

EFFECTS OF SOWING CULTIVATION DIFFERENCES ON THE FORMATION OF DIFFICULT WHEAT ROOT SYSTEM IN RAINFED LAND

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ABSTRACT

The article describes the impact of sowing norms on the formation of the root system of hard wheat varieties 'Mingchinor' and 'Yakut-2014' in the conditions of the hilly region of rainfed land.

Keywords: rainfed land, hilly region, durum wheat, sowing norm, variety ('Mingchinor', 'Yakut-2014'), root system.

INTRODUCTION

It is known that the main function of the root system is to provide the plant with the necessary amount of water and nutrients during the period of growth and development. This is because a number of scientific studies have shown that the development of the root system and its activity have a significant impact on the formation of the crop of all cultivated plants, as well as winter wheat [5; 363-s, 8; 14-s, 7; 432].

The level of development of the root system of wheat planted in autumn depends on its depth of penetration into the soil, indicators such as root mass, plant type, variety, planting dates, norms, nutritional regime [3; 64-s.].

The formation features of the root system of hard and soft wheat varieties included in the State Register for planting on rainfed and irrigated lands of Uzbekistan are poorly studied. In particular, the effect of planting norms on the development of durum wheat root system is not sufficiently covered in the literature.

MATERIALS AND METHODS

Field experiments were carried out on the basis of the program in the conditions of the farm "Yashin-Yamin" in the rainfed region of Yakkabag district of Kashkadarya region.

New 'Mingchinor' and 'Yakut-2014' varieties were tested which included in the State Register of durum wheat in the conditions of the hilly region of rainfed lands.

In the experiment, the sowing norm of winter wheat was 2.0 per hectare; 2.5; 3.0 and 3.5 million. were studied at the expense of seeds. The experiment was designed as following: 4 replications each one 50 m² in 2 tiers. In the experiment, plant care was carried out on the basis of agro-techniques adopted for the region. All phenological observations and biometric measurements made in the field experiment were used in the methodological manuals of the Uzbek Cotton Research Institute "Methods of conducting field experiments" [1; p. 145].

Root weight was determined in monoliths with a soil shear surface of 50x15 cm. Physiological evaluation of the root system of durum wheat planted in autumn was evaluated on the adsorption of methyl zinc on the general and active surface of the root absorbing in relation to the sowing norm as the absorbing organ [6; 311-b.].

Analysis of variance of data obtained on productivity B.A. Dospekhov [2; 356-s].

RESULTS AND DISCUSSIONS

Our research shows that planting norms have a significant impact on the surface mass and root system of durum wheat sown in the fall. The development of root system and surface mass was highest in durum wheat varieties when the sowing norm was 2 million germinated seeds per hectare (Table 1).

Table 1. Influence of planting norms on the development of surface mass and root system in the accumulation phase (2018-2020 years)

Sowing norm mln. germination ability seeds	Dry mass of 100 plants, g		Root rate, %
	Root	Upper part	
‘Mingchinor’			
2,0	11,5	24,5	47,7
2,5	11,0	23,7	46,4
3,0	10,7	23,6	45,2
3,5	9,0	20,9	43,1
‘Yakut-2014’			
2,0	11,2	23,9	46,9
2,5	10,5	22,9	45,8
3,0	10,4	23,6	44,1
3,5	8,7	20,7	42,0

At the sowing rate of 2.0 million per hectare, before wintering in the ‘Mingchinor’ variety of durum wheat, the root mass of 100 plants was 11.5 g and the surface mass was 24.5 g. The root rate of the plant was 47.7%. This is the case with the ‘Yakut-2014’ variety

the indicator is 11.2 accordingly; 23.9 g; the root coverage rate was 46.9%. With the increasing of planting norms, the indicators of root, surface mass, root rate were decreased. In general, in all planting norms, the above figures were higher than in the thousand 'Mingchinor' varieties.

Table 2 Influence of sowing norms on development of surface mass and root system during the last phase of ripening (2018-2020 years)

Sowing norm mln. germination ability seeds	Dry mass of 100 plants, g		Root rate, %
	Root	Upper part	
'Mingchinor'			
2,0	55,1	490	11,2
2,5	54,4	488	11,1
3,0	53,5	485	11,0
3,5	51,0	480	10,6
'Yakut-2014'			
2,0	54,1	485	11,1
2,5	53,5	483	11,0
3,0	52,6	480	10,9
3,5	50,1	477	10,5

Studies conducted by N.U.Alimbekov et al. in the rainfed hill land of the Tashkent region show that in the ripening phase of wheat sown in autumn on irrigated lands, the length of the roots is 215-233 cm. roots were 76-80 cm, and in non-irrigated backgrounds were 67-73 cm and 40-45 cm, respectively.

The secondary roots of wheat can sometimes penetrate to a depth of 60-80 cm, while the primary roots can penetrate to a depth of 200-220 cm into the soil [9: pp. 227-233, 4; 311-b.].

By the time of the last stage of ripening phase of wheat, the root, surface mass sowing rate of 100 plants in the 'Mingchinor' variety was 55.1 when sowing 2.0 million germinated seeds per hectare; 490 g, root rate was 11.2%. With the increase in planting norms, this has led to a decrease in rates. A similar pattern was observed in the 'Yakut-2014' variety (Table 2).

CONCLUSION

Based on the results, it can be concluded that the root system of 'Mingchinor' and 'Yakut-2014' varieties of durum

wheat grown on rainfed lands is mainly distributed in the tillage layer of the soil and, although relatively small, accumulates more mass in the deeper layers of the soil.

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