

Xikmatov Sherzod Tuxtamurodovich
TSAU. Dotsent

Abstract This article presents the results of studies devoted to the study of the effect of salinity on soil structure, porosity and mass of hajm in the conditions of medium and strong saline soils. The results of the study, the structure, porosity of the soil in the layers of 0-28, 28-40, 40-113, 113-168, 168-190 CM, as well as the mass of the hajm are given separate data on soil cuts.

Key words: medium to strong saline soil, soil cuts, soil structure, porosity, volume mass.

Enter. Sufficient attention is not paid to preparation of lands for salt washing and quality and systematic organization of salt washing works based on agrotechnical rules, control of water consumption. As a result, agroclusters, farms and producers of other agricultural products prepare land for salt washing and salt washing, Especially in the northern districts of the Republic of Karakalpakstan, in the Jizzakh and Syrdarya regions, as well as in most districts of the Bukhara, Navoi, Fergana and Khorezm regions, agrotechnical rules and deadlines are grossly violated, water is wasted, and the effectiveness of salt washing operations remains low.

The total land area of the Jizzakh region, which is the object of the study, is 2117.9 thousand hectares, of which 300.8 thousand hectares are irrigated, 485.4 thousand hectares are cultivated, 263.9 thousand hectares are irrigated, and 219.6 thousand hectares are dry land. The irrigated soils of the region are diverse in terms of mechanical composition, and this characteristic of the soils also affects their meliorative condition. Medium and light sandy soils have favorable hydro-physical and agronomic characteristics. Therefore, saline leaching reclamation activities are relatively easy in these soils. The area of such soils occupies 222.3 thousand hectares and makes up 84.1% of the irrigated arable land of the region. Soils with a light mechanical composition are distributed in most districts of the region. Except for Zafarabad and Forish districts, which are adjacent to the desert areas of the Kyzylqum-Arnasoy regions, and the heavy soils of Bakhmal district, which are included in the mountainous region. From 42 to 50 percent of the land of these districts is occupied by loamy-sandy mechanical composition soils.

Research system and methods. The new type of drainage pipes installed in the experiment were made of plastic with a certain diameter depending on the volume of sewage, each section was 10 meters long and 6.2 mm thick. The lower measured points of the pipe were perforated with a diameter of 2-3 mm every 3-4 cm. Its lower part is completely filled with fine sand and gravel, and a special pipe is laid. After the pipe is installed, the pipes are fastened together. Since the sewage water flows into these drainage pipes only from the lower part under pressure, mud and sediment do not flow inside, which ensures its long-term operation. These pipes can be placed in saline, saline-affected and saline-affected areas at depths of 1.5 to 2.5 meters, depending on the size of the cropland, taking into account the water runoff. This new type of drainage pipes will help combat soil erosion, restore and increase soil fertility, improve its melioration status, and restore ecological balance.

The estimated area of the experiment is 4 hectares, the 1st control option - the existing vertical ditch (defunct) open collector - 2 hectares, the 2nd experimental option - the closed ditch of new construction - 2 hectares.

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The soil of the experimental area is grass-gray, medium sand according to its mechanical composition, moderately saline, seepage water is located at a depth of 2.0-2.5 m.

Research results and analysis. In order to study the genetic structure of the soil of the experimental area, a soil section was taken from the irrigated land area of the "Bakhmal Agro" farm in the Mirzachol district of the Jizzakh region. The soil cross-section was taken in the 3rd area on the right side of the Gulistan-Mirzachol highway, 24 km. The soil of the experimental area is grassy gray, moderately saline, the depth of seepage water is 2.0-2.5 meters.

A layer-by-layer definition of soil cross-section is given below.

0-28 cm layer. Permanently cultivated arable layer, grass gray, medium in mechanical composition, cultivated soft layer, fine-grained (1.0-2.0 cm) structure, low moisture level, dry topsoil, annual weeds, semi-rotted wheat straw and weed roots are found in the soil layer.

28-40 cm layer. Under the arable layer, light gray, compacted, with a significantly higher moisture content than the upper layer, weed roots are found.

40-113 cm layer. It is light in color, the mechanical composition is heavier compared to the previous layer, there are small carbonate grains in some parts of the soil layer. This layer is relatively less dense, there are some weed root remains.

113-168 cm layer. Light gray, light mechanical composition, powdery particles, non-condensed, carbonate grains are common.

168-190 cm layer. Light-colored, gray streaks are found, the mechanical composition is heavy, compacted, the moisture level is very high, and there is seepage water at the bottom of the soil section. The result of determining the mechanical composition of the ground soil of the experimental area shows that, The mechanical composition of the plowed layer and the soil under the plowed layer is "moderate", the mechanical composition of the soil up to 113 cm below the plowed layer, that is, the 73 cm layer, is "heavy", at the depth of 113-168 cm, it is also "medium", the mechanical composition of the layer in the 168-190 cm layer, i.e., the layer where the closed trench pipe is located, is "heavy".

Table 1.

Mechanical composition of the soil of the experimental area, %.

Width, cm	Soil particles, %								Mechanical composition
	1- 0,25	0,25- 0,1	0,1- 0,05	0,05- 0,01	0,01- 0,005	0,005- 0,001	<0,001	>0,01	
0-28	19	12	11	22	12	14	10	36	Medium
28-40	16	14	8	23	10	17	12	39	Medium
40-113	14	10	10	26	15	20	13	50	Heavy
113-168	17	14	12	22	10	15	10	35	Medium
168-190	12	10	6	20	10	24	13	53	Heavy

Volumetric mass and porosity of the soil are the main factors that determine the temperature of water in the soil, the spread of plant roots, the composition of air, nutrients, and moisture in the soil.

Volumetric mass and porosity of the soil of the experimental area were determined in the layers up to the depth of seepage water at the beginning of the experiment. The results of the determination are shown in Fig. 1.

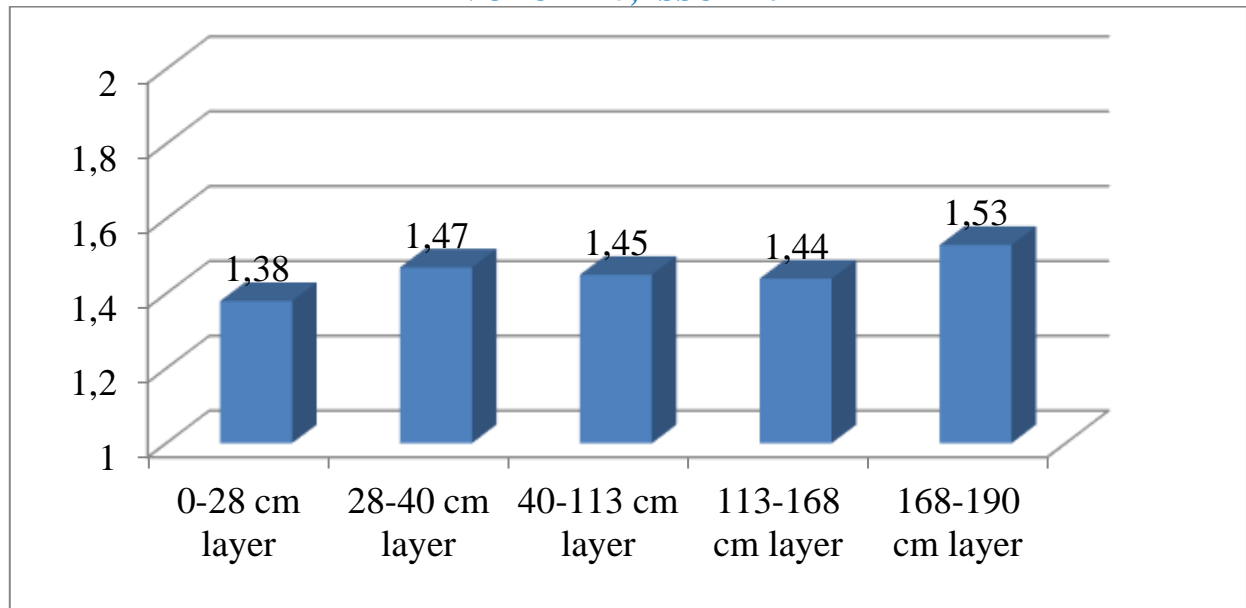


Figure 1. Volumetric mass of soil, g/cm³

According to the obtained data, the volumetric mass of the soil was 1.38 g/cm³ in the plowed layer, in the 28-40 cm layer below the plowed layer, this indicator was 1.47 g/cm³, and it was relatively (0.09 g/cm³) more dense than the treated plowed layer. Such compaction of the soil layer prevents the water supplied for irrigation of crops and the root system of the plant from penetrating into the deep layers.

In the 40-168 cm, i.e. 128 cm layer, the volumetric mass of the soil was 1.44-1.45 g/cm³, in the 168-192 cm layer, it was observed that the volumetric mass of the soil increased to 1.53 g/cm³. In the experimental field, a closed trench pipe is placed at the depth of this layer.

Soil porosity depends on its density, and it was observed that the lower the volume mass of the soil, the higher the soil porosity. The porosity of the soil in the soft plowed layer was 49%, and under the compacted plowed layer it was 45%. In the next 40-168 cm layer of the soil, the level of porosity was 46%, and in the relatively high-density 168-190 cm layer, it was 43%.

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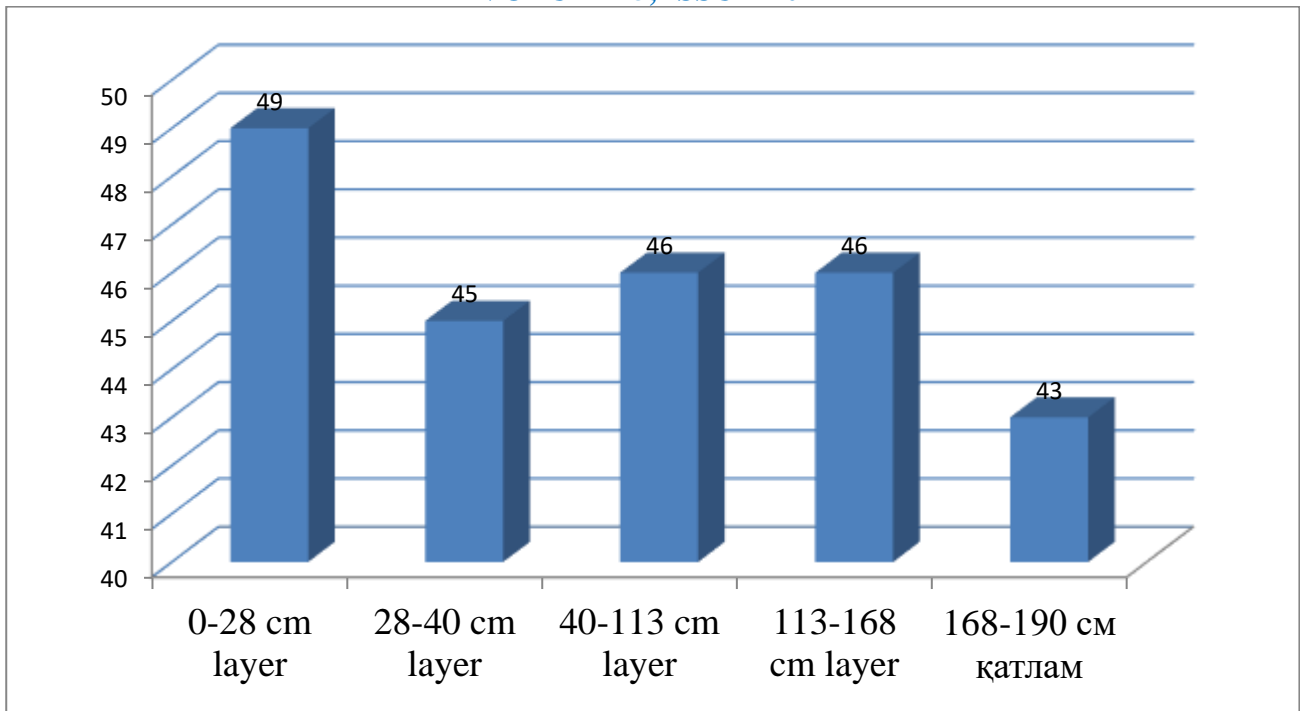


Figure 2. Soil porosity, %

Summary. Studying the volumetric mass and porosity of the soil of the experimental area, it can be concluded that according to the accepted scale of soil density and porosity, the arable layer of the soil is compacted at 1.38-1.47 g/cm³, and the subsequent layers are moderately compacted soil, and the porosity of the arable layer corresponds to 49%, and the following layers correspond to 43-46%.

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