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General Physical and Agrochemical Indicators of Typical Gray Soils Under Irrigation

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Abstract: The soil has a unique organic-mineral composition. In the process of soil formation, accumulation of humus and other complex organic compounds occurs. Also, the soil is enriched with biogenic secondary aluminosilicate minerals, biophilic elements, thus it acquires its main property - fertility. Due to the soil cover's fertility, it has the ability to ensure the growth and development of plants, i.e. to produce crops. This property of the soil is one of the important conditions for the existence of people and multi-sectoral agriculture.

Key words: genetic, important conditions, agriculture, process, directly,

INTRODUCTION

The mechanical structure of the soil is one of the main indicators that determine its most important fundamental properties and productivity. The mechanical composition is directly related to water-air, biological properties, absorption capacity, oxidation-reduction conditions of the soil. In addition, the general physical properties of the soil (comparative and volumetric mass, porosity), accumulation of nutrients (nitrogen, phosphorus, potassium, etc.) , 1986; Bobokho'jaev, Uzokov, 1990; Mirakhmedov, Miryunusov, 1985).

Soil mechanical composition is an agrophysical indicator that does not change in the long term depending on the conditions of its formation. In this, the entire period of the soil formation process and all the characteristics and regimes of the soil are expressed.

Mechanical structure is the main morphological indicator. It is known that all types of soils, therefore, have their own mechanical composition for all the genetic layers that make up it. For example, sand, sandy, sandy loam, sand (light, medium) and silt (light, medium) mechanical compositions are typical for one or another genetic layer or layers. When testing soils in field conditions and mapping them, it is necessary to indicate the mechanical composition index of the genetic layers of the tested soil types, among other morphological features, otherwise the conducted research processes are completely wrong.

It should be remembered that all types of soil, its genetic layers can have the same mechanical composition (sand, loam, etc.), that is, there can be a large number of soil types with the same mechanical composition.

Mechanical composition is the main agrochemical indicator, because, as we explained above, humus in the soil, all nutrients, the absorption capacity of the soil, the necessary oxygen compounds, change in connection with the large and small mechanical elements of the soil. If the soil becomes heavy in terms of mechanical composition, it will have more humus and nutrients compared to light soil.

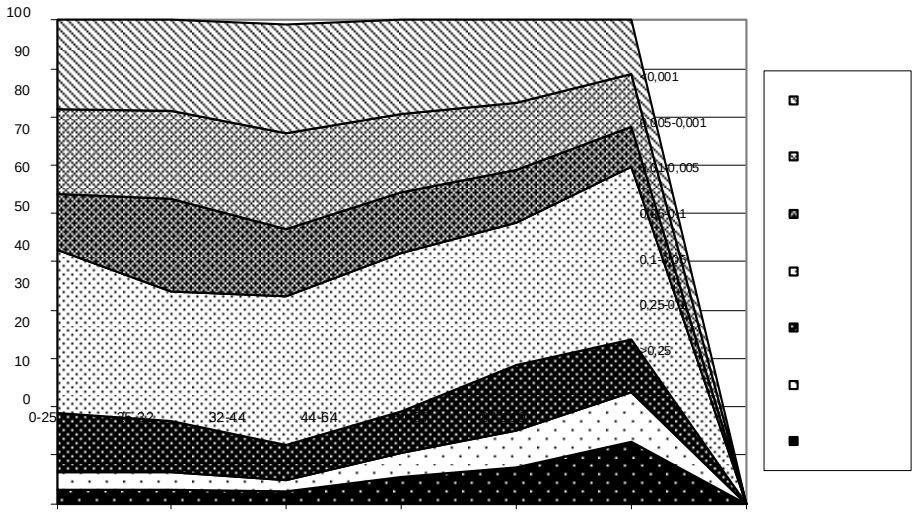
Mechanical composition is an important water-physical, physical-mechanical indicator. Sandy, loamy, loamy and loamy soils do not have the same properties and conditions, and because they differ from each other in terms of mechanical composition, the soils do not have their own physical and mechanical properties. For example, sandy soils do not have a large water capacity, but have good water permeability and poor capillary properties. On the contrary, loamy soils have a large moisture capacity. These soils with two different mechanical compositions have their own air, water and heat regimes. If we evaluate both of these soils from the point of view of processing, since physical and mechanical characteristics such as viscosity are not expressed in soils with a light mechanical composition, their processing is urgent even in conditions of high humidity.

Mechanical composition is the basis of soil testing, it serves as a basis for drawing up soil maps of one or another farm, separating soil types, and evaluating separated soils.

The information presented above shows how important the mechanical composition is when describing and evaluating soils.

In fact, it is of great practical importance to draw up maps of the mechanical composition of alluvial meadow soils that are widespread and irrigated in our Republic. Because these soils have a very complex mechanical structure in their vertical section compared to gray soils. Grassy alluvial soils are not only sandy, loamy, loamy, etc. in cross-section, but also have a very complex mechanical structure with layers. It is observed that the cross-section becomes heavier or lighter from the upper layer to the bottom, as well as a rapid change of layers (sandy-sandy-sandy; sandy-sandy-sandy-gravel, etc.). In such complex lithological conditions, a unique food, water, air and heat regime is created. From this point of view, it is recommended to draw up maps of the mechanical composition of soils for each area, rather than just making soil maps of the irrigated lands of our republic. This, in turn, makes it possible to solve the problem of improving the fertility of irrigated soils, especially their melioration condition, on a scientific basis.

The mechanical composition of the soil of the experimental field is medium loam and heavy loam.



1- drawing. Analysis of the mechanical composition of typical irrigated gray soils

Table 1

Analysis of the mechanical composition of typical irrigated gray soils.

N	Qatlam, sm	Fraksiyalar(mm),%							Fizik soz, <0,01 zarrachalar miqdori,%	The name of the soil according to the granulometric composition.
		>0,25	0,25-0,1	0,1-0,05	0,05-0,01	0,01-0,005	0,005-0,001	<0,001		
1.	0-25	2,8	3,8	12,1	33,8	11,4	17,6	18,5	47,5	Medium sand
2.	25-32	2,8	3,5	10,8	26,6	19,5	18,1	18,7	56,3	Heavy rain
3.	32-44	2,4	2,5	7,2	30,6	13,9	20,0	22,4	56,3	Heavy rain
4.	44-64	5,6	4,9	8,4	32,9	12,7	16,0	19,5	48,0	Medium sand
5.	64-87	7,6	7,3	13,6	29,5	11,0	14,0	17,0	42,0	Medium grain
6.	87-110	12,7	10,3	11,0	35,8	8,2	11,0	11,0	30,2	Medium sand

It is known that the physical properties of the soil and the physical processes taking place in it are of great importance to the fertility of the soil and the growth and development of plants. Information on the specific mass of soil is important in studying the structure of soil layers. volumetric mass of the soil is important in determining the humus, nitrogen and other elements and moisture reserves in the soil. in addition, it is the growing conditions of agricultural crops. Porosity depends on the mechanical composition of the soil, its structural state, the activity of soil animals, the amount of organic matter, and the methods of tillage and cultivation in arable land.

Table 2

General physical properties of typical irrigated gray soils.

N.	Layer, sm	Volumetric mass g/sm^3	Relative mass g/sm^3	Total porosity, %.
1	0-25	1,38	2,69	48,7
2	25-32	1,52	2,71	43,9
3.	32-44	1,51	2,73	44,7
4	44-65	1,59	2,73	41,7
5	65-87	1,62	2,72	40,5
6	87-110	1,62	2,73	40,7

It is known that soil fertility depends on its physical properties, chemical composition, amount of nutrients absorbed by plants and other factors. Humus is one of the most important factors affecting soil fertility. The amount of humus depends on such factors as the mechanical composition of the soil, the conditions of soil formation, the relief of the place, the type of crop, and the technology of cultivation. Humus binds the mineral particles of the soil firmly together, making it a granular structure. Soils with a high content of humus are quickened, less effort and energy are spent in mechanical processing, the density of the soil is reduced, or in other words, its immunity is improved. Organic fertilizers are of great environmental importance, they reduce the effects of many negative consequences that occur when mineral fertilizers are used, retain excess nutrients and prevent leaching, neutralize harmful compounds.

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