

Agrophysical Characteristics of the Soil of the Experimental Field

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Annotation: Currently, a number of scientific researches are being conducted in the world to analyze the agrochemical, agrochemical and microbiological properties of soils, the state of humus, and the interrelationship of soil biological activity with external environmental factors.

Keywords: water-physical properties, mechanical composition, aggregate composition, volumetric mass, porosity, irrigated agriculture, Khaydov layer.

Water-physical properties of the experimental field, in particular, mechanical composition, aggregate composition, volume mass, porosity, limited field moisture capacity and water permeability are determined as preliminary data and as a general description of the soil of the experimental field.

According to S.N. Rizhov, it is important to start with the study of the water-physical properties of the soil in the conditions of irrigated agriculture.

In the conducted studies, it was found that the mechanical composition of the soil of the experimental field contained less particles of 1.0-0.1 mm and more particles of 0.1-0.05 mm.[1]

As we know, aggregates and structured soils are formed in the course of transitioning to a granular state under the influence of humus and other compounds of mineral particles. The amount of agronomically important aggregates in the aggregate composition of the soil of the experimental field is 70-73 percent. According to the obtained data, the diameter is 10 mm. larger aggregates start from the 70-80 cm layer of the soil and fall to 20-28% in the 80-100 cm layer. [2] The weight of aggregates with a diameter of 5-10 mm is 50-60 percent in the 0-70 cm layer, and they are 2-3 percent in the 70-80 cm layer of the soil.

In general, the amount of aggregates of 10-0.25 mm, considered acceptable from the agronomic point of view, in the soil of the experimental field is 63-71 percent.

It is known from scientific sources that the physical properties of the soil, in particular, its volume and porosity, are important for the development of cotton growth and harvest. [3] The influence of seed sowing methods on the agrophysical properties of the soil has been sufficiently studied by A. Rahimberdiyev, M. Ibragimov, Yu. Posogov, M. Muhammadjonov and developed relevant recommendations. According to these studies, the volume mass of the soil in the Khaydov layer is 1.2-1,3 g/cm, created favorable soil conditions for the optimal growth of cotton. In the same soil conditions, cotton roots develop well. microbiological and nitrification processes are activated. Therefore, in this study, the effect of planting methods on the agrophysical properties of the soil is studied. [4]

According to the obtained data, the volume mass of the soil of the experimental field increases from the sowing of seeds to the end of the period of cotton. This is a legal situation, of course. Because the irrigation carried out during the period of cotton plowing, the introduction of equipment into the field several times does not affect this indicator. (Table 1)

The effect of planting methods on soil volume mass, g/cm

Soil layers, cm	Period of operation.	Period of action.		
		A single row.	Coupling.	Flat land.
0-10	1,27	1,37	1,33	1,40
10-20	1,28	1,39	1,34	1,39
20-30	1,27	1,40	1,36	1,41
30-40	1,32	1,41	1,37	1,41
40-50	1,33	1,43	1,38	1,42
50-60	1,35	1,42	1,42	1,43
60-70	1,36	1,44	1,40	1,45
70-80	1,40	1,44	1,43	1,48
80-90	1,40	1,46	1,45	1,50
90-100	1,41	1,51	1,48	1,52
0-50	1,29	1,40	1,36	1,41
0-70	1,31	1,41	1,37	1,41
0-100	1,34	1,42	1,39	1,44

At this point, it should be mentioned that in the options where the seedlings are planted in a single row, the density of the soil is reduced by 0.03 g/cm compared to the flat ground. [5] When planting in double rows, this indicator is reduced to 0.06-0.07 g/cm compared to other options, which is the reason for the improvement of soil porosity in these options. Therefore, in these options, as a result of the increase in air-heat properties and water permeability properties of the soil, a favorable soil environment for the growth and development of cotton is created. [7]

In the options where the seeds are planted in a double row, the porosity of the soil is 50.1%, and its physical conditions are well maintained during the entire operation period. Or, it is determined that its porosity is 1.5% higher than in both options. So, it is determined that the method of planting seedlings in a double row in the autumn field creates favorable soil conditions for the growth and development of plants compared to the method of planting in a single row. Also, it was found out that it is the most effective method for efficient use of land and high cotton production.

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