WATER-PHYSICAL PROPERTIES OF OLD-IRRIGATED TYPICAL SEROZAL SOILS UNDER DRYTIC (Celyeeyrrhizaglabra L)

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Abstract: Obtaining increase in the volume of agricultural products by increasing the yield of agricultural crops. The solution of this very important task can be achieved by reproducing and improving soil fertility, differentiated placement of crops, taking into account the soil-reclamation conditions for the introduction of new agricultural technologies developed and used in agricultural production recently.

Keywords: Irrigated agriculture, light gray soils, structures, light brown, carbonate, loess, granulometric, humus, physical clay, water permeability.

Introduction.

In Uzbekistan, irrigated agriculture is widespread. Irrigated irrigated soils are located mainly in the region of typical and light gray soils, as well as in light brown bare soils of the steppe zone. Irrigated irrigated light sierozem and meadow-sierozem soils in Uzbekistan for their natural properties are considered the most fertile. Based on when the soils were developed and since when they have been watered, various changes occur in the structure profile of various soils.

The object and subject of research.

Field experiments were performed at the experimental station of the Tashkent State Agrarian University, located in the Kibray district of the Tashkent region. The farm lands are located in the upper part of the Chirchik River, at an altitude of 475 m above sea level, northern latitude E 41022'10.99II and 38.310 east longitude.

The soils of the cultivated area of the experimental farm have long been watered over the old irrigated non-saline typical gray-earth soils, the drainage waters of which are located at a depth of 7-8 m. The thickness of
the humus layer is 0-70-80 cm, the phosphorus of the general form is equal to -0.170 and the amount of potassium is 2.0%, and the humus in the 20-40 cm layer is 1.29%, the total nitrogen is 0.10%, the total phosphorus - 0.14%. This soil is poorly supplied with humus and total nitrogen. With the deepening of the soil, the amount of humus decreases. Typical serozem soils in their mechanical composition are medium and heavy loamy. The effect of carbonate, i.e. phosphoric compounds on the water is low, with the result that the amount of P2O5 possible absorbed by plants (despite the large amount of the total part of phosphorus) is much less.

The number of particles not split in water does not exceed 20%. Typical gray soils are distinguished by high permeability. The granularity of the soil is unstable, and therefore, due to moisture, it is washed off and dissolved. After the soil dries and hardens as a result of evaporation, crusts are formed, resulting in soil compaction (Besedin, Veliyev, Shodmonov, 1970). Water permeability decreases, bulk weight in 0-30 cm reaches 1.50 g/cm3. The permeability of the soil responds more to various factors than its other physical properties, and varies on different layers. According to some researchers, these changes are not important from the point of view of practice. It is known that as a result of irrigation, soil activity decreases and the amount of reserve water increases.

According to A.N. Rozanov (1951), the water properties of the soil are closely related to permeability. The amount of soil particles also depends on the permeability and capacity of the field moisture.

The maternal soils of Central Asia are mainly loess and loess deposits. The presence of unstable macro formations ensures a high fertility of these soils, and with the proper implementation of all agrotechnical measures it is possible to obtain a high yield from all agricultural crops.

Typical serozem soils, formed from loess-like parent rocks, are peculiar; in their physical structure, they are characterized by the presence of biologically active, mobile, water, and nutrients. It can be observed that these properties produced microparticles with a size of 0.25-0.01 mm.

**By definition, A.N. Rozanova, these soils have the following properties:**
1. Insignificant content of humus and humus layers;
2. High content of carbonates;
3. Weak plexus of the mineral part of the soil mass;
4. Low content of mineral residues;
5. Increased calcium residues.

In the old - irrigated typical serozem soils there was an agro-irrigation layer with a thickness from 50 to 100-150 cm. This layer is light gray in color, changes to brown or brown in depth.

**Research results.**

The soil of the experimental field, where we conducted the experiments,
has the following properties: in terms of granulometric composition, these soils most likely belong to loess, coarse dust-like - medium-heavy loams. One of the properties inherent in soils formed from loess deposits is the presence of large dusty soils (0.05-0.01) in 39.9% of the arable layer and 41.8% of the subarable layer. The amount of sand fractions is small, and the amount of sludge in the subsoil layer reaches 16.8% (1-table).

### 1-table

**Granulometric composition of the soil of the experimental field**
(relative to dry soil in%)

<table>
<thead>
<tr>
<th>Layers of soil, sm</th>
<th>Size of fractions, mm</th>
<th>Physical clay</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-0,25</td>
<td>0,25-0,1</td>
</tr>
<tr>
<td>0-30</td>
<td>4,09</td>
<td>5,15</td>
</tr>
<tr>
<td>30-50</td>
<td>1,12</td>
<td>1,80</td>
</tr>
<tr>
<td>50-80</td>
<td>2,30</td>
<td>1,60</td>
</tr>
<tr>
<td>80-130</td>
<td>1,10</td>
<td>1,01</td>
</tr>
<tr>
<td>130-160</td>
<td>0,62</td>
<td>0,72</td>
</tr>
</tbody>
</table>

The soil we characterize is not saline. The dry residue in it is 0.063-0.064%, Cl-0.003% the amount of carbonates is between (CO2) 7.58 and 7.50% (2-table).

### 2-table

**The amount of salts and carbonates (CO2) of the soil of the experimental field.**

<table>
<thead>
<tr>
<th>Layers of soil, sm</th>
<th>%</th>
<th>mg / eq</th>
<th>%</th>
<th>mg / eq</th>
<th>%</th>
<th>mg / eq</th>
<th>%</th>
<th>mg / eq</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HCO₃</td>
<td>Cl</td>
<td>SO₄</td>
<td>Ca</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-30</td>
<td>0,038</td>
<td>0,630</td>
<td>0,003</td>
<td>0,085</td>
<td>-</td>
<td>-</td>
<td>0,010</td>
<td>0,50</td>
</tr>
<tr>
<td>30-50</td>
<td>0,039</td>
<td>0,630</td>
<td>0,003</td>
<td>0,085</td>
<td>-</td>
<td>-</td>
<td>0,005</td>
<td>0,24</td>
</tr>
</tbody>
</table>
To determine the agrochemical properties of the soil before the start of
the experiments, in the fall, samples were taken from 0-30 and 30-50 cm
layers. The data analysis is shown in 3-table.

3-table.

Primary agrochemical properties of the experimental field.

<table>
<thead>
<tr>
<th>Layers of soil, sm</th>
<th>Common forms%</th>
<th>Movable forms, mg / kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Humus</td>
<td>Nitrogen</td>
</tr>
<tr>
<td>0-30</td>
<td>1,010</td>
<td>0,100</td>
</tr>
<tr>
<td>30-50</td>
<td>0,998</td>
<td>0,098</td>
</tr>
</tbody>
</table>

According to table 3, it can be seen that the humus content in the 0-30
cm arable horizon of the studied soils is 1.010%, and in the subsoil horizon
0.998% the content of total nitrogen, phosphorus and potassium,
respectively, was equal to 0.100; 0.164; 0.850 and 0.098; 0.095; 1.000.

Conclusions.
The studied soils belong to poor soils with mobile forms of nutrients. In
this soil, the use of organic fertilizers will be more effective.

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