Proceedings of International Educators Conference
Hosted online from Rome, Italy.
Date: 25th January, 2023
ISSN: 2835-396X Website: econferenceseries.com

FORMATION OF THE ROOT SYSTEM OF DURUM WHEAT PLANTED AT DIFFERENT PERIODS AND RATES OF RAINFALL

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Abstract

The article presents the results of the research on the formation of the root system of the durum wheat variety "Mingchinor" under different planting periods and standards under drought conditions. It studied the formation of the root system depending on the biological characteristics of the variety, planting periods, and standards.

Keywords: Durum wheat, planting rate, planting time, dry land, plant, dry mass, root mass, root availability, tillering phase, wax ripening phase, root system, cultivar, grain crop

The characteristics of root system formation of winter wheat varieties included in the State Register in dry lands of Uzbekistan have been little studied.

The main task of the wheat root system is to provide the plant with the required amount of water and nutrients during its growth and development. Because the development of the root system and its activity have a significant impact on the formation of all crops, including winter wheat, in several scientific studies [4, 10, 12, 13, 111].

Planting periods have a significant effect on the vigorous development of plants in dry lands. Plants planted in optimal periods are less damaged during wintering, and quickly restore the surface mass and root system. That's why for they are growing of the era second in half the water a lot spend Winter durum wheat cannot form the above-ground mass and root system normally when planted late, therefore cannot fully use the available moisture in the soil [14].

During the initial growth and development of the plant, primary root roots play a major role in providing moisture and nutrients.

The number of researchers determined that the number of sprouting roots depends on the size and the size of the wheat seed [5, 9, 6, 8, 7]. In our research, it was observed that this is the case in the conditions of Uzbekistan. That is, a higher mass

of 1000 grains indicated a higher number of roots. It should be noted that a good formation of the root system can achieve high productivity only in the fields planted in the optimal planting period and norms. For this purpose, optimal bush thickness and the nutritional regime are created for each plant under specific growing conditions, during the growing season, for the most comfortable growth, deveined lopment, and a well-developed root system. In this case, all agrotechnical methods should be aimed at forming an optimal root system in the plant.

Research method and materials. We conducted field experiments in the dry farming conditions of the farm "Yashin-Yamin" in the Yakkabog district of the Kashkadarya region. 2.0 per hectare of durum wheat variety "Mingchinor" on October 1, October 21, November 11, and December 1 as an experimental object; 2.5; 3.0 and 3.5 million. one grain of fertile seed was sown. The size of the 4-reciprocating, 50 m ^{2}, 2-tiered piles were placed in the field experiments. Calculation and determination of durum wheat root weight distribution in the soil layer were determined according to VARojkov, IVKuznesova, Kh.R.Rakhmatulloyev methodology in experimental plots [3]. Root weight was determined in monoliths with a soil shear surface of 50x15 cm. The distribution of the roots of durum wheat, the penetration of some roots into the pit, the dynamics of the growth of the root, the trenches were dug and the windows placed on its wall were determined.
In the experiment, biometric measurements and phenological observations were carried out according to the method of Methods of conducting field experiments [1]. The dispersion analysis of the obtained data on productivity was determined according to the method of B.A.Dospekhov [2].

Research results and analysis
Research by A. Ilashov and others shows that the main part (60%) of wheat roots in dry lands is located in the 0-20 cm layer of the soil. Secondary roots penetrate to a depth of 60-80 cm, and primary roots to a depth of 210-220 cm [15].
In our studies, planting time and rates significantly influenced the above-ground mass and root system of fall-planted durum wheat. 2.0 million per hectare is due to be planted on October 21. (control) the development of the root system and above-ground mass was the highest in the Mingchinor cultivar when the germinating seed was planted (Table 1).

Table 1

The effect of planting time and standards on the development of the above-ground mass and root system in the budding phase (Mingchinor variety, 2017-2020)

Planting period	Sowing norms per hectare million _ piece unyielding seed	100 pcs of the plant dry mass, g		Root with availability level
		root	land top part	
1.10 (control)	2.0 (control)	13.6	28.5	47.8
	2.5	13.1	28.1	46.7
	3.0	12.6	27.7	45.5
	3.5	11.2	25.6	43.8
21.10	2.0 (control)	13.5	28.3	47.7
	2.5	13.0	28.0	46.4
	3.0	12.4	27.4	45.2
	3.5	11.0	25.5	43.1
11.11	2.0 (control)	11.0	24.4	45.0
	2.5	10.6	24.3	43.7
	3.0	10.3	24.5	42.0
	3.5	9.5	23.1	41.1
1. 12	2.0 (control)	10.2	23.7	43.0
	2.5	10.1	24.1	41.9
	3.0	9.7	23.8	40.8
	3.5	9.2	23.0	40.0

It was found that the root mass of 100 plants before wintering was 13.6 g, and the above-ground mass was 28.5 g.

The degree of rooting of the plant was 47.8%.

that when the planting standards are increased from 2.0 million viable seeds per hectare (control) to 3.5 million viable seeds, the indicators of the root, surface mass, and level of root supply decrease.

In our experiments, it was observed that in the dry mass of 100 plants (root and above-ground part), the level of root supply decreased with the delay of planting dates of the Mingchinor variety in all planting periods and standards during the budding phase of wheat, and with the increase of planting standards (Table 1).

Table 2

The effect of planting time and standards on the development of the above-ground mass and root system during wax ripening (Mingchinor variety, 2017-2020yy.)

Planting period	Sowing norms per hectare million _ piece unyielding seeds	100 pcs of the plant dry mass, g		Root with availability level
		root	land top part	
1.10 (control)	2.0 (control)	64.9	487.6	13.3
	2.5	61.0	462.4	13.2
	3.0	54.3	420.9	12.9
	3.5	53.3	416.2	12.8
21.10	2.0 (control)	60.4	457.9	13.2
	2.5	55.6	424.3	13.1
	3.0	53.8	414.1	13.0
	3.5	44.6	353.8	12.6
11.11	2.0 (control)	59.1	451.0	13.1
	2.5	51.9	402.4	12.9
	3.0	51.6	406.5	12.7
	3.5	43.2	346.0	12.5
1. 12	2.0 (control)	56.2	442.7	12.7
	2.5	49.0	392.2	12.5
	3.0	44.8	364.2	12.3
	3.5	40.4	333.6	12.1

By the wax ripening phase of wheat, the root and above-ground mass of 100 plants of the Mingchinor variety is 2.0 million per hectare. (control) 64.9 when the fertile seed was planted; 487.6 g. The level of root coverage was 13.3 %. Increasing planting rates led to a decrease in these indicators (Table 2).

It is known that the stronger the root system of plants is developed and the more capacity it has, the easier it is to supply the above-ground part of the plant with water and nutrients dissolved in it.

This situation has been statistically proven in our research. The dependence of the plant surface mass on the root mass has a linear description according to the analytical expression and direction, the regression equation of the dependence is y=332.92-9.18x, and the correlation coefficient it was found to be r=0.98 (Figure 1).

As determined in the experiments, the root system spreads mainly in the arable layer of the soil in dry lands, and many of its roots penetrate deeper into the soil compared to winter wheat grown under irrigated conditions.

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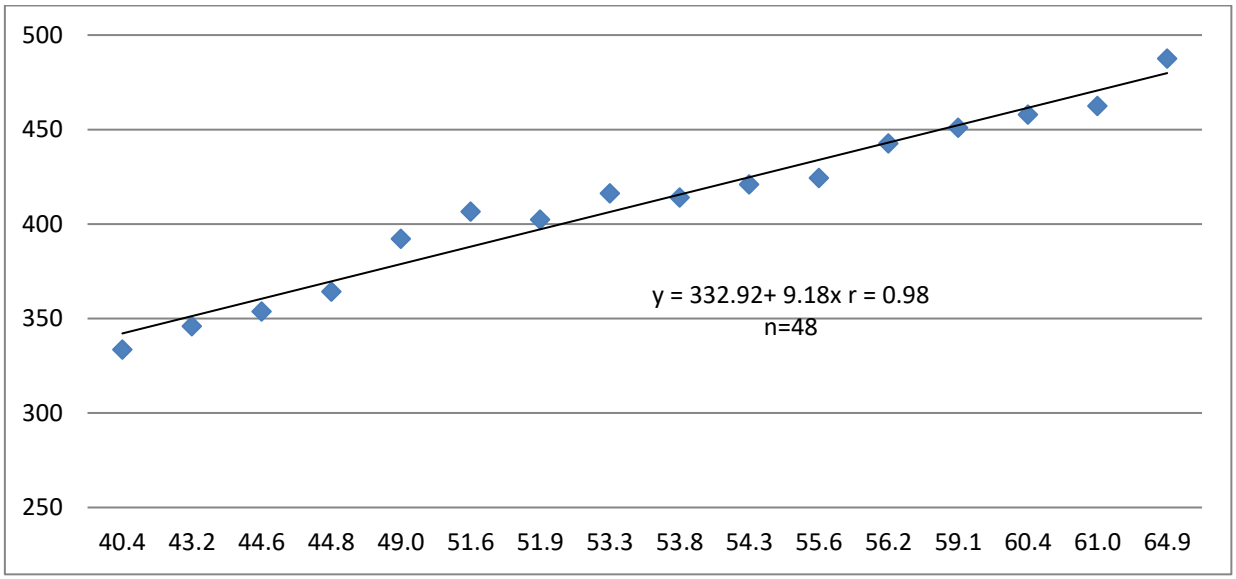

Figure 1. Hard wheat A thousand years variety land top of the mass root to the mass dependence (on average 100 pcs in the plant, g)

determined in the experiments, the root system spreads mainly in the arable layer of the soil in dry lands, and many of its roots penetrate deeper into the soil compared to winter wheat grown under irrigated conditions.

Thus, although the Mingchinor variety of durum wheat has relatively few roots in the plowed layer of the soil, it accumulates more mass in the deep layer of the soil and settles deeper in the lower layers. It can be concluded that durum wheat is more resistant to soil and air dryness than soft wheat.

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