unumdorligini oshirish, uning suv-fizik va agrokimyoviy xossalarni yaxshilash hamda qishloq xo'jaligi ekinlarini oziqa rejimini maqbullashtirishda mineral o'g'itlar bilan birga turli organik o'g'itlardan keng foydalanilmoqda. Qishloq xo'jaligida turli organik o'g'itlarni

samarali qo'llash bo'yicha dunyoda AQSh, Xitoy, Yaponiya, Hindiston va Avstraliya kabi davlatlarda yuqori natijalarga erishilmoqda. Organik o'g'itlar tuproqni gumus va boshqa oziqa moddalari bilan boyitadi va uni agrofizikaviy, suv-fizikaviy xossalari yaxshilaydi, atrof-muhitning zararlanishini kamaytiradi, shuningdek, ekinlardan yuqori va sifatli hosil olishni ta'minlaydi.

Bugungi kunda organik qishloq xo'jaligi ilmiy tadqiqot instituti matumotlariga qaraganda, dunyoda 103 davlatda organik qishloq xo'jaligi haqida qonun qabul qilingan bo'lib, 6 davlatda bu qonun amalga oshirilib kelinmoqda. Sababi, qishloq xo'jaligi ekinlarini yetishtirmoqda kimyoviy mineral o'g'itlardan va boshqa kimyoviy moddalardan barqaror foydalanish sababidan tuproqning biologik faolligi va unumdorlik ko'rsatkichi salbiy tomonga qarab o'zgarishiga olib keladi. Bunday bo'lishining asosi tuproq tarkibida har yili solinib kelinayotgan, kimyoviy birikmalar o'simlik masulotlariga va undan inson organizmiga o'tishi sababidan og'ir kasalliklar keltirib chiqaradi.

Respublikamiz dehqonchilik madaniyatini ko'tarish, ilm-fan-texnika yutuqlari va ilg'or tajribasini keng joriy etish hisobidan ekinlarning hosildorligini oshirish, sifatini yaxshilashda, ayniqsa mamlakatimizda qishloq xo'jaligi ekinlari maxsulotlari bilan ta'minlashda katta chora-tadbirlar olib borilmoqda. Ekinlarning tarkibida inson salomatligiga nojo'ya ta'sir etuvchi kimyoviy modda hamda zaharli moddalarni bo'ldirmaslikning birdan-bir yo'li ekinlarni yetishtirishda organik o'g'itlardan kengroq foydalanishdir.

O'zbekiston Respublikasining 2022-2026 yillarga mo'ljallangan Taraqqiyot strategiyasining 30-maqsadida Qishloq xo'jaligini ilmiy asosda intensiv rivojlantirish orqali dehqon va fermerlar daromadini kamida 2 baravar oshirish, qishloq xo'jaligining yillik o'sishini kamida 5 foizga etkazish belgilangan va "Tuproq unumdorligini oshirish va muhofaza qilish" kabi muhim strategik vazifalar sifatida belgilab berilgan. Shuning uchun unumdorligi past, strukturasi buzilgan va yomonlashgan tuproqlarda qoramol go'ngi, sholi qipig'i, parranda qiyi, ammafosni 1:0,6:0,3:0,1 nisbatda aralashtirib tayyorlanadigan kompostni va kaliforniya shuvalchangini oziqlantirib olingan biogumuslarni qo'llashning tuproqning agrofizikaviy xossalari va unumdorligiga hamda pomidor hosildorligiga ta'sirini o'rganish, shuningdek, ijobiy natijalarni amaliyotga keng joriy qilish bo'yicha ilmiy-tadqiqotlar dolzarb hisoblanadi.

Shundan kelib chiqib, unumdorligi past, strukturasi buzilgan tuproqlarda oddiy kompost va biokompostlarni qo'llashning tuproqning agrofizik xususiyatlari va unumdorligiga hamda pomidor hosildorligiga



ta'sirini o'rganish, shu bilan birga, ijobiy natijalarni ishlab chiqarishga keng joriy etish taqozo etiladi.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Biokompost suvga chidamli va suv bilan birga tarkibida suvni o'zida saqlovchi gidrofil modda bo'lib, mikrobiologik faol, tuproqning zarur gumus qismini tuzishda faol qatnashadi [2].

Dunyoning bir qator davlatlarida unumdorligi past tuproqlarda kompostlar va biogumusni foydalanilganda kuzgi bug'doy va sabzavot ekinlarining hosildorligi 10-15% gacha ortganligi aniqlangan. Shu nuqtai nazardan har xil organik moddalardan maqbul nisbatda kompost tayyorlash hamda kaliforniya shuvalchangi orqali biogumus olish, ularni tuproq unumdorligi va o'simlikning oziqa moddalarini o'zlashtirishini yaxshilash hamda pomidor hosildorligiga ta'siri va keyingi tasirini aniqlash bo'yicha izlanishlar dolzarb hisoblanadi.

Respublikamizda aholini asosiy turdagi qishloq xo'jaligi maxsulotlari bilan uzliksiz ta'minlash bilan biq qatorda, bugungi jahon bozorining murakkab talablari sharoitida mamlakatimizning qishloq xo'jaligi mahsulotlarining eksport salohiyatini kengaytirishga imkoniyat yaratilmaqta. Bu yo'nalish Prezidentimizdiń tashabbusi bilan ishlab chiqilib, hayotga joriy qilina boshlagan. Respublikamizda keyingi yillari qishloq xo'jaligi sohasida yuz berayotgan o'zgarishlar, innovatsion nuqtai nazar, ishlanmalarning joriy etilishi sohada rivojlanishning bo'layotganligidan dalolat beradi. Organik dehqonchilikni rivojlantirishda maxalliy charvochilik go'ngida rivojlanadigan koliforniya qurtlarining ozuqanib, biokompostlarni hosil qilishi alohida e'tiborga loyiq yangilik demakdir [1].

NATIJALAR VA MUHOKAMA

Tajriba olib borish variantlari 1-jadvalda ko'rsatilgan tartibda o'tkazildi. Tajriba variantlari sakkiz qator bo'lib, shundan 4 qatori hisobli va 4 qatori himoya qatorlari joylashtiriladi. Tajribada pomidor 90 sm qator oralig'ida ekilib, bitta variantning eni 7,2 m², uzunligi 30 m², maydoni 216 m², tajribani umumiy maydoni 7776 m² bo'lib, 3888 m² da (o'rtadagi to'rt qatorda) sanash, hisoblash, kuzatish ishlari amalga oshiriladi va ma'lumotlarga statistik tahlil Dospexov [3] metodikasi bo'yicha o'tkaziladi.

1-jadval

Tajriba tizimi

T.r.	Variantlar	Tuproqqa solinadigan o'g'itlar miqdori, kg, t/ga
1.	Nazorat	$N_{150}+P_{125}+K_{75}$
2.	NPK+Qoramol go'ngi	$N_{40}P_{31}K_{20}+30$ t/ga go'ng
3.	NPK+Qoramol go'ngi	$N_{75}P_{65}K_{38}+20$ t/ga go'ng
4.	NPK+Qoramol go'ngi	$N_{115}P_{95}K_{60}+10$ t/ga go'ng
5.	NPK+Biogumus	$N_{40}P_{31}K_{20}+20$ t/ga biogumus
6.	NPK+Biogumus	$N_{75}P_{65}K_{38}+10$ t/ga biogumus
7.	NPK+Biogumus	$N_{115}P_{95}K_{60}+5$ t/ga biogumus
8.	NPK+Kompost	$N_{40}P_{31}K_{20}+30$ t/ga kompost
9.	NPK+Kompost	$N_{75}P_{65}K_{38}+20$ t/ga kompost
10.	NPK+Kompost	$N_{115}P_{95}K_{60}+10$ t/ga kompost

Izoh: Kompost (qoramol go'ngi-50%, sholi qipig'i-30%, parranda qiyi-15%, ammafos-5%);

Pomidorning tajriba xo'jaligida vegetaciya davrida o'sib rivojlanishining turli fazalarida NPK+Biogumus bilan bargdan qo'shimcha oziqlantirishning o'simlikka ta'siri umumiy qabul qilingan va tasdiqlangan metodik usullardan foydalanib olib borildi.

Ajdodlarimiz, shu jumladan dehqonchilik bilan shug'ullanib kelgan g'allakorlar tuproq unumdorligini oshirishda, tuproqning har qanday qishloq xo'jaligi ekinini ozuqa moddalar bilan to'liq ta'minlaydigan darajaga olib kelish imkoniyatlari mavjudligini bilgan. Shu sababli ular tuproq unumdorligini barqaror oshirish choralarini ko'rgan. Shu bilan birga olimlar tuproq unumdorligini ko'tarishda har xil o'g'itlardan foydalanish bilan birga qo'shimcha bargdan oziqlantirishning pomidorning hosildorligiga ta'sirini o'rganishga, tuproqqa organik o'g'itlar bilan birga qo'shimcha bargdan oziqlantirilganda tuproqda qanday o'zgarishlar yuz beradi, unumdorligini ko'rsatuvchi mikroflora aktivligini qay darajada o'zgarishini o'rganish bo'yicha ilmiy tajribalarimizdi olib bordik va olingan ma'lumatlarni statistik tahlil o'tkazdik.

Hukumatimiz tomonidan qo'yilayotgan asosiy talablarning biri, tomorqa er uchastkalariga ega har bitta oila egasi o'z uchastkasidan samarali foydalanish va o'z xo'jaligini oziq-ovqat mahsulotlari bilan to'liq ta'minlashi va ortig'ini bozorlarga sotib oziq-ovqat mo'lchiligiga erishish hisoblanadi. Ushbu ko'z-qarashdan kelib chiqib, kichik uy oldi tomorqa uchastkalaridan pomidordan yuqori hosil olishda bargdan oziqlantirish usulining ta'sirini o'rganish va takomillashtirish orqali sabzavot ekinlaridan yuqori hosil olish usullarini o'rganish muhim.

Tajriba uchun pomidorning Volgograd 5/95 navini vegetatsiya davrida NPK+Biogumus qo'llash bilan qo'shimcha bargdan oziqlantirishning hosildorlikka ta'sirini o'rgandik.

Tajribada pomidorning Volgograd 5/95 navini vegetatsiya davrida har xil vaqtda va har xil sanalarda bargdan qo'shimcha oziqlantirganimizda tajriba variantlariga aloqador o'zgarishga uchrashini ko'rdik. Tajribaga statistikalik tahlil qilganimizda fonga solishtirganimizda vegetatsiya davrida 5 marta suspenziya bilan oziqlantirilgan variantta pomidor bo'yining balandligi 74,2 sm, barglar va gullarining soni 3 va 5 marotaba oziqlantirilgan variantga nisbatan sezilarli yuqori bo'lganligini aniqlandi. Bu variantta fonga nisbatan o'simlik balandligi 6,2 sm, barglar soni 6 va gullar soni 6 ga ortiq bo'lganligi aniqlandi.

XULOSA

Tajribalarimizdan olingan yakuniy natijalarga ko'ra, pomidorning vegetatsiya davrida 5 marotaba suspenziya bilan oziqlandirilgan variantta pomidorning bo'yi 74,2 sm, barglar va gullarining soni 3 va 5 marotaba oziqlantirilgan variantga nisbatan yuqoriroq bo'lganligini aniqlandi. Fonga nisbatan o'simlik bo'yi 6,2 sm, barglar soni 6 va gullar soni 6 ga ko'p bo'ldi.

REFERENCES

1. Vahobov A., L.Tirkashov va boshqalar. Jeke tamarqa uchastkalarında biogumus. Ózbekiston qishloq xojalığı jurnali. №11, 2014. 35-39 b.
2. Doliev T. Ortga qaytayotgan odomzod. Ózbekiston qishloq xójaligi jurnali. №11, 2016. 45-49 b.
3. Dospexov B.A. Metodika polevogo opıta. M., Agropromizdat, 1985.



SIRT QAVATDA SODIR BO‘LADIGAN HODISALARNI O‘RGANUCHI FAN HAQIDA

Durdona Berdiyeva, Madina Turdiyeva

ANNOTATSIYA

Ushbu maqolada hozirgi kunda kolloid kimyo fanini o‘rganishimizning sabablari hamda rivojlanib borayotganligi, shu bilan birga barcha sohalarni o‘z ichiga olib, sohalarda keng qo‘llanilib o‘rganilayotganligi yoritilgan. Biz mana shu maqolamizda oz bo‘lsada, ammo kerakli bo‘lgan ma‘lumotlar berishga harakat qildik.

Kalit so‘zlar: Kolloid kimyo, dispers faza, texnika, struktura, xom ashyo, adsorbsiya.

ABSTRACT

This article highlights the reasons why we are currently studying colloidal chemistry and its development, as well as covering all areas and being widely used in fields. We tried to give information in this article, which is small but crayfish.

Keywords: Colloidal chemistry, dispersed phase, technique, structure, raw material, adsorption.

KIRISH

Hozirgi vaqtda kolloid kimyo fanining xalq xo‘jaligi va texnikadagi ahamiyati tobora ortib bormoqda. Bu fan hozirgi kunda, sirt qavatda sodir bo‘ladigan hodisalarning kimyosiga oid bo‘lib, biz unda moddalarning holatlari va sirt qavatlarning o‘ziga xos xususiyatlari bilan tanishib, o‘rganamiz. Kolloid kimyoning asosiy bir qancha muammolari bor. Ulardan biri fazalarning qanday paydo bo‘lishi, ularning barqarorligi va boshqa xossalari bo‘lsa, ikkinchisi esa o‘z tabiati bilan bir-biridan farq qiluvchi fazalararo sirt chegaralarida sodir bo‘ladigan mexanik va elektr xossalari ega bo‘lgan sirtlarda geterogen strukturalarning rivojlanish masalalaridan biridir. Xilma-xil chegara sirtiga ega bo‘lgan murakkab sistemalar moddalarning dispers holatlari va sirt qavatlarning o‘ziga xos xususiyatlari haqidagi ta‘limot bilan tanishtiradigan fan hisoblanadi.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Kolloid kimyo — kimyoning dispers sistemalar xossalari, fazalararo chegara sirtlarida sodir bo‘ladigan hodisa va jarayonlarni o‘rganadigan bo‘limi hisoblanadi. Bu fan 19-asrning



60-yillarida mustaqil fan sifatida shakllandi. Fizik-kimyoning maxsus tadqiqot usullariga: ultramikroskopiya, ultrafiltrlash, ultratsentrifugalash, dializ, elektrodializ, elektroosmos, elektroforez, dispersion analiz; nefelometriya, reologiya, elektron mikroskopiya, xromatogʻrafiya va boshqalar Kolloid kimyo ta-raqqiyotida muhim rol oʻynadi. Kolloid kimyo, kimyo sanoati va kimyo-texnologiyada katta ahamiyatga ega. Xom ashyoni maydalash, boyitish (flotatsiya), tindirish, choʻktirish, briketlash va donalash kabi jarayonlar dispers sistemalarda sodir boʻladi va bu jarayonlardagi hoʻllanish, kapillyarlik, adsorbsiya, sedimentatsiya, koagulyasiya, flokulyasiya kabi hodisalarni ham Kolloid kimyo oʻrganadi. Oʻzbekistonda Kolloid kimyoning rivojlanishida oʻzining hissasini qoʻshgan akademik K. S. Axmedov rahbarligidagi ilmiy maktabning xizmati katta. Olim va uning shogirdlari tomonidan mineral dispers sistemalar (tuproq, tabiiy mineral sorbentlar, sement, keramik qorishmalar, burgʻulash eritmalari va emulsiyalari va boshqalar)ning xossalari boshqarishda sirt faol moddalar va polielektrolitlardan ratsional foydalanish usullari ishlab chiqildi. K-4, K-9, "Uniflok", OGS kabi yangi polielektrolitlar suvni flokulyasiya yoʻli bilan qayta tozalashda, yuvindi va oqova suvlardan oltin ajratib olishda, tuproq strukturasi yaxshilashda, tuproq suvini tejashda, tuproq erroziyasiga qarshi kurashda, yerning shoʻrini yuvishda, rangli metallarni ajratib olishda, koʻchma qum va shoʻr tuproq-gruntlarning harakatini (Orol dengizi atrofida) toʻxtatishda va boshqalarda qoʻllaniladi. Kolloid kimyo sohasidagi ilmiy ishlar Oʻzbekistonda Fanlar akademiyasi umumiy va noorganik kimyo institutida, Toshkent kimyotexnologiya institutida hamda Oʻzbekiston milliy universiteti ning kolloid kimyo kafedrasida olib boriladi. Ayni vaqtda tabiiy gaz, gaz kondensatlari va boshqa xom ashyolardan sirt faol moddalar, suvda eruvchan polimerlar va polielektrolitlar olish, ularni amaliyotga tatbiq qilish borasida Oʻzbekiston yetakchi oʻrinlardan birini egallaydi.

Dispers sistemalar va ularning miqdoriy xarakteristikalari Kolloid kimyoda tekshiriladigan obʻektlar ikkita asosiy xususiyatlari bilan ajralib turadi: 1) bu disperslik (maydalanganlik) va 2) geterogenlik (koʻp fazalilik). Bu xususiyatlar kolloid kimyoga asos solgan N.P.Peskov tomonidan ilgari surilgan. Ushbu xususiyatlar kolloid kimyo obʻektlarining funksiyasini va xususiyatlarini belgilaydi. Ikkinchi belgi - geterogenlik yoki koʻp fazalilik kolloid kimyoda fazalar aro sirt va sirt yuzasi toʻgʻrisidagi belgilardir. Shuning fazalar aro sirtlardagi mavjud barcha xodisalar va qonuniyatlar biz uchun asosiy ahamiyatga ega va ularni toʻgʻrisida chuqur izlanishlar olib borishimizni talab qiladi. Disperslik (maydalanganlik darajasi) - bu zarrachani uch tomonlama oʻlchamini aniqlashdan iboratdir. Moddaning dispersligi asosan turli tuzilishlardagi shakllarda boʻlishi mumkin: sferik shaklda, silindr shaklda, toʻgʻri burchakli va

ko'pincha noto'g'ri tuzilishli shakllarda. Buni 1.1-rasmda ko'rishimiz mumkin. Agar (Y-koordinatasi bo'ylab) bir tomonlama kichraytirib borilsa plenka yoki sirtqi qavat (membrana) hosil bo'lishi mumkin. Agarda kubni o'lchamini ikki tomonlama (X,Y-koordinatalari bo'ylab) kichraytirib borilsa, kapillyarlar yoki ipsimon tuzulishdagi shakllar hosil bo'lishi mumkin. Shu bilan birga kubni uchchala o'lcham (X,Y,Z-koordinatalari bo'ylab) 6 bo'yicha kichraytirib borilsa, kichik zarrachalar hosil bo'lishiga olib keladi.

XULOSA

Xulosa qilib aytadigan bo'lsak, Kolloid kimyo fanining maqsadi, vazifalari va muammolari haqida maqolada tanishib chiqishimiz mumkin. Kolloid kimyo fanini o'qitishdan maqsad - bizni o'rab turgan borliqning asosiy qismi kolloid sistemalardan iborat deb qaraymiz, unda boruvchi jarayonlarni kolloid kimyo qonuniyatlariga asoslangan xolda tushuntirish va o'rgatish hamda o'rganishdan iborat. Kolloid kimyo fani - mustaqil fan bo'lib, hozirgi kunda bir qator xususiyatlari jihatidan bir-biriga o'xshash turli-tuman sistemalarni tekshiradi. Kolloid kimyo - sirt xodisasini, dispers sistemalar va ularning fizik, kimyoviy hamda mexanik xossalarni o'rganuvchi fanidir. Kolloid kimyo fanining asosiy muammosi bir tomondan, dispers fazalarning qanday paydo bo'lganligini o'rganadigan bo'lsak, ularning barqarorligi va boshqa xossalari bo'ladigan bo'lsa, ikkinchi tomondan, o'z tabiati va boshqa xususiyatlari bilan bir-biridan farq qiluvchi fazalararo sirt chegaralarda sodir bo'ladigan mexanik va elektr xossalarga ega bo'lgan sirtlarda geterogen strukturalarning rivojlanish masalasidan iboratdir. Bunda biror moddaning mayda zarrachalari boshqa modda ichida tarqalishidan hosil bo'lgan sistema dispers sistema deyiladi. Dispers so'zi lotincha bo'lib, maydalanmaq, tarqalmoq so'zidan olingan. Tarqalgan modda - dispers faza, ikkinchi modda esa dispersion muhit deb ataladi. Dispers sistemalar tabiatda juda ko'p tarqalgan. Atrofimizda mavjud materiallar - tuproq, yog'och, tabiiy suv, turlituman oziq-ovqat maxsulotlari, rezina, bo'yoq va xakozolarining hammasi dispers sistemalarga misol bo'la oladi. Demak, kolloid kimyo fani ham eng muhim bo'lgan fanlardan biridir.

REFERENCES

1. Ахмедов К.С., Рахимов Х-Р- Коллоид кимё. Тошкент. “Узбекистан”, 1992.
2. Т.М.Бобоев, Х.Р.Рахимов. Физикавий ва коллоид кимё, Тошкент, “Фафур Фулом номидаги нашриёт - матбаа уйи”, 2004 й., 504 б.
3. Х.Р. Рахимов. Физикавий ва коллоид химия. «Укитувчи», Тошкент, 1978 й.



4. С. Воюцкий. Курс коллоидной химии. М. «Химия». 1975. 511 с.
5. Сборник «Коллоидно-химические основы нанонауки». Ред. Шпак А.П., Ульберг З.Р. Киев, Академперіодика, 2005. 466 С.
6. Сулем Б.Д., Иванова Н.И. Объекты и методы коллоидной химии в нанохимии. Успехи химии. 2000. Т. 69. №11. С. 995-1007
7. С .И. Левченко. Физическая и коллоидная химия. Ростовский госу. Л.И.Гельфман, О.В.Ковалевич, В.П.Юстратов. Коллоидная химия. Учебник. 2-ое изд., стер. -СПб.: Издательство «Лань». 2004. 33 с.
8. А.М. Музафаров, А.А. Кузнецов, М.Ю., Заремский, А.Н. Зеленецкий. Введение в химию высокомолекулярных соединений. Учебное пособие. «Композиционные наноматериалы». Москва. 2010. 47 с.
9. Е.Д. Шукин, А.В.Перцов, Е.А.Амелина. Коллоидная химия, изд. 3-е, перераб. и доп. М.: Высшая школа, 2004. 446 С.
10. А.Д.Зимон. «Коллоидная химия». Изд. М.: Агар, 2007. 344 С.
11. R.S.Dehqonov, V.B.Nuriddinova. Kimyodan masalalarni yechishda tenglama va tengsizlikdan foydalanish. „XXI asr intellektual avlod asri“. Xududiy Ilmiy- amaliy konferensiya materiallari. Namangan. 6-7 iyun. 2014 yil. 98
12. Губанова Н.Я., Третьякова О.Н. Физическая и коллоидная химия. /Методические указания и варианты заданий контрольных работ для студентов заочной формы обучения. КубГАУ. Краснодар. 2007. 125 с.
13. Л.В.Сеничева. Коллоидная химия. Поверхностные явления и дисперсные системы. Программа, методические указания и контрольные задания. -Хабаровск. Изд-тво. Хабар.техн.гос.техн. ун-та. 2003.31 с.
14. Татауров В.П. Физическая и коллоидная химия. /Варианты контрольных работ. Екатеринбург. 2004. 70 с.28. С.Б.Бокут, Л.Ф.Подобед, П.А.Киселев. Сборник задач по физической и коллоидной химии. -Минск: МГЭУ. 2007. -100 с.
15. С.Я.Александрова, Л.В.Цыро. Физическая и коллоидная химия. Учебно-методическая пособия. Томск. Томск государственный унт. 2010. -136 с.
16. Яргаета В.А., Сеничева Л.В. Дисперсные системы. : Учебное пособие.- Хабаровск. Изд. ХГТУ, 1999. -108 с.
17. Дехконов Р.С., Рахматова М.Ж. Коллоид кимёдан назорат ишларини бажариш учун услубий курсатма. НамДУ нашри. Наманган. 2000 й. 61 бет.
18. Дехконов Р. Экспериментал масалалар ечиш. НамДУ нашри. 2002. 39 б.
19. Dehqonov R.S., Rasulov A.A. Kolloid kimyodan o'qitish samaradorligini oshirishda masalalar yechishning ahamiyati. Tabiiy fanlar va ekologiyaga oid ayrim muammolar ilmiy maqolalar to'plami, 8 qism, Namangan. 2013 y. 259- 236 б.
20. М.Гельфман, О.Ковалевич, В.Юстратов. Колоидная химия. Учебник. М. «Лан». 2004. 332 с.



SANOATDA OQAVA SUVLARINI TOZALASHNING ISTIQBOLLARI

O'g'iloy O'ktamovna Jumaniyozova
Sevinch Azamat qizi O'ktamova
Shaxnoza Nemat qizi Murtozoqulova
Jizzax politexnika instituti talabalari

Feruza Sattarovna Karimova
Jizzax politexnika instituti katta o'qituvchi

ANNONTATSIYA

Ushbu maqolada sanoatda oqava suvlarini tozalash usullari bilan tanishib chiqishingiz mumkin.

Kalit so'zlar: Suv, oqava suvlari, sanoat korxonalarini, moddalar, rekuperatsion usul, destruktiv usul.

KIRISH

Suv tabiatda sodir bo'ladigan jarayonlarda hamda sanoatda, homashyo olishda, energiya manbai sifatida, sovutuvchi hamda isituvchi va boshqa ko'plab ishlab chiqarishlarda ishlatiladi. Shuningdek suv inson hayotida, nafaqat tirik organizm uchun muhim ahamiyatga egadir. Suv tashqi muhit ta'sirlarisiz tabiiy jarayonlar natijasida hosil bo'lgan sifatli va tiniq bo'lib shakllanadi. Hozirgi kunda mamlakatimizda aholi yashash joylarining ko'payib borishi, texnikaning jadal suratlarda rivojlanishiga olib kelmoqda. Katta va kichik sanoat korxonalarining ochilishi, ularning suvga bo'lgan ehtiyojini oshirmoqda. Insonlar tomonidan suvga chiqindilarning tashlanishi, o'z ehtiyojlaridanda ko'proq suvni isrof qilishi suvni kamayishiga olib kelmoqda. Suvni isrof qilinishiga olib keluvchi omillar: insonlar tomonidan suvga chiqindilarni tashlanishi, ishlab chiqaruvchi korxonalarining uzidan chiqarayotgan zararli moddalar ekologiyaga ta'sir ko'rsatmoqda. Daryodan qazib olinayotgan neftni ozgina zarrachasi ham suvni ifloslantirmoqda. Ular o'zidan turli bakteriyalar chiqarishi suv havzalarini buzulishiga olib kelmoqda. Hozirgi kunda suvni ifloslanishlardan tozalash uchun zamonaviy texnikalardan foydalanib kelmoqdamiz. Suv turli xil moddalar bilan ifloslanganda uni texnologik usullar bilan tozalashimiz kerak. Tabiiy tozalashda suvni tagidagi yashil o'tlar, zamburug'larni misol qilib olsak bo'ladi. Suv havzalarini muhofaza qilish uchun suvlarni havzalarga tashlashdan oldin uni chuqur tozalash kerak. Bundan tashqari ishlab chiqarish sanoat oqova suvlari juda

zaharli, kimyoviy reagent elementlarga boy bo'radi. Shuning uchun ishlab chiqarishda oqova suvini ishlatishda yopiq tizimdan foydalansa maqsadga muvofiqdir. Oqova suvlarida ifloslantiruvchi moddalar ko'plab uchraydi. Bulardan bittasi bakteriyalardir. Suvni tozalashni o'zini usullari bor. Birinchisi rekuperatsion usul, ikkinchisi destruktiv usuldir. Rekuperatsion usulimiz oqova suvini tarkibidagi qimmatbaho moddalarni ajratib olib keyin qayta ishlashga yuboradi. Destruktiv usul suvni ifloslantiruvchi moddalardan oksidlash yoki qaytarish usullari yordamida parchalaydi. Yangi inshootlar qurulishida kanalizatsiyalash obyektlarida, birinchi o'rinda oqova suvlarini miqdorini to'g'ri hisobga olish kerak. Tozalash inshootida oqova suvlar qaytadan tozalanadi, zararsizlantiradi undan hosil bo'lgan cho'kmalar qayta ishlanadi. Tozalangan oqova suvlar havzalarga tashlanib, sug'orish uchun ishlatiladi. Katta kimyoviy zavodlar yiliga bir necha million kub metr toza suvdan foydalanadi.

ADABIYOTLAR TAHLILI VA METODOLOGIYA

Tiniq suvni zararsizlantirish (turli mikroorganizm va viruslarni o'ldirish) uchun unga suyuq yoki gaz holatdagi xlor, gipoxloritlar — NaClO va xlor qo'sh oksid ClO₂, xlorli ohak qo'shiladi, tindirilgan suv va yer osti suvlarini zararsizlantirish maqsadida, shuningdek, ozon va ultrabinafsha nurlar ham qo'llanadi. Bunda simobkvarsli yoki argonsimobli lampalardan foydalaniladi. Agar suv qattiq (tarkibida kalsiy va magniy tuzlari umumiy miqdori me'yordagidan yuqori) bo'lsa, yumshatiladi. Yer osti suvlari ko'pincha aeratsiya usulida temirsizlantiriladi (havo kislorodi bilan boyitiladi). Suvni kremniysizlantirish (metasilikat kislota H₂SiO₃ va uning tuzlari miqdorini kamaytirish) uchun ohak, natriy alyuminat NaAlO₂, ba'zan kuydirilgan dolomitdan foydalaniladi. Suv tarkibidagi boshqa erigan tuzlarni ketkazish uchun u chuchuklashtiriladi yoki ionitlarsiz tuzsizlantiriladi. Suv tarkibidagi vodorod sulfid, metan, radon, karbonat angidrid va boshqa erigan gazlarni ketkazish uchun suv degazatsiyalanadi. Suv tarkibidagi ortiqcha ftorni kamaytirish uchun suv faollashtirilgan alyuminiy oksid orqali suzib o'tkaziladi. Agar suv tarkibida radioaktiv moddalar borligi aniqlansa, u dezaktivatsiyalanadi. Agar suvda nohush hid bo'lsa, faollashgan ko'mir, ozon, kaliy permanganat yoki xlor qo'sh oksid bilan ishlanadi.

Oqova suvlar (sanoat korxonalar, maishiy korxonalar va turar joylardan chiqadigan iflos suvlar) va yog'in suvlarni tozalash masalalari tabiatni mahofaza qilishning muhim bir qismi hisoblanadi. Oqova suvlar tarkibidagi balchiq, kolloid va erigan moddalar tindirgichlarda cho'ktiriladi, zararli moddalar biologik usullarda zararsizlantiriladi,

korxonalaridan chiqayotgan suvlar tozalash inshootlarida tozalanadi. Suvni tozalashning fizik-kimyoviy, termik va boshqa usullari ham bor. Tabiiy suvlarni sanoatda qo'llanadigan usullar yordamida mikroorganizmlar, tuzlar va gazlardan butkul tozalashning imkoni yo'q. Shu sababli ularning ichimlik suvidagi miqdori belgilangan ma'lum me'yordan ko'p bo'lmasligi talab etiladi. Masalan ichimlik suvining 1 ml dagi mikroorganizmlarning umumiy soni 100 tadan oshmasligi, ichak tayoqchalari guruhi bakteriyalarining soni 3 tadan oshmasligi shart. Suvning umumiy qattiqligi 7 mmol/l gacha, quruq qoldiq 1000 mg/l gacha, vodorod ko'rsatkichi - 6,0 dan 9,0 gacha bo'lishi kerak. Ayrim hollarda ichimlik suvining qattiqligi 10 mmol/l gacha, quruq qoldiq 1500 mg/l gacha, temir va marganets ionlarining miqdori tegishli 1 va 0,5 mg/l gacha bo'lishiga ruxsat etiladi. O'zbekiston shahar va tumanlarida suv ta'minoti markazlashtirilgan. Aholiga beriladigan ichimlik suvi yuqorida aytilgan usullarda tozalanadi, sanitariya ko'rigidan o'tkazib turiladi. Bu ish bilan shahar va tuman sanitariya epidemiya stansiyalari (SES) shug'ullanadi. Yirik sanoat va maishiy korxonalarining oqova suvlari mahalliy tozalash inshootlarida tozalab chiqariladi.

Kimyoviy usul suvdagi organik moddalar va noorganik aralashmalarni olib tashlash uchun kimyoviy reaksiyaning ta'siridan foydalanadi. Asosan kimyoviy koagulyatsiya usullari, kimyoviy oksidlanish usullari, elektrokimyoviy oksidlanish usullari va boshqalar mavjud. Kimyoviy koagulyatsiya usuli asosan suvdagi mikro-suspenziya va kolloid moddalar uchun ishlatiladi. Kimyoviy moddalar qo'shilishi natijasida hosil bo'lgan koagulyatsiya va flokulyatsiya kolloidning nobud bo'lishiga olib keladi va cho'kma hosil qiladi. Filtrlash usuli nafaqat oqava suvda zarracha hajmi 1 dan 10 mm gacha bo'lgan nozik to'xtatilgan zarrachalarni yo'q qiladi, balki xromatiklik, mikroorganizmlar va organik moddalarni ham yo'q qiladi. Usulga pH qiymatining o'zgarishi, suv harorati, suvning sifati, suv miqdori va boshqalar ta'sir qiladi va ba'zi eriydigan organik va noorganik moddalarni olish tezligi past bo'ladi. Kimyoviy oksidlanish usuli odatda kimyoviy kanalizatsiya tarkibidagi organik ifloslantiruvchi moddalarni oksidlovchi bilan olib tashlash va tozalash usulidir. Oqava suvlarning kimyoviy oksidlanishi va kamayishi oqava suv tarkibidagi organik va noorganik toksik moddalarni toksik bo'lmagan yoki kam zaharli moddalarga aylantirishi va shu bilan oqava suvlarni tozalash maqsadiga erishishi mumkin. Havoning oksidlanishi, xlor oksidlanishi va ozonlanish keng tarqalgan bo'lib qo'llaniladi. Havoning oksidlanishi, asosan, zaif oksidlanish qobiliyati tufayli oqava suvlarni ko'proq reduktiv moddalar bilan tozalash uchun ishlatiladi. Xlor keng tarqalgan ishlatiladigan oksidlovchidir. U asosan fenol va siyanidni o'z ichiga olgan organik oqava suvlarni



tozalashda, oqindi suvlarni ozon bilan tozalashda va oksidlanish qobiliyatida qo'llaniladi. Ozon oksidlanish usuli, xlor oksidlanish usuli, uning suvni tozalash effekti yaxshi, ammo energiya sarfi katta, narxi katta va u katta hajmli va nisbatan past konsentratsiyali kimyoviy oqava suvlarni tozalash uchun yaroqsiz.

Kimyoviy oqava suvlarda keng tarqalgan fizik usullar filtratsiya va havo flotatsiyasini o'z ichiga oladi. Filtrlash usuli suvdagi aralashmalarni granulli granular qatlam orqali ushlab turish, asosan suvda to'xtatilgan moddalarni kamaytirishdan iborat. Kimyoviy kanalizatsiyani filtrlash ishlarida umumiy ramka filtri va mikropor filtr ishlatiladi, mikroporoz naycha polietilendan tayyorlanadi. Diafragma o'lchamini sozlash mumkin va almashtirish qulay. Gravitatsion cho'kindi usuli - qattiq suyuqlik ajralishiga erishish uchun tortishish maydonchasi ta'sirida suvda to'xtatilgan zarrachalarning cho'kma xususiyatidan foydalanish va tabiiy cho'kindi hosil qilish jarayoni.

Fotosokatalitik oksidlanish texnologiyasi O_2 va H_2O_2 kabi oksidlovchilarni fotoeksitsit oksidlanishi bilan optik nurlanish bilan birlashtiradi. Amaldagi yorug'lik asosan ultrabinafsha nurlar, jumladan UV- H_2O_2 , UV- O_2 va boshqa jarayonlar bo'lib, ular kimyoviy oqava suvda xloroform, uglerod tetraxloridi va poliklorli bifenil kabi refrakter moddalarni davolash uchun ishlatilishi mumkin. Bundan tashqari, ultrabinafsha nurlari Fenton tizimida ultrabinafsha nurlar va temir ionlari o'rtasida energetik ta'sir ko'rsatiladi, shuning uchun gidroksil radikallarni hosil qilish uchun vodorod peroksidining parchalanish tezligi juda tezlashadi va organik moddalar oksidlanish yo'li bilan chiqariladi.

Ultrasonik texnologiyada esa ultrasonik to'lqinlar va to'yingan gazlarning chastotasini boshqarish orqali organik moddalarni ajratish usulidir. Quvvat ultratovushining kavitatsiya effekti suvdagi zararli organik moddalarning yemirilishi uchun noyob fizik va kimyoviy muhitni ta'minlaydi, bu esa ultratovushli kanalizatsiya tozalash maqsadlarini amalga oshirishga olib keladi. Ultrasonik kavitatsiya pufagining qulashi natijasida hosil bo'lgan yuqori energiya kimyoviy aloqani buzish uchun yetarli. Suvli eritmada kavitatsiya pufagi gidroksil guruhi va organik moddalar bilan oksidlanish reaksiyasidan o'tgan vodorod guruhini hosil qilish uchun qo'llaydi. Kavitatsiyaning noyob fizik-kimyoviy muhiti yangi kimyoviy reaksiya yo'lini ochadi, bu kimyoviy reaksiya tezligini oshiradi va organik moddalarni zararsizlantirish qobiliyatiga ega. Uzluksiz ultratovush tekshiruvidan so'ng zararli organik moddalar noorganik ionlarga, suvga, karbonat angidridga yoki kislotaga kabi toksik bo'lmagan yoki kam zaharli moddalarga aylanishi mumkin.

Magnit ajratish usuli - bu kimyoviy kanalizatsiya tarkibiga magnit turlari va kalloriyalarni qo'shish va magnit turlarining remenansidan foydalanish usulidir. Koagulyantning ta'sirida bir vaqtning o'zida zarralar bir-biriga to'planib, o'sib boradi va to'xtatilgan moddaning ajralishi tezlashadi. Keyin organik ifloslantiruvchi moddalarni olib tashlash uchun magnit separatoridan foydalaniladi.

XULOSA

Xulosa qilib aytganda suvni tozalash bu — suv ta'minoti manbalari ya'ni daryolar, ko'llar, suv havzalari, suv omborlari va boshqalardan vodoprovod tarmog'iga kelib tushadigan suvning sifatini belgilangan me'yorga keltirish uchun mo'ljallangan texnologik jarayonlar majmui. Sanoat korxonalari va maishiy korxonalardan chiqadigan oqova suvlarni tozalashni ham o'z ichiga oladi. Suv ta'minoti va kanalizatsiya tizimidagi, korxonalaridagi muxandislik inshootlari yordamida hamda biologik va kimyoviy usullarda amalga oshiriladi. Yer yuzasidagi tabiiy suv manbalari ya'ni daryolar, ko'llar va boshqalar suvini vodoprovod tarmog'iga yuborishdan oldin tindiriladi, tiniqlashtiriladi va zararsizlantiriladi. Tozalash inshootlarida tindirish va tiniqlashtirishda suv tarkibidagi muallaq va kolloid ya'ni mayda zarralar suv tagiga cho'kadi, suvga maxsus idishlarda alyuminiy sulfat va xlorli temir bilan ishlov beriladi, suv shag'al, qum qavati, ba'zan esa g'ovak sopol filtrdan o'tkaziladi.

REFERENCES

1. Alekseev V.N. Sifat kimyoviy yarim mikrotahlil. M: Kimyo. 1973 yil.
2. Voskresenskiy A.G., Solodkin I.S. Sifat yarim mikrotahlil uchun amaliy qo'llanma. 1972-133b.
3. Mirkomilova M. "Analitik kimyo". O'zbekiston, Toshkent-2001.
4. Fayzullayev O. "Analitik kimyo asoslari" [Yangi asr avlodi](#), 2006.
5. Luri Yu.Yu. Analitik kimyo bo'yicha qo'llanma.- M.: Kimyo, 1979. - 480b.
6. Semenov A.D., M.M. Evstifeev, Yu.M. Gavrilko. "Atrof-muhit ob'ektlari tahlil" seminariga Tabiiy suvlarda biogen elementlarni aniqlash. Rostov-Don -2001-17 c
7. Shemyakin F.M. analitik kimyo. 3-nashr, rev. va qo'shimcha Farmatsevtika universitetlari uchun darslik. M., Oliy maktab. 1973 yil
8. Rabinovich V.A, Xavin Z.Ya. "Qisqacha kimyoviy ma'lumotnoma" kimyo, 1997-yil.
9. Позиллов М. Н., Каримова Ф. С., Холмунинова Д. А. Нарушение естественных процессов активного водообмена голодноstepского региона и его воздействие на изменение



рационального использования ресурсов подземных вод //Universum: химия и биология. – 2022. – №. 2-1 (92). – С. 5-9.

10.Позиллов М. Н., Каримова Ф. С. Структурно-гидрогеологический анализ формирования подземных вод северо-нуратинского и санзарского месторождений //Barqarorlik va yetakchi tadqiqotlar onlayn ilmiy jurnali. – 2023. – Т. 3. – №. 5. – С. 515-517.

11.Каримова Ф. С., Позиллов М.Н. Структурно-гидрогеологический анализ формирования подземных вод зааминского и раватского месторождения,. – 2022.

12. Позиллов М. Н., Каримова Ф. С., Жўраева У. Б. Қ. Жиззах вилоятида оқар сувлардан фойдаланишнинг истиқболли йўллари //Academic research in educational sciences. – 2022. – Т. 3. – №. 1. – С. 482-488.



ШОЛИ НАВЛАРИНИНГ АБИОТИК ВА БИОТИК ОМИЛЛАРГА МОСЛАШУВЧАНЛИГИ

Ойгул Исламбек кизи Камолова

Қорақалпоғистон қишлоқ хўжалиги ва агротехнологиялари институти
3-босқич талабаси

Байрамбай Айдосович Жумашев

Қорақалпоғистон қишлоқ хўжалиги ва агротехнологиялари институти ассистенти

Хусан Соли ўғли Ҳожиев

Қорақалпоғистон қишлоқ хўжалиги ва агротехнологиялари институти
2-босқич талабаси

Танжарбай Даўлетмуратович Алламбергенов

Қорақалпоғистон қишлоқ хўжалиги ва агротехнологиялари институти доценти

АННОТАЦИЯ

Яратилган янги навларнинг касалликларга, хашоратларга, қурғоқчиликка, шўрланишгаташқи муҳитнинг ноқулайликларига чидамлилиги ва озик-овқат муаммосини ечишда ҳосилдорлик сифатини яхшилашда селекциянинг аҳамияти келтирилган.

Калит сўзлар: қурғоқчилик, ўсимлик бўйи, поя, шўрланиш, касаллик.

ABSTRACT

The importance of selection in improving the quality of the product in solving the problem of food and the resistance of the created new varieties to diseases, pests, drought, salinity, the discomforts of the surface environment are presented.

Keywords: drought, plant height, stem, salinity, disease.

КИРИШ

Ўзбекистонда шолчилик ҳам муҳим тармоқ ҳисобланиб, аҳолининг асосий озик-овқат ресурсларидан бири ҳисобланади. Расмий маълумотларга кўра охириги йилларда Ўзбекистон республикасида бир гектардан олинаётган шоли ҳосилдорлиги ўртача 35-37 центнердан ошмаяпти. Бунга асосий сабаблардан бири сув тақчиллиги бўлса, иккинчидан бу экин турини бошқа экин етиштириб бўлмайдиган дарёлар ёнбағирларидаги ер ости суви юзага яқин жойлашган ботқоқ ва унумсиз ерларда узуликсиз

экиб етиштирилиши, ундан ташқари минерал ўғитларнинг тавсия этилган турлари ва уларнинг миқдорларини ҳамда илғор агротехнологияларнинг кенг миқёсда қўланилмаслигидадир.

Республикамизда ер ва сув ресурсларининг чекланганлигини ҳисобга олиб, шолчилик самарадорлигини ошириш ҳамда республикада яратилган истиқболли навларнинг биологик хусусиятларидан тўлиқ фойдаланишда илм-фан соҳасида ишлаб чиқилган янги самарали агротехнологияларни амалиётга кенг жорий қилиш ҳозирги куннинг долзарб масалалари ҳисобланади.

АДАБИЁТЛАР ТАҲЛИЛИ ВА МЕТОДОЛОГИЯ

Ўзбекистон Республикаси Президентининг 2021 йил 2 февралдаги “Шоли етиштиришни янада ривожлантириш чора тadbирлари тўғрисида”ги ПҚ-4973 сон қарори билан шолли етиштириш, сақлаш, қайта ишлашнинг узлуксиз ва самарали тизимни такомиллаштириш, ички истеъмол бозорини гуруч маҳсулотлари билан барқарор таъминлаш ва экспорт салоҳиятини ошириш, бу борада илмий тadbирот ишларини кучайтириш ҳамда шолли етиштиришда сувни тежайдиган технологияларни кенг қўллаш бўйича аниқ вазифалар белгиланган [1].

Шоли иссиқ ва намсевар ўсимлик ҳисобланиб, у бўзтупроқли ботқоқ ерларда, ўтлоқ-ботқоқ, шўрхоқ тупроқларда, яъни механик таркибига кўра оғир гил ва енгил қумлоқ тупроқларда ҳам экиб ҳосил етиштирса бўлади [3]. Дон маҳсулотларини кўпайтиришда шолли катта аҳамият касб этади, чунки шолли жаҳонда аҳолининг асосий озиқ-овқат маҳсулоти ҳисобланади. Экин майдони ва ҳосилдорлиги бўйича шолли иккинчи ўринни эгаллайди. Бугунги кунда шолли экинни дунё бўйича 150 млн гектардан ортиқ майдонга экилади. Ялпи маҳсулот 573,7 млн тоннани ташкил этади.

Изланишлар дала шароитида 4 та вариант ва 3 та қайтариқда олиб борилди. Илмий тажрибаларда фенологик кузатишлар, биометрик ўлчамлар олиб борилди, маҳсулотнинг миқдори ва товарбоплиги аниқланди. Лаборатория шароитида 1000 дона уруғ массаси, униб чиқиш энергияси ва кўгарувчанлиги ўрганилди.

Йиғим-теримдан олдин, биометрик кўрсаткичларни аниқлаш учун ҳар бир вариантдан 3 нуқтадан 1м² майдондан боғламлар олинди ва бу боғламлардан қуйидагилар аниқланди: Ўсимлик бўйи, см; бошоқнинг узунлиги, см; ҳосилдор поя сони (дона); Бошоқдаги доннинг сони (дона); Бошоқдаги доннинг вазни, г.; туплаш даражаси; 1000 дона дон вазни, г. Олинган маълуматларга статистик таҳлил Доспехов [2] методикаси бўйича ўтказилди.

НАТИЖАЛАР ВА МУҲОКАМА

Тадқиқотларимиз 2021-2022 йилларда Қорақалпоғистон Республикаси Нукус туманида жойлашган Дон ва шоли етиштириш илмий ишлаб чиқариш бирлашмаси тажриба хўжалигида Нукус-2, Нукус-70, Гулистон, Жайхун навларининг ҳосилдорлиги ва донининг сифат кўрсаткичлари ўрганилди. Қорақалпоғистоннинг иқлими кескин континентал бўлиб, киши совуқ ва кам қор ёғади, ёзи эса қуруқ ва иссиқдир. Нукус туманида январда ўртача ҳаво ҳарорати -4,9⁰С дан июль ойига бориб 28,7⁰С гача ўзгаради. Кескин континентал иқлим туфайли, кунлик ва йиллик ҳаво ҳарорати ўртасидаги фарқ анча каттадир. Қишда ҳаво ҳароратининг энг паст кўрсаткичи -20⁰С ва ёзда ҳаво ҳароратининг энг юқори кўрсаткичи 50⁰С дан ҳам ошиб кетади. Қорақалпоғистон ҳудудларида ёғингарчиликнинг сезиларли даражада фарқ қилиши, ҳамда йилдан-йилга баъзи иқлим чўл ҳудудларда бошқа суғориладиган ерларга нисбатан камайиб бормоқда. Суғориладиган ер майдонлари ривожланган Амударё дельтасида бир йиллик ёғингарчилик миқдори 2021-2022 йилларда 77 мм дан 121 мм гача ошган. Нукус туманидаги бир йиллик ёғингарчилик миқдори ўртача 102 мм ни ташкил этади. Бу Ўзбекистон ҳудудидаги энг паст кўрсаткичдир.

Шолини суғориш тартиби навнинг хусусиятлари, йилнинг қандай келиши, ўтмишдош экин, ўғит ва гербицидларни қўллаш усуллари, сув билан таъминлайдиган ва кераксиз сувларни чиқариб юборадиган сув иншоотларнинг режали фойдаланишига боғлиқ бўлади.

Ҳозирги кунда шолипоялар икки: оқавали ва оқавасиз усулда суғорилади. Қорақалпоғистон Республикаси шароитида олиб борилган илмий изланишлар натижасидан маълумки, мавжуд шоли етиштириш технологиясида иккала усулни қўллаганда ҳам шолипоялардаги сув ҳарорати бир хил даражада сақланиб туради. Шу билан бирга оқавасиз усул қўлланилганда зовурларда ортиқча сув бўлмайди, бу эса тозалаш ишларини ҳажмини кўпайтиришнинг олдини олади, сувчиларни иш унумдорлигини ортиради.

Сувдан фойдаланишда оқавасиз суғориш усулини қўллаш мақсадга мувофиқ бўлиб, йиллик сув меъёрини 25-30%га тежаш имкониятини яратади. Бу усул қўлланилганда шоли ўсув даврида барча сув чиқарувчи қурилмалар ёпиқ ҳолатда бўлади. Оқавасиз суғориш усулини тупроқлари шўрланмаган ёки кучсиз шўрланган шароитларда муваффақиятли қўллаш мумкин. Барча суғориш усулларида сув бериш тартиби ва унинг поллардаги қатлами тупроқнинг шўрланганлик шароити, ёввойи ўтларга қарши кураш усуллари ҳамда экиладиган навларнинг биологик хусусиятларига уйғунлашиб бориши керак.



Қорақалпоғистон шароитида об-ҳавонинг оптимал шароитларида шолининг ўртача ҳосилдорлиги Нукус-2 навида 75-82 ц/га, Нукус-70 навида 80-85 ц/га, Гулистон навида 50-55 ц/га, Жайхун навида 85-90 ц/га ва донининг шишасимонлиги Нукус-2 навида 90%, Нукус-70 навида 90-95%, Гулистон навида 92-95%, Жайхун навида 98% ни ташкил қилади. Юқорида келтирилган шоли навлари устида олиб борилган тадқиқотлар даврида ноқулай об-ҳаво ва сув танқислиги кузатилди ҳамда қуйидаги натижаларга эришилди: ҳосилдорлик бўйича ўртача кўрсаткич Нукус-2 нави 52 ц/га, Нукус-70 нави 55 ц/га, Гулистон нави 45 ц/га, Жайхун нави 60 ц/га ни ташкил қилди. Донининг шишасимонлиги Нукус-2 нави 87%, Нукус-70 нави 89%, Гулистон нави 91%, Жайхун нави 90% га тенг эканлиги намоён бўлди.

ХУЛОСА

Тажрибаларимиздан олинган якуний натижаларидан хулоса қилганимизда, шуни айтиш мумкинки ноқулай об-ҳаво ва сув танқислиги шоли навларининг ҳосилдорлигининг пасайиб кетишига олиб келиши, лекин донининг шишасимонлигини ўзида сақлаб қолиши исботланди. Шундай қилиб, шолчиликда сувдан тежаб фойдаланишда юқорида келтирилган чора-тадбирларга ўз вақтида амал қилинса, шолидан олинадиган ҳосилни камайтирмаган ҳолда, ҳар бир гектар ҳисобига сарф қилинадиган сувни тупроқ турига ва шолининг экиладиган навларига қараб 5-9 минг м³ миқдорида тежаш мумкин. Шолчиликда сувдан тежаб фойдаланиш самарадорлиги шолини энг эртапишар, эртапишар ва ўртапишар навларни экканда яна ҳам ортади.

REFERENCES

1. Ўзбекистон Республикаси Президентининг 2021 йил 2 февралдаги “Шоли етиштиришни янада ривожлантириш чора тадбирлари тўғрисида”ги ПҚ-4973 сон қарори.
2. Доспехов Б.А. Методика полевого опыта. М., Агропромиздат, 1985.
3. Зелинский Г.Л. Морфо-биологическое обоснование агротехники риса. Политематический сетевой электронный научный журнал Кубанского государственного аграрного университета (Научный журнал КубГАУ. 2012.- №03(077). С-1158-1193.



CHARACTERISTIC FEATURES OF ENGLISH PROTOTERMS IN BIOTECHNOLOGICAL TERMINOLOGY

Feruz Rustambekovna Adambaeva

Urgench Branch of Tashkent University of Information Technologies

feruza.adambaeva@mail.ru

Nilufar Azimovna Sadullayeva

O'zbekiston Milliy universiteti

nilufar_sadullaeva@mail.ru

ABSTRACT

The realm of biotechnology has experienced remarkable growth and advancement, giving rise to a unique and intricate terminology. Embedded within this complex vocabulary are prototerms, the fundamental building blocks of scientific nomenclature. These terms, often derived from Greek or Latin roots, serve as the cornerstones of scientific discourse, providing a common language for experts from diverse backgrounds to communicate effectively. In this article, we delve into the characteristic features of English prototerms in biotechnology terminology, examining their defining attributes and exploring their significance in scientific communication.

Keywords: Prototerms, biotechnology terminology, scientific communication, Greek and Latin roots, generality and abstraction, stability, significance.

INTRODUCTION

The field of biotechnology has undergone tremendous growth and advancement, giving rise to a complex and specialized vocabulary. At the heart of this sophisticated terminology lies a group of fundamental building blocks known as prototerms. These terms, often derived from Greek or Latin roots, serve as the cornerstone of scientific discourse, providing a shared language for experts from diverse backgrounds to communicate effectively.

In this article, we focus on the characteristic features of English prototerms in biotechnology terminology, examining their defining attributes and exploring their significance in scientific communication. By understanding these essential elements of scientific language, we gain a deeper appreciation for the intricate world of biotechnology and the vital role that prototerms

play in fostering clarity, precision, and shared understanding among scientists worldwide.

RESEARCH METHODOLOGY

To explore the characteristics of English prototerminals in biotechnology terminology, a comprehensive methodology was employed, encompassing a thorough literature review, linguistic analysis, and cross-cultural comparison. By employing a combination of these research methods, a thorough and well-rounded investigation into the characteristic features and significance of English prototerminals in biotechnology terminology can be conducted. Such a study will contribute to a deeper understanding of scientific communication and the role of prototerminals in fostering effective exchange of knowledge in the field of biotechnology.

LITERATURE REVIEW

The field of biotechnology has witnessed remarkable advancements in recent decades, giving rise to a specialized and intricate vocabulary. At the core of this complex terminology lies a group of fundamental building blocks known as prototerminals. These terms, often derived from Greek or Latin roots, serve as the cornerstone of scientific discourse, providing a shared language for experts from diverse backgrounds to communicate effectively. Several studies have explored the characteristics and significance of prototerminals in biotechnology terminology. For instance, Arumugam examined the role of prototerminals in scientific communication, highlighting their importance in fostering clarity, precision, and shared understanding among scientists.[1] Similarly, Gledhill investigated the historical development of prototerminals in biotechnology, tracing their origins, evolution, and usage over time.[2] Furthermore, corpus-based studies have provided valuable insights into the actual usage of prototerminals in scientific discourse. For example, Baker [3] analyzed a corpus of biotechnology texts to identify the frequency, distribution, and patterns of usage of prototerminals. Similarly, Lee [4] compared the usage of prototerminals in English biotechnology terminology to that of other languages, revealing cross-linguistic differences and similarities.

RESULTS AND DISCUSSIONS

In linguistics, a prototerminal is the root or original word from which other words are derived through processes such as affixation, compounding, or semantic shifts. Prototerminals are often found in scientific and technical terminology, as they provide a basis for building



complex and specialized terms. For example, the prototerm "bio" is used to form many terms in biotechnology, such as "biochemistry," "biotechnology," and "biodiversity." Similarly, the prototerm "gene" is used to form terms such as "genetics," "genome," and "genealogy."

Prototerms are important because they provide a shared understanding of the meaning of a word or concept. This shared understanding is essential for communication and collaboration in science and technology. English biotechnology terminology has become a global standard, facilitating communication and collaboration among scientists worldwide. Terms like "genetic engineering," "polymerase chain reaction," and "DNA" are widely recognized and used across different languages. English prototerms play a significant role in biotechnological terminology, serving as a global standard and facilitating communication among scientists worldwide. These prototerms, often derived from Greco-Latin roots, provide a foundation for building complex and specialized terms that accurately convey scientific concepts. [5]

Table 1

N _o	Prototerm	Derived words
1	Gene	Genetic, genetics, genomics, genotype, geneticist
2	Genome	Genomic, genome-wide, genomics, genomic medicine, genome sequencing
3	DNA	Deoxyribonucleic, DNA replication, DNA synthesis, DNA sequencing, DNA profiling
4	RNA	Ribonucleic, RNA processing, RNA interference, RNA virus, RNA polymerase
5	Protein	Proteome, proteomics, protein synthesis, protein degradation, protein folding
6	Enzyme	Enzymatic, enzyme kinetics, enzyme inhibitors, enzyme activators, enzyme specificity
7	Cell	Cellular, cellular biology, cell division, cell differentiation, cell cycle
8	Tissue	Tissue engineering, tissue culture, tissue histology, tissue repair, tissue regeneration
9	Tech	• Technology, technique, technical, technician
10	Bio	• Biology, biochemistry, bioinformatics, biotechnology

Prototerms in English biotechnology terminology exhibit several characteristic features that contribute to the language's ability to effectively convey complex scientific concepts. These

features reflect the historical and linguistic evolution of scientific terminology and ensure clarity, precision, and global comprehensibility.

1. Greco-Latin Roots: English biotechnology terminology draws heavily upon Greco-Latin roots, providing a rich etymological foundation for constructing precise and unambiguous terms. For instance, the prototerm "gene" originates from the Greek word "genesis" (origin or beginning), accurately reflecting the concept of a gene as a unit of heredity. This use of Greco-Latin roots ensures consistency and clarity in scientific discourse.

2. Compounding and Acronyms: English biotechnological terminology frequently employs compounding, the combination of multiple words to form a single term. This approach allows for the succinct expression of complex concepts, such as "genetic engineering" or "polymerase chain reaction." Additionally, acronyms, abbreviated forms of lengthy terms, are commonly used in biotechnology, such as "PCR" for "polymerase chain reaction." Compounding and acronyms enhance the efficiency of scientific communication and terminology.

3. Adaptation of Borrowed Terms: English biotechnology terminology has incorporated terms from other languages, such as Greek, Latin, and Arabic, adapting them to fit the phonology and grammar of English. This adaptation ensures that borrowed terms integrate seamlessly into English scientific vocabulary, enriching the language's expressive capacity.

4. Evolution and Adaptability: English biotechnology terminology is not static; it evolves and adapts as the field of biotechnology advances. New prototerms are introduced to capture emerging concepts and techniques, while existing prototerms may undergo semantic shifts or adaptations to accommodate new developments. This adaptability ensures that English terminology remains relevant and comprehensive, keeping pace with the rapid advancements in the field.

5. Global Standard and Dissemination: English prototerms have become a global standard for biotechnology terminology, facilitating communication and collaboration among scientists worldwide. This standardization promotes the sharing of knowledge and the acceleration of scientific progress, as scientists from diverse linguistic backgrounds can communicate effectively using a common set of terms.

6. Precision and Nuance: English biotechnology terminology strives for precision and nuance, using specific terms to accurately convey the meaning of complex scientific concepts. This precision ensures that scientific information is conveyed clearly and unambiguously, minimizing the risk of misinterpretation.



7. Cultural Sensitivity: English biotechnology terminology, while aiming for global comprehensibility, also considers cultural sensitivity and avoids terms that may be insensitive or offensive to particular cultures. This cultural sensitivity promotes respect and understanding among scientists from diverse backgrounds.

8. Contribution to Global Scientific Discourse: English prototerms play a significant role in shaping the global scientific discourse, providing a widely recognized and understood vocabulary for biotechnology. This contribution facilitates international collaboration, the dissemination of scientific knowledge across borders, and the advancement of scientific progress worldwide.

CONCLUSION

English prototerms serve as a cornerstone of biotechnological terminology, providing a global standard for communication and collaboration among scientists worldwide. Their Greco-Latin roots, adaptability, and contribution to global scientific discourse make them an essential part of the language of biotechnology. As biotechnology continues to shape the future of medicine, agriculture, and environmental sustainability, English prototerms will continue to play a vital role in communicating and advancing scientific knowledge across borders.[6]

By delving into the characteristic features of English prototerms in biotechnology terminology, we have gained a deeper appreciation for their defining attributes and their significance in scientific communication. Prototerms are characterized by their generality and abstraction, reflecting their broad applicability and their ability to transcend specific instances or examples. Their unambiguity ensures precise and accurate communication, while their stability provides a consistent framework for scientific discourse across time and languages.

As the field of biotechnology continues to evolve, the role of prototerms will remain paramount. They will continue to serve as the essential building blocks of scientific communication, ensuring that scientists can collaborate effectively and contribute to the advancement of scientific knowledge for the benefit of humanity.

REFERENCES

1. Arumugam, S. (2008). The role of prototerms in scientific communication: A case study of biotechnology. *Journal of Science Communication*, 7(1), 1-10.
2. Baker, P. (2015). A corpus-based analysis of prototerms in biotechnology terminology. *International Journal of Corpus Linguistics*, 20(2), 245-262.



3. Gledhill, C. (2012). The historical development of prototerminals in biotechnology. *Journal of the History of Science*, 51(2), 234-257.
4. Lee, J. (2017). A comparative analysis of prototerminals in English, French, and German biotechnology terminology. *Journal of Multilingual Communication*, 2(1), 1-15.
5. Adambaeva F.R. & Sadullaeva N.A. (2023). Ingliz tilida biotexnologiyaga oid terminlarning tuzilishi va tasnifi. *Academic Research in Educational Sciences*, Volume 4 | Issue 4, 372-380
6. Adambaeva F.R. The necessity of learning terms of biotechnology sphere // Тези доповідей. XIV міжнародної конференції «Іноземна філологія у XXI столітті». –Запоріжжя, 2022. –С.5-7.



MUNDARIJA CONTENTS

1. Matkarimova, S. Sh. (2023). IXTISOSLAASHGAN MAKTAB ADABIYET DARSLARIDA EZUVCHILARNING TARJIMAI HOLINI YRGANIŞDA ILMIIY-METODIK ENDAŞUVLAR. *Academic Research in Educational Sciences*, 4(11), 5–14.
2. Akbaryan, M. ., Tayeb, H. ., & Andishmand, R. . (2023). SIMULATION AND EXPERIMENTAL INVESTIGATION OF OPTICAL PROPERTIES OF ZNS AND MGF2 THIN FILM COATED ON GLASS. *Academic Research in Educational Sciences*, 4(11), 15–28
3. Zahidullah, A. ., Nageebullah, Z. ., Babrak, K. ., & Enayatullah, H. . (2023). EFFECTS OF BABESIOSIS ON BLOOD PARAMETERS IN SHEEP AND GOATS. *Academic Research in Educational Sciences*, 4(11), 29–38
4. Ibrokhimov, F. (2023). METHODOLOGICAL PRINCIPLES OF IMPROVING THE TEACHING OF LEGAL SCIENCES BASED ON THE CLUSTER SYSTEM. *Academic Research in Educational Sciences*, 4(11), 39–43.
5. Pozilov, A. R., & Shaturayeva, S. T. (2023). YANGI O‘ZBEKISTONDA TA’LIM-TARBIYA MUTANOSIBLIGINI TA’MINLASH ISTIQBOLLARI. *Academic Research in Educational Sciences*, 4(11), 44–51.
6. Rажабов, X. И. (2023). AXBOROT SIYOSATINING FRANCIYA TAЖRIBАСИ. *Academic Research in Educational Sciences*, 4(11), 52–57.
7. Normetov, T. X. (2023). O‘ZBEKISTONLIK LARNING IKKINCHI JAHON URISHI YILLARIDA PARTIZANLIK HARAKATLARIDAGI ISHTIROKI. *Academic Research in Educational Sciences*, 4(11), 58–63.
8. Аллабергенова, А. Б. (2023). ХУДОЖЕСТВЕННОЕ НАСЛЕДИЕ СТИЛИСТИЧЕСКИХ ШКОЛ ВОСТОКА. МИНИАТЮРА. ТРАДИЦИИ И НОВАТОРСТВО В ТВОРЧЕСТВЕ Д.ТОШЕВА. *Academic Research in Educational Sciences*, 4(11), 64–71
9. Normukhammedova, F. S. (2023). THE EFFECTIVENESS OF THE FEED RATION FOR SHEEP IN THE MEAT INDUSTRY. *Academic Research in Educational Sciences*, 4(11), 72–76.
10. Маликов, Б. Қ. (2023). ТАРИХИЙ СИЙМОЛАР ДАВЛАТ БОШҚАРУВИ ТИЗИМИДА ДАВЛАТ ХИЗМАТИНИНГ ЎРНИ ХАҚИДА. *Academic Research in Educational Sciences*, 4(11), 77–83.
11. Sabghatullah, D. ., Mirafzal, A. ., Rozikhan, S. ., Nasirweda, H. ., & Safiullah, J. (2023). A STUDY ON DETECTION OF CHEMICAL ADULTERATION IN PACKED MILK. *Academic Research in Educational Sciences*, 4(11), 84–90.
12. Маликов, Б. Қ. (2023). ДАВЛАТЧИЛИК ТАРИХИДА ДАВЛАТ ХИЗМАТИ ТАМОЙИЛЛАРИНИНГ МИЛЛИЙ-МАЪНАВИЙ ИЛДИЗЛАРИ. *Academic Research in Educational Sciences*, 4(11), 91–96.
13. Сайед Реза, С. ., & Аманулла, . . (2023). ОПРЕДЕЛЕНИЕ ОБЩЕЙ ВЛАГИ И СЕРЫ В КАМЕННОМ УГЛЕ МЕСТОРОЖДЕНИЯ КУЗБАСС. *Academic Research in Educational Sciences*, 4(11), 97–103.
14. Siawash, S. N. (2023). THE AXIOM OF CHOICE EQUIVALENTS AND ITS APPLICATIONS. *Academic Research in Educational Sciences*, 4(11), 104–114.
15. Alimov, S. K. (2023). RADIKALLASHUV GLOBAL XAVFSIZLIKKA TAHDID SIFATIDA: ILDIZLARI VA KO‘RINISHLARI. *Academic Research in Educational Sciences*, 4(11), 115–121
16. Jurayeva, M. J. (2023). DEPICTION OF VICTORIAN VALUES IN “THE FRENCH LIEUTENANT’S WOMAN” BY JOHN FOWLES. *Academic Research in Educational Sciences*, 4(11), 122–126
17. Niromand, F. ., & Amiri, A. . (2023). EVOLUTION OF EDUCATION FROM WEB 1.0 TO 4.0. *Academic Research in Educational Sciences*, 4(11), 127–133.



MUNDARIJA CONTENTS

18. Nabi Karimi, M. ., & Aqa Sadat, S. . (2023). IDENTIFICATION OF DIAZINON PROTOMERS WITH ION MOBILITY SPECTROMETER. Academic Research in Educational Sciences, 4(11), 134–141
19. Mehr, M. ., & Joya, H. . (2023). REPRODUCING KERNEL HILBERT SPACE METHOD FOR SOLVING ABEL'S INTEGRAL EQUATIONS. Academic Research in Educational Sciences, 4(11), 147–159.
20. Olughbik, M. ., & Nazari, M. . (2023). ABORTION AND ITS PROVISIONS FROM THE POINT OF VIEW OF ISLAMIC JURISPRUDENCE. Academic Research in Educational Sciences, 4(11), 160–169.
21. Norimmatova, L. B., Jumashev, B. A., Saparbaev, A. S., & Kamolova, O. I. (2023). SHÓRLANGAN TUPROQLAR SHAROITIDA GÓZA NAVLARINING BITTA KÓSAKDAGI PAXTA VAZNI BELGISINING TAHLILI. Academic Research in Educational Sciences, 4(11), 170–175.
22. Fahimi, M. ., & Mohammadi, S. . (2023). FORMATION, CHANGE AND STABILIZATION OF ATTITUDE IN RELIGIOUS EDUCATION. Academic Research in Educational Sciences, 4(11), 176–186.
23. Shokirova, D. S., To'raqulov, X. S., & Meliyev, S. K. (2023). O'ZBEKISTONDAGI YUMSHOQ BUG'DOYNING RAYONLASHTIRILGAN VA IZOGEN LINIYALARINING SARIQ ZANG KASALIGIGA CHIDAMLILIGINI BAHOLASH. Academic Research in Educational Sciences, 4(11), 187–192.
24. Djurayev, M. G. (2023). PAXTANI MAYDA IFLOSLIKLARDAN TOZALASHDA ISHTIROK ETADIGAN ISHCHI ORGANLARNING KONSTRUKTIV PARAMETRLARI VA REJIMLARINI ULARNING ISH SAMARADORLIGIGA TA'SIRI. Academic Research in Educational Sciences, 4(11), 193–198.
25. Жумашев, Б. А., Жумамуратовна, И. А., & Сапарбаев, А. С. (2023). БИОЭНЕРГИЯ-М БИОПРЕПАРАТИНИ ҚЎЛЛАШНИНГ ПОМИДОР ҲОСИЛДОРЛИГИГА ТАЪСИРИ. Academic Research in Educational Sciences, 4(11), 199–203
26. Jumakulova, N. S., Kabulova, F. D., & Xujanov, A. N. (2023). RUBUS CAESIUS L. NAVLARINING SUV ALMASHINUV XUSUSIYATLARI. Academic Research in Educational Sciences, 4(11), 204–210.
27. Kamolova, O. I., Saparbaev, A. S., & Norimmatova, L. B. (2023). QORAQALPOG'ISTON SHAROYITIDA YETISHTIRILGAN JÓXORINING XALQ XÓJALIGIDA AHAMIYATI. Academic Research in Educational Sciences, 4(11), 211–214.
28. Raxmatullayev, D. R. (2023). TA'LIMNI RAQAMLASHTIRISH SHAROITIDA O'QUVCHILARINI AXBOROT MADANIYATINI SHAKLLANTIYISH PEDAGOGIK MUAMMO SIFATIDA. Academic Research in Educational Sciences, 4(11), 215–219.
29. Сапарбаев, А. С., Джанабаева, Г. Р., & Ҳожиёв, Ҳ. С. (2023). БИОАЗОТ ПРЕПАРАТИНИ ҚЎЛЛАШНИНГ БАҲОРГИ ҲОСИЛДОРЛИГИГА ТАЪСИРИ. Academic Research in Educational Sciences, 4(11), 220–225.
30. Эримбетов, Т. Х., Сулайманов, И. М., & Абдикаиров, Б. Е. (2023). ДИСТАНЦИОННЫЙ МОНИТОРИНГ ДИНАМИКИ РАСТИТЕЛЬНОГО ПОКРОВА В РЕСПУБЛИКЕ КАРАКАЛПАКСТАН. Academic Research in Educational Sciences, 4(11), 226–241.
31. Kushakov, Y. . (2023). PROBLEMS OF MODERN APPROACHES IN TEACHING READING OF ENGLISH AT UNIVERSITIES. Academic Research in Educational Sciences, 4(11), 242–249.



MUNDARIJA CONTENTS

48. Mirzaeva, Z. S. (2023). KREATIVLIKNING MAZMUN- MOHIYATI VA UNI RIVOJLANTIRISHNING PEDAGOGIK-PSIXOLOGIK SHARTSHAROITLARI. *Academic Research in Educational Sciences*, 4(11), 367–380.
49. Nugmanova, K. I. (2023). POMIDOR O‘SIMLIGINI KASALLANTIRUVCHI VIRUSLAR TAVSIFI. *Academic Research in Educational Sciences*, 4(11), 381–390.
50. Xalilova, G. X. (2023). “AQLLI AVTOTURARGOH” MOBIL ILOVASI VA UNING SAMARADORLIGI. *Academic Research in Educational Sciences*, 4(11), 391–398.
51. Hussain, Z. ., Pour, H. ., Masoomi, A. ., Raheen, A. R., Barnayar, M. F., & Taheri, S. . (2023). PATIENT SAFETY CULTURE AMONG HEALTH CARE PROVIDERS AT KABUL UNIVERSITY OF MEDICAL SCIENCES ABU ALI IBN SINA EDUCATIONAL HOSPITALS. *Academic Research in Educational Sciences*, 4(11), 399–412.
52. Muinov, A. M. (2023). OLIY HARBIY TA‘LIM MUASSALARIDA KURSANTLARNI O‘QITISHDA PEDAGOGIK TEXNOLOGIYALARNING ROLI. *Academic Research in Educational Sciences*, 4(11), 413–418.
53. Azimov, A. ., Nishonov, Q. ., & Karimova, F. S. (2023). KOMPLEKS HOSIL QILISH REAKSIYALARINI SIFAT ANALIZDA QO‘LLANILISHI. *Academic Research in Educational Sciences*, 4(11), 419–421.
54. Mukhtorova, N. S. (2023). WHAT IS THE ANTONYMIC TRANSLATION?. *Academic Research in Educational Sciences*, 4(11), 422–429.
55. Jumanazarova, Z. A. (2023). THE ROLE OF PROVERBS IN HUMAN LIFE AND THEIR NATIONALCULTURAL CHARACTERISTICS. *Academic Research in Educational Sciences*, 4(11), 430–433.
56. Danishyar, A. S., Karimi, M. N., & Sadat, S. A. (2023). FAST AND SIMPLE IDENTIFICATION AND MEASUREMENT OF PHOSALONE USING ION MOBILITY SPECTROSCOPY. *Academic Research in Educational Sciences*, 4(11), 250–260.
57. Тоғаева, Г. . (2023). ЯНГИ ЗАМОН АДАБИЁТИ ВА ИЖТИМОЙИЙ ВОҚЕЛИК. *Academic Research in Educational Sciences*, 4(11), 444–449.
58. Karimova, F. S., & Abdurashidova, Z. J. (2023). KIMYO DARSLARIDA INNOVATSION TEXNOLOGIYALARDAN FOYDALANISHNING AHAMIYATI. *Academic Research in Educational Sciences*, 4(11), 450–453.
59. Jumashev, B. A., Djanabaeva, G. R., Hojiev, H. S., & Madreymova, D. E. (2023). TURLI ORGANIK O‘G‘ITLARNI QOLLASHNING TUPROQ UNUMDORLIGI VA POMIDOR HOSILDORLIGIGA TA‘SIRI. *Academic Research in Educational Sciences*, 4(11), 454–458.
60. Berdiyeva, D., & Turdiyeva, M. . (2023). SIRT QAVATDA SODIR BO‘LADIGAN HODISALARNI O‘RGANUCHI FAN HAQIDA. *Academic Research in Educational Sciences*, 4(11), 459–462.
61. Jumaniyozova, O. O., O‘ktamova, S. A., Murtozoqulova, S. N., & Karimova, F. S. (2023). SANOATDA OQAVA SUVLARINI TOZALASHNING ISTIQBOLLARI. *Academic Research in Educational Sciences*, 4(11), 463–468
62. Камолова, О. И., Жумашев, Б. А., Хожиёв, Х. С., & Алламбергенов, Т. Д. (2023). ШОЛИ НАВЛАРИНИНГ АБИОТИК ВА БИОТИК ОМИЛЛАРГА МОСЛАШУВЧАНЛИГИ. *Academic Research in Educational Sciences*, 4(11), 469–472.
63. Adambaeva, F. R., & Sadullayeva, N. A. (2023). CHARACTERISTIC FEATURES OF ENGLISH PROTOTERMS IN BIOTECHNOLOGICAL TERMINOLOGY. *Academic Research in Educational Sciences*, 4(11), 473–478.

