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General Description of Dry and Conditionally Irrigated Light Gray Soils

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Abstract: *Gray soils are susceptible to water erosion in terms of their geomorphological conditions, while light gray soils are characterized by extreme flatness of the relief and no slope, which ensures the movement (runoff) of groundwater. is the cause of liberation. On the other hand, light gray soils spread over long distances from the main water sources, and thirdly, the amount of atmospheric precipitation here is 1.5-2.5 times less than that of typical gray soils. For these natural reasons, the efficiency of irrigated agriculture on light soils is relatively low.*

Keywords: evolution of ground, typical-light serozem, irrigations, relief, geomorphological, ground water, alluvial sediment.

INTRODUCTION

Typical and light gray soils, common in the foothills of the territory of Uzbekistan, are covered with irrigated and arable lands of the republic. In particular, the main irrigated and rain-fed lands of Tashkent, Samarkand, Surkhandarya, Kashkadarya, partly Fergana Valley and Navoi region consist of these soils, and the properties of these soils have been published in print by many researchers [3,4,2]. However, the current land reclamation and the ecological status of these arable lands are not the same, and there are certain problems in the management of the fertility of these soils. In fact, while typical gray soils are geologically waterlogged, light gray soils are characterized by a very flat topography and no slope that allows groundwater to flow. is the cause of the ignition process. On the other hand, light gray soils spread over long distances from the main water sources, and thirdly, the amount of atmospheric precipitation here is 1.5-2.5 times less than that of typical gray soils. For these natural reasons, the efficiency of irrigated agriculture on light soils is relatively low. Data on the distribution of gray soils in the Nurata mountains and foothills are given in the scientific works of most researchers [5,6,7].

Nurata district of Navoi region, which is one of the southern regions of the country, as mentioned above, is not provided with irrigation water at all.

MATERIALS AND METHODS

Nurata district has its own natural and historical conditions. Firstly, the region has the Nurata mountain ranges, which are not very high, and secondly, because these ranges are under the influence of severe drought (little rainfall, only 250-350 mm per year less covered with trees, shrubs and grasses; thirdly, the slopes of the mountains are less fine-grained, most of them are covered with primitive rocks and, finally, fourthly, proluvial and ancient, extending from the foothills.And alluvial deposits caused by local rivers are very skeletal. It is on these skeletal fine soils that dark, typical and light gray soils are formed. Since the proluvial-alluvial plains of the Nurata foothills directly border on the desert zone, the continental climate in this region is sharply manifested. Atmospheric precipitation is seasonal and occurs mainly in winter and spring, with almost no precipitation in summer and autumn. Typical and light gray soils have a moisture content of only 0-30 (0-50 cm). Such a hydrothermal property of the soil cover under the conditions of the Nurata region does not allow the development of lalmi cultivation here, in our opinion, this type of agriculture does not bring any economic benefits to the region. There are light gray soils in the area, which on some farms are conditionally irrigated using local reservoirs formed on the basis of spring rainfall and spring water, as well as artisanal wells dug on some farms. As described above, the humus layer is short (0-20 or 0-30 cm) on protected light gray soils, and in arid conditions the reserve practically retains the morphogenetic characteristics of light gray soils. Only here the driving layer is formed from a mixture of sod, subsurface and partially extending V layers. Of course, in such conditions, a special soil formation regime arises. In conventionally irrigated light gray soils, specific changes begin to occur, including: first, continuous growth of the humus layer and continued weak differentiation in the vertical soil profile;

It should be noted that due to the fact that irrigation is carried out using artesian and spring water, irrigation is practically absent.

According to the data on the mechanical and micro-aggregate composition of dry and conditionally irrigated light gray soils, the bulk of the studied soils consists of sand particles (1-0.05 mm). Their content is 40-52% along the profile, of which 35-45% is fine sand (0.1-0.05 mm). The amount of dust particles, especially coarse dust (0.05-0.01 mm), is also large and ranges from 4 to 42% in the profile, while the smallest particle size (<0.001 mm) is 3. -18%. The high content of large particles in the mechanical composition of dry and conditionally irrigated light gray soils indicates that the physical and mechanical process of erosion continues, and at the same time, the physicochemical, especially biological, erosion process is slow. It should be noted that

in the subsurface layer of dry and conditionally irrigated light gray soils, there is no accumulation of soil particles characteristic of chronically irrigated light gray soils.

RESULT AND DISCUSSION

When analyzing the composition of microaggregates in dry and conventionally irrigated light gray soils, it was found that the aggregates decompose as a result of irrigation. In particular, on conventionally irrigated and arid lands, the soil is moderately sandy, but water-resistant microaggregates (<0.25 mm) account for 15% of conventionally irrigated light gray soils in the arable layer and 13-14% in the subsoil. 225-160 cross-sectional data are also noteworthy. Conditionally irrigated light gray soils are medium sandy with a grain size of more than 12%, while the amount of water-resistant micro-aggregates is protected and dry, light sandy with a grain size of 6-7%. 5-6% less light gray soil. Of course, the main reason for this is irrigation water and its composition, because, as we mentioned above, agricultural irrigation is carried out mainly by spring and artesian water. Unfortunately, we have no information on the chemical composition of these waters.

CONCLUSION

Brief data on the agrochemical composition of the studied soils, the humus content in dry and poorly irrigated light gray soils in the tillage layer ranges from 0.59 to 1.31%. The distribution of humus along the soil profile decreases from the upper layer to the lower layer. This feature of the humus profile depends on the structure of the plant root system and the amount of applied organic and mineral fertilizers. One hectare of land (0-50 cm) has a humus thickness of 22-43 tons.

The amount of total nitrogen, partially total phosphorus and potassium varies depending on the humus.

The largest amount of total nitrogen is in the moving bed, which decreases towards the lower bed. The total potassium content ranges between 1.38-2.17%. A high total potassium content indicates that the parent rock that forms the soil is rich in potassium compounds.

The amount of carbonates in the soil is about 6.3-8.5%. We see that the amount of gypsum depends on the amount of carbonate along the profile. Sections 54, 160A and 200 show the decrease in the amount of carbonates with the increase in the amount of gypsum. Due to the low humus content in light gray soils and the low content of fine particles, especially colloids, these soils do not have a high absorption capacity.

The sum of exchangeable bases of these soils is 7.5-11.0 mg / eq per 100 g of soil. These soils are saturated with alkaline bases. The amount of calcium and magnesium absorbed in the soil complex is 92-92.7% of the metabolic capacity, the remaining 6.4-10.7% are potassium and sodium.

Based on the data presented, it can be noted that dry and conditionally irrigated light gray soils of the Nurata mountains and foothills differ from the soils of other regions in their morphological structure - a very dry climate. arrival, the genetic layer is not very thick, the amount of humus is low, the texture is stony and gravel, the water resistance is low and the microstructure of macroaggregates, the lack of plant species.

In general, dry and conditionally irrigated light gray soils are suitable for agriculture, and with a water source, irrigated agriculture can develop. It should be noted that due to the fact that light gray soils are prone to salinization, irrigation and drainage and hydraulic engineering measures must be taken into account before development.

This conclusion can be drawn from the materials described above.

1. The Nurata mountain and foothill plains belong to the group of low mountains of the republic, which are characterized by low precipitation, bare slopes, ie, without fine soil and vegetation. characterized by the presence of uncovered stones.

2. Due to the fact that the mountains and plains of Nurata are located in the southern part of the country, the upper limit of the distribution of light gray soils is 700 m above sea level. reaches height and continues its gradual development in extremely dry conditions.

3. Southern light gray soils have special morphogenetic, agrochemical and agrophysical properties such as short profile, stony and light sandy loam, low humus content, very low nutrient content, but high carbonate content, some salinity and susceptibility to salinization ... functions.

4. All studied agrophysical and agrochemical properties of these soils can be used for irrigated agriculture in the presence of sources of irrigation water. However, in this case, it is necessary to take measures to prevent water and wind erosion, as well as secondary salinization.

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