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Thickness of Winter Wheat Seedlings and Physical Properties of Soil

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Abstract: This article highlights the effect of sowing winter wheat on the density and porosity of the soil under the conditions of typical gray soils in the Tashkent region with different soil tillage and two different seeding rates.

Keywords: row spacing, tillage, irrigation erosion, soil, winter wheat, seedling thickness, mineral fertilizers, plants, option, return.

In 2015-2016, in order to analyze the data obtained as a result of experiments to obtain a high and high-quality harvest of winter wheat on lands subject to irrigation erosion in the Tashkent region, in 2015-2016, winter wheat was cultivated by cultivating cotton between rows in the Kibray district of Tashkent region. region, on the fields of the Koraboev Tursunmurad farm and the fields of the Bukinsky district

In an experiment conducted under production conditions, 4 options in 3 returns were placed in one tier. The width of the furrow in the field under study is 60 cm, length 360 m, the area taken into account is 4200 m^2.

In the experiment, cotton was cultivated in row spacing (12-14 cm), and as a control, 4 million seeds per 1 ha were sown at a mineral fertilizer rate of $N_{150}P_{105}K_{75}$ kg/ha. But the best result was obtained when sowing 6 million seeds of winter wheat per 1 ha and application of mineral fertilizer norm $N_{200}P_{140}K_{100}$ kg/ha

In a production experiment on a field with predominant tillage, 4 million winter wheat seeds were sown per 1 hectare as a control with a mineral fertilizer rate of $N_{150}P_{105}K_{75}$ kg/ha, and as an option with the best result, 4 million seeds were sown per 1 hectare and a mineral fertilizer rate of $N_{200}P_{140}K_{100}$ was used. kg/ha

On March 17, 2015, the Granstar+ herbicide was used to control weeds on the experimental field. To combat corrosion of winter wheat, the drug “Titul” was used. In the production experiment, winter wheat grain after ripening was harvested on July 18, 2015 (see Table 1).

After the experimental fields were leveled and prepared for sowing, with both tillage methods, sowing of winter wheat was completed on October 23. During the germination period, watering was carried out three times and mineral fertilizers were applied twice.

Table 1. Agrotechnical measures carried out during the cultivation of winter wheat.

№	Types of work performed	Past deadline
		2015
1	Application of mineral fertilizers	20.10.2014.
2	Autumn arable land	20.10.2014.

3	Leveling the ground	21.10.2014.
4	Processing between cotton rows	22.10.2014.
5	Sowing winter wheat	23.10.2014.
6	Watering	24.10.2014, 22.03.2015, 09.05.2015.
7	Nutrition	18.02.2015, 20.03.2015.
8	Spraying with herbicides (Granstar+)	17.03.2015.
9	Anti-corrosion (Title 25 g/ha)	23.04.2015.
11	Harvesting	18.07.2015.

Scientific observations carried out in field experiments were carried out on the basis of a methodological manual for conducting field experiments developed at Scientific research institute of cotton of Uzbekistan (2007).

Table 2 the influence of tillage methods, seeding rates and mineral fertilizers on soil volume and porosity

№	Seeding rate, million pcs.	Mineral fertilizer rates, kg/ha	Soil layer, cm	Volumetric mass of soil, g/cm^3	Soil porosity, %
At the beginning of the ascension period			0–30	1,31	51,2
			30-50	1,42	47,4
When cultivating cotton between rows					
1	4	**$N_{150}P_{105}K_{75}$**	0–30	1,43	47,0
			30-50	1,51	44,0
2	6	**$N_{200}P_{140}K_{100}$**	0–30	1,39	48,5
			30-50	1,49	44,5
	In a plowed field				
At the beginning of the ascension period			0–30	1,26	52,6
			30-50	1,37	49,3
3	4	$N_{150}P_{105}K_{75}$	0–30	1,36	49,6
			30-50	1,47	45,3
4		$N_{200}P_{140}K_{100}$	0–30	1,34	50,1
			30-50	1,49	45,4

According to data obtained from production experience, in variants sown between rows of cotton, the volumetric mass of soil at the beginning of the germination period was 1.31 g/cm^3 in a soil layer of 0-30 cm and 1.42 g/cm^3 in a layer of 30-50 cm 6 million seeds were planted per 1 hectare. It was noted that in the 2nd option, the best result was achieved in the option where the rate of mineral fertilizers $N_{200}P_{140}K_{100}$ kg/ha in a layer of 0-30 cm was 1.39 g/cm^3, and in a layer of 30 -50 cm - 1.49 g/cm^3. This showed that, compared to the control option, it turned out to be less compacted by 0.04–0.02 g/cm^3, which corresponds to the soil layers (see Table 2).

It was noted that in the variants where production experiments were carried out on arable land, the volumetric mass of the soil was less compared to the variants where winter wheat was sown between the rows of cotton. According to his data, in 3 variants with basic tillage, the volumetric mass of the soil was 1.36 g/cm^3 in a layer of 0-30 cm, 1.47 g/cm^3 in a layer of 30-50 cm, and the best result was obtained from mineral fertilizers with the application rate $N_{200}P_{140}K_{100}$ kg/ha, which is 1.34–1.49 g/cm^3, and this corresponds to soil layers. It can be seen that when plowing the soil in autumn and applying mineral fertilizers in large doses, the volumetric mass of the soil was good, which means that favorable conditions were created for the growth and development of plants.

It is known from the literature and from the experiences of many scientists that in variants with a reduced volumetric weight the porosity of the soil increases, and in variants with an increased volumetric weight it decreases, i.e. these 2 physical properties of the soil are related to each other and are inversely proportional. Consequently, porosity soil - in the first option, i.e. where 4 million seeds/ha are sown and mineral fertilizers are applied $N_{150}P_{105}K_{75}$ kg/ha in the 0-30 cm layer is 47.0%, and in the 30-50 cm layer - 44.0%.

On arable land with the best soil porosity, 4 million seeds/ha were sown and this was established in the option of applying mineral fertilizers with an application rate of $N_{200}P_{140}K_{100}$ kg/ha. In this option, the soil porosity in the 0-30 cm layer was 50.1%, and in the 30-50 cm layer this figure was 45.4%.

As can be seen, from the results of field experiments, it was established that the physical properties of the soil were better in the options for applying mineral fertilizers at a rate of $N_{200}P_{140}K_{100}$ kg/ha than in the options for sowing winter wheat by plowing compared to the options for sowing winter wheat by cultivating cotton between rows, with a norm application of mineral fertilizers $N_{150}P_{105}K_{75}$ kg/ha.

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