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CURRENT CONDITION AND USAGE OF SOILS AROUND KATTAKURGAN RESERVOIR

Islamova Zukhra Bakhtiyarovna
Researcher of the National University of Uzbekistan
zukhra_islamova@mail.ru

Gafurova Lazizakhon Akramovna
Professor of the National University of Uzbekistan,
Doctor of Biological Sciences
glazizakhon@yandex.ru

Madrimov Rajabboy Masharipovich
PhD of Biological Sciences Researcher at the
National University of Uzbekistan
madrimov7105@gmail.com

Annotation
This article deals with the current state of the soil cover around the Kattakurgan Reservoir and their use.

Keywords: Zarafshan rivers, surface part of the Earth, typical gray soils, foothills, semi-desert zone

Introduction

Kattakurgan oasis is bordered by the Aktag ridge in the north, the Zirabulak-Ziyovuddin lowlands in the south, the Navoi oasis in the west and the Samarkand oasis in the east. The average height of the oasis is 350-500 m above sea level. The area is 1213 km^2. The geosystem of this oasis corresponds territorially to the Kattakurgan geosynclinal fold, which is the western part of the Zarafshan basin. The lower part of the base of the fold Paleozoic era is at a depth of 2600-3000 m and is filled with deposits of Neogene and anthropogenic periods. Its surface is covered by modern alluvial, alluvial-proluvial, lyoss and lyossimon rocks. Its relief forms consist of the slopes of the Okdarya, Koradarya and Zarafshan rivers, terraces and foothill proluvial plains. The terraces of the river cliffs stretch from east to west with a flat surface. They are composed of Quaternary crushed rock, the upper part of which is covered with lyossimonic rocks. The surface of the earth is fragmented under the

influence of strong water erosion, and there are several depressions in the undulating slope. The Kattakurgan Reservoir was built on such a shallow lowland.

Picture 1. Spatial image of anthropogenic landscapes of the Zarafshan basin.

OBJECT OF RESEARCH AND DISCUSSION

Kattakurgan reservoir is a subtropical semi-desert zone, the typical gray soil zone consists of lyossimon, proluvial and alluvial deposits, located in the middle of the foothills and Zarafshan oasis. , is characterized by an uneven distribution of atmospheric precipitation. Climatic conditions The average annual temperature is + 13.2 °C, the hottest month is July with an average temperature of + 27.1 °C. The average annual temperature of the soil is + 17 °C, the warmest period is July with an average temperature of + 35 °C, the coldest January temperature is 0.2 °C. The onset of the soil freezing period in autumn is observed from October 17-28 to March 26 to April 3. The average annual amount of precipitation is 322 mm, mainly in the autumn-winter and spring seasons. In summer and autumn, the relative humidity is around 25-30%, the average annual humidity is 58%.

Groundwater varies depending on the water level of the Zarafshan River, the amount of atmospheric precipitation and the irrigation period. During the intensive irrigation period in summer, the groundwater level rises, and in autumn and winter it decreases. While groundwater is the main source of salt in the soil under certain conditions, it serves as a means of collecting dissolved salts in the second condition, transferring them to other soils by its own flow, i.e. redistributing salts. The closer the mineralized groundwater is to the surface, the faster and more rapidly the processes of salt

accumulation and secondary salinization in the soil occur. Groundwater is discharged through drainage networks.

The ingress of salts through irrigation water is one of the main causes of soil salinity. Salinization can occur not only through mineralized waters (1-3 g / l), but also from water intended for normal (0.5-1 g / l) irrigation, as they also bring large amounts of naturally dissolved salts in their direction. The chemical composition of brackish water is mainly chloride-sulfate, sometimes sulfate.

33-35% of water-soluble salts are released through the collector-drainage networks in the area, mainly by washing the soil. Their average amount is 35-37 t / ga per year, and 71-73 t / ga.

The Kattakurgan Reservoir is located in the middle part of the Zarafshan oasis, the main soils of which are typical gray soils, which are also found in the foothills of the region, in the foothills, in the upper parts of the mountains. The upper limit of typical gray soils is located at an altitude of 700-1200 meters above sea level. In these soils the humus horizon is much better expressed; the total thickness of the humus (A + V) horizon is 55-80 cm. a the upper part of the horizon is quite grassy; atmospheric precipitation moistens the soil up to 1.5 meters. In this area, hydromorphic soils are followed by automorphic soils in terms of area. Irrigated hydromorphic soils are composed of meadow-grass, meadow, swamp-meadow and marsh soils. This type of soil is well developed in the basins of the Zarafshan River and its tributaries, the Akdarya and Karadarya, in the lower reaches of the foothill proluvial plain, where groundwater lies close to the surface. In hydromorphic soils, meadow, swamp and meadow-swamp soils are not saline due to good groundwater exchange. Grassland and swamp soils have a slightly richer and granular structure in humus than irrigated gray soils. For example, the content of humus in irrigated meadow-gray soils is around 1.5-2.5%, while the content of humus in alluvial meadow soils on the river bank is 2-4%. The landscape of the Kattakurgan oasis is rich in groundwater, but they are strongly mineralized. Depth of groundwater varies from 2 m to 10-12 m. Groundwater causes soil moisture, the formation of meadows, swamp-meadows and swampy soils. Typical gray, semi-hydromorphic gray-meadow, meadow-gray soils with mainly automorphic irrigation are spread around Kattakurgan reservoir.

Typical irrigated gray soils are found in the foothills, foothills, and terraces of the Zarafshan River III and above, divided into low and high hills. In the foothills and terraces of the mountains, their mechanical composition is heavy and medium sandy, and in the foothills, medium sandy. The transitional layer is separated by dense and aggravated layers, sometimes with signs of turbidity.

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Irrigated meadows - gray soils - groundwater level Occurs on the terraces of the II-crest of the Zarafshan River, formed by lowering through reclamation measures up to 4-5 meters. Here the process of transition from meadow soils to meadow-gray soils takes place. In these soils the signs of meadow soils and the newly formed signs of gray soils combine. Layered alluvial deposits serve as soil-forming rocks.

Irrigated grasslands - meadow soils - occupy a large part of the area's irrigated land fund. They are soils that "transition" from gray soils to grassland. These soils are formed on the lyossimon, proluvial-alluvial deposits of the subterranean sloping plains of the typical and light gray soil regions and on the high slopes of the rivers. In terms of mechanical composition, the soils are mainly muddy and heavy sandy (Table 1.), sometimes gravels can be found at a depth of 0.5 - 1 meter. The transition of gray soils to gray-meadow soils is due to the fact that the groundwater level has risen to 2-3 meters as a result of years of irrigation of automorphic soils against the background of weak natural and artificial drainage of the area.

Mechanical composition of irrigated soils Table.1

Depth sm	Fraction amount,% and particle size, mm							physicist mud < 0.01
	> 0.25	0.25-01	0.1-0.05	0.05-0.01	0.01-0.005	0.005-0.001	< 0.001	
Section 4 Irrigated gray - meadow soils								
0-25	0.5	0.1	5.4	45.9	6.8	29.1	12.2	48.1
25-58	0.1	0.1	25.8	39.7	7.2	27.1	16.5	50.8
58-98	1.0	0.1	4.7	35.5	5.9	32.2	20.6	58.7
98-138	2.4	0.1	1.6	34.6	5.8	55.4	0.1	61.3

Aqueous absorption of irrigated soils Table 2

Depth sm	Dry residue	HCO3,	Cl	SO4	Ca	Mg	Na	Cl SO4	Gypsum	Type of salinity
Section 4 Irrigated gray - meadow soils.										
0-25	0,114	0,057	0,007	0,036	0,012	0,005	0,021	0,26	6,424	Chloride-sulphate
25-58	0,138	0,049	0,011	0,051	0,014	0,010	0,015	0,28	0,343	Chloride-sulphate
58-98	0,336	0,033	0,025	0,176	0,042	0,012	0,042	0,19	0,328	Chloride
98-138	0,702	0,027	0,021	0,384	0,074	0,023	0,080	0,07	0,844	Chloride

Rapid capillary wetting in the lower parts of the soil section creates conditions for the development of oxidation-reduction processes and the formation of a clayey layer. In the plowed layer of these soils, a residual-light gray color is preserved.

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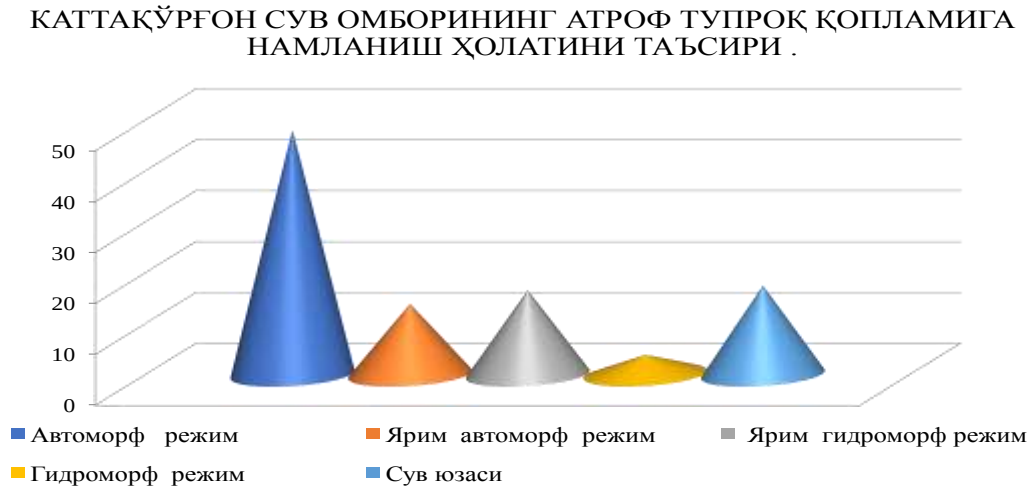
The content of humus in it is 0.9-1.6%, total nitrogen - 0.04-0.09%. The amount of total phosphorus in the driving layer is 0.12-0.18%, total potassium - 0.6-1.0%, low salinity, chloride-sulfate type (Table 2). The soils are very highly carbonated, the amount of which fluctuates between 6-11% along the profile. Its amount is most concentrated in the transitional alluvial layer. The absorption capacity of soils is 6-10 mg-eq per 100 grams of soil. Absorbed bases are dominated by calcium (80%) and magnesium (5-12%), respectively.

Statistical analysis of nutrients in the topsoil of the Kattakurgan reservoir Table.3

The arithmetic mean, X	Average arithmetic error, m	Average quadratic constraint,, σ	An indicator of the accuracy of the average arithmetic ,P , %	Coefficient of variationV, %	The average level of reliability obtained , t	Number of observations , n
Gumus,%						
0,773	0,022	0,14	2,85	18,1	35,1	41
Phosphorus in action, mg / kg,						
17,29	1,14	7,28	6,6	42,1	15,1	41
Exchangeable potassium, mg / kg,						
184,09	8,18	52,35	4,44	28,43	22,5	41
Physical turbidity %						
36,1	0,63	4,07	1,74	11,27	57,3	41

The formation of the surrounding soils under the influence of the Kattakurgan Reservoir occurs mainly in dry and protected lands. These soils can be observed in 4 modes, namely, Automorphic, semi-automorphic and semi-hydromorphic and hydromorphic wetting processes. These processes play a key role in the dynamic change of groundwater levels (Pic.2., Table.3).



Picture.2. The current state of the surrounding soil cover of the Kattakurgan Reservoir.

Conclusion

In the typical gray soils of the automorphic regime, the application of systemic agro-technical measures to increase soil fertility and productivity and scientifically based placement of agricultural crops (cereals, oilseeds and legumes) and the systematic increase of productivity is effective. Intensive drip irrigation for semi-autorphic and semi-hydromorphic typical gray and gray meadow soils for agricultural purposes can be used effectively in cultivation.

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