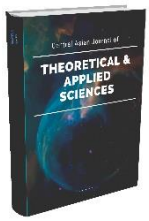

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Meliorative Condition of Lands of Fergana Province

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Abstract: *This article provides information about land reclamation of Fergana region, high soil salinity and rise of underground water.*

Keywords: *land, reclamation, soil, salinity, erosion, water, fertilizer, mountain.*

INTRODUCTION.

The situation regarding the soil-ameliorative condition of the saline and eroded lands in Central Asia, in particular in Central Ferghana, cannot help but worry us. At present, about 65 percent of irrigated lands are in bad meliorative condition, which is primarily due to the high level of soil salinity and the rise of underground water. About 330,000 hectares of land in Uzbekistan are unsuitable for agriculture due to the unsatisfactory state of land reclamation. Today, our society has realized that improving our life, raising the standard of living of the population, increasing the efficiency of our economy, feeding our people, planning our future, no matter what kind of problem, what kind of issue, most of them are related to agriculture. The industry that feeds us all is agriculture. This is why, if we want to build a prosperous life, if we have set ourselves the goal of improving people's life, we need to start the economic reform from the field of agriculture and rural life (I.A. Karimov. 1996).

Our first president, I.A. Karimov, emphasized that "rude and arrogant attitude towards nature cannot be allowed". The President continues that nature does not forgive such an attitude. As a result of the false socialist ideology that man is the master of nature, a great loss has been caused to it, human life, their extermination, and the loss of their gene pool are in danger [1-5].

Today, desert zone soils are a great reserve for agriculture, most of the parent rock composition of desert zone soils contains carbonates and water-soluble salts. The water-physical properties of the soil are good, but the biomass accumulated by the plants is also due to the roots.

That is why increasing the vegetation cover in desert conditions is the next urgent task of improving the water and physical properties of the soil and increasing the productivity of the sandy soils of the desert zone.

In the years of independence in our republic, comprehensive measures aimed at effective use of irrigated

sandy deserts and sandy lands and improvement of the ecological and meliorative condition of the lands were implemented. As a result, an additional 2-3 centners of raw cotton and 4-6 centners of wheat were obtained from each hectare of sandy and sandy lands, especially Central Fergana lands. At the same time, measures were developed to determine the genesis of sandy and loamy lands with severe amelioration conditions, their morphogenetic properties [6-10]. In particular, to protect sandy areas affected by wind erosion from wind erosion, to increase the productivity of high-quality cotton raw materials and agricultural products in such areas, natural and artificial fertilizers (N, P, K local fertilizers) application is one of the urgent issues of agro-soil science and agrophysics.

METHODS.

The region of Central Ferghana has been studied by many scientists. In 1931, A.A. Mentsi and K.M. The Klavdienkos gave the descriptions of the saline soils and salt marshes spread here in the soil research conducted in Central Fergana. Authors (1957) developed descriptions of the measures to further develop the collector-drainage system and the organization of salt washing systems after carrying out a melioration analysis of the seepage waters of the areas scattered in the expanses of the Sokh and Isfayram streams.

In 1929-1933 A.N. Pankov thoroughly studied the degree of mineralization of seepage waters in the soils of the plains of the valley[4].

In 1939-1940, the work on reclamation zoning of the Central Fergana territory was carried out by V. A. Kovda and A.N. It was carried out by the Rozanovs.

In addition, we can see the works of V. Y. Isakov on studying the fertile soils of Central Fergana. According to him, the origin of the soils of the territory depends on independent natural conditions, and they are called a separate soil geochemical province. It is shown that the role of tectonic and denudation earth movements in the formation of soils is large, as a result of the combination of sodium, magnesium, calcium and other elements in the soil under the influence of underground and surface water, saline and rich, fertile layers were formed in the soil.

RESULTS AND DISCUSSION

Rivers are fed by seepage and underground water, precipitation and glacier melting. The mountains, sub-mountain plains, and hills are not salted due to their large slope and high water permeability of the rocks, and the underground water flow is good in these places [11-16].

In the central part of the settlement, the Sirdarya plays the role of a ditch. Sizot waters have a weak current in the west. This stream passes along a small width on the coast between layers of heavy sandy rocks. In ancient times, the middle part of Central Fergana was a lake, hydrogeologically, it had non-flowing seepage water.

The waters of the lake flowed through the Farhad Gate, thus creating conditions for the weak movement of seepage waters and underground waters.

The Syr Darya erodes the right bank, therefore the right bank is well dug, the terraces are high, and the seepage waters are deep. A clear hydrogeological regionalism is observed on the left bank of the river. The upper parts of the cones consist of large fragmental rocks. Filtration is strong. Therefore, this part corresponds to the region of the water reservoir and seepage waters. The speed of the flow is distinguished by its speed in this area. The level of mineralization of these waters is 0.3-0.5 g/l. Its chemical composition corresponds to hydrocarbonate-calcium. In nature, it has been proven that under the influence of water with such a composition, there will be no salinity in the land, especially in the foothills made of highly permeable rocks.

The middle part of the cone spread consists of large skeletal rocks, and at the edges it is replaced by small-grained groups, as a result of which the seepage slows down the movement of water and creates pressure. In these areas, seepage water is 1-2 m (3 m). This area is 3-5 km wide and is located in the form of islands [17-21].

The next hydrogeological region is called the emergence and distribution of groundwater. In this group, mineralization of syzot waters is 1-3 g/l. In the border areas of these cones, the mineralization of seepage water is 5-10 g/l, and according to the anion content, it belongs to the chloride-sulfate group. Hydrogeological regionalism is also manifested in the cones of Sokh and Oltiariq, Margilonsoy rivers.

For example, the cone of the Sokh river is 40-45 km long. The Sokh river has a water consumption of 32-48 m^3/second and can irrigate around 100,000 hectares of land. During irrigation, the level and mineralization of seepage water changes. This phenomenon can also be seen in other streams and their cone spreads. The deposits of the central part of the Fergana basin consist mainly of sea, lake sediments and sediments with a heavy mechanical composition. First of all, this area, that is, the lands of Central Ferghana, served as the receiving erosion base of the waste waters of the Sokh, Altiariq, and Margilan rivers [22-26].

Reed fields and mud fields started after the waste water. At the beginning of the exploitation of the cones, the abandoned waters were managed, as a result, the seepage waters rose, the lands became saline, and salt marshes were formed. The salinity of seepage waters in this area reached 30-50 g/l in some cases.

After the transfer of Kiziltepa, Fayziabad, and Bagdad collectors, these lands began to be developed in a broad sense.

Due to the general slope, these collectors themselves fell into the pit, and their current depth is 5-8 meters. At the same time, this phenomenon increased the efficiency of the ditches.

It created conditions for cleaning the land through rice and washing with high water standards. This was used immediately, as a result, a large amount of land was appropriated. In this way, lands were appropriated both on the northern and southern sides.

To the south of the irrigated fields is the Taldiguduq sand field. Currently, Sh. Company association named after Rashidov was established.

One of the tributaries of the Isfayram stream is Kuvasoy, which is located in the west.

Fergana branch of UzPITI is located in the lower part of the Kuvasoy cone. According to the observation data of scientists of the branch, if the level of seepage water is 1 meter below the surface of the earth, when the irrigation rate is 1000 m^3 hectares, this water is 56%, and when the seepage water level is 2 meters, it is 25%. It will be used to increase the water supply [27-31].

The proximity of stormwater to the surface of the earth, the slowness of the flow, the high temperature of the air, lead to the increase of evaporation. In the brackish soil where the depth of seepage water is 0.5 meters in the area without vegetation, evaporation is 253.8 mm per year, when the seepage water level is 1 meter, evaporation reaches 102 mm, when it is 1.5 m, it reaches 38.5 mm.

Thus, mineralized sizot waters correspond to Central Fergana. Water balance of Central Ferghana Reshetkina N.M. according to the data, 3800 mln. m^3, 9180 million from irrigation water. m^3, a total of 12480 mln. m^3. Consumption of spring water is 2055 million m^3, 4745 million in the direction of Syrdarya. m^3, 1770 mln. m^3, 3910 million from evaporation. consists of m^3.

As the evaporation of water increases, the level of mineralization of seepage water from the mountains to Central Fergana, from East to West from Central Fergana increases. This indicator is also high in the depressions between the hills, in the border parts of the cone spreads.

One of the main problems related to the irrigated soils of Fergana region is their salinity problem. The state of soil salinity is distributed differently in different regions of the district (Table 9) and affects soil fertility and yield and quality. The main irrigation network of the region is the Fergana canal. Its average turbidity in 1 m^3 of water is 6 gr/l in the spring months. Depending on the conditions of the hydromodule of the region, if water is supplied to 1 ha of land per 1000 m^3, this amount is 6 tons. found that there is a blur. That is, 1 m3 of water contains 1000 l of water, 1000 x 6 = 6000 gr. 10003 m of water means 10 million liters of water, 1000000x6=6000000 million grams of turbidity, which is 6000 kg per kg. So, when watering one acre, 6 tons of mud is laid on 1 ha of land. If we consider the density here as 1.43 gr/cm^3, we can find the volume of 6 t of mud to calculate the thickness of 1g of earth according to the following formula (1) m= P xV where V=1 cm^3, P=1.43 gr. It follows from formula (2) V=M/S. Here the density is transferred to kg/m3. That is, P=1.43gr/cm^3= 1.430 kg/m^3. The volume of 6000 kg of pure mud is 4.196 m^3. If we consider that there is 1 cm of mud on the ground. According to the density of the cloud, its mass is 143000 kg according to (1). So 1 ha of earth is not 1 cm thick. To calculate the thickness of 6 tons of mud, we use the simple poroportion method

1 cm at -143000 kg

h cm at -6000 kg will be

$h=\frac{6000}{143000}$=0.042 cm in thickness, mud is deposited. As can be seen from the above, the growth of the calcareous layer depends on the level of water turbidity. In addition, the mechanical composition of sand gradually changes from mechanical composition to heavy sand. This, in turn, increases the amount of water given for salt washing [1-4].

Distribution of saline soils by district in Fergana region.

1-table.

№	Districts	Irrigated land area, ga	Salted Lands		Medium, strong and very strong saline soils		
					Regarding irrigated areas		Regarding saline areas
			ga	%	ga	%	%
1	Dang‘ara	19025.0	13036.5	68.005	6192.1	32.5	47.5
2	Beshariq	2530.0	13654.3	54.0	4728.9	18.7	34.6
3	Furqat	15234	10770.5	70.7	4090.0	26.8	38.0
4	Buvayda	17425.0	12459.0	71.5	4471.7	25.7	35.9
5	Bog`dod	21620.0	14133.3	65.4	6163.4	28.5	43.6
6	Qo`shtepa	22127.0	152645	69.0	8136.1	36.8	53.3
7	Toshloq	14699.0	6559.3	44.6	2520.1	17.1	38.4
8	Yozyovon	17614.0	11846.0	67.3	5805.5	33.0	49.0
9	Uchko`prik	17166.0	6444.9	37.5	3477.4	20.2	53.9
	Total:	170218.3	104168.4	61.2	45582.3	26.8	43.8

The main agriculture in the territory of Fergana region is based on irrigation, in irrigated farming activities, the canal named after Margilonsoy, U. Yusupov, (Big Fergana canal,) Naiman, Katta Andijan, Kuvasoy, Sokh-Shokhimardon, Ko` Khansoy, Oltiariqsoy, Rishton, Nursuk, Samarkand, canal named

after F.Shamsutdinov, South Fergana canal, Fayziobodsoy, Khanabad irrigation canals provide service. Achchikkol, Northern, Sokh-Isfara, Naynova, Sarijuga, Lower Qiziltepa, Northern Baghdod collectors are widely used to improve the land reclamation condition of irrigated lands in Fergana region.

CONCLUSION.

Due to the predominance of light mechanical composition in the studied soils, the soils are susceptible to water and wind erosion. According to the expenditure of labor and funds on the eroded lands, the area can be divided into 4 main groups.

1. Lands where erosion control is not required,

2. Sloping flat lands that need to be combated against erosion,

3. Lands requiring measures to prevent the formation of ravines on other sloping lands,

4. Anti-erosion lands requiring large amounts of labor and funds.

Taking into account that the region is located in the IV hydromodule region, watering plants with 1000-1100m^3 of water per hectare in sandy soils helps to keep the soil seepage water at a normal depth when seepage water is located close to the surface. As a result of compaction, the mechanical composition of the soil becomes heavier, it is advisable to lower this standard to 900 m^3 later.

REFERENCES.

1. Азимбоев С.А. Шўрланган тупроқлар мелиорацияси. Т. 2003.
2. Ғофурова Л.А., Абдуллаев С.А., Намозов Х.Қ. Мелиоратив тупроқшунослик. Т.: “Ўзбекистон Миллий энциклопедияси”. 2003.
3. Комилов О.К. Мелиорация засоленных почв Узбекистана. Т.: 1985.
4. O.O.Mamatkulov, “Markaziy Farg`ona qumliklarida loyqa cho`ktirish va tuproq unumdorlikni oshirish”, - Farg`ona-2020
5. Mamatqulov O., Qobilov S., Yokubov S. CULTIVATION OF MEDICINAL SAFFRON PLANT IN THE SOIL COVER OF FERGANA REGION //Science and Innovation. – 2022. – Т. 1. – №. 7. – С. 240-244.
6. Mamatqulov O., Qobilov S., Yokubov S. FARG ‘ONA VILOYATINING TUPROQ QOPLAMIDA DORIVOR ZAFARON O ‘SIMLIGINI YETISHTRISH //Science and innovation. – 2022. – Т. 1. – №. D7. – С. 240-244.
7. Valievich M. H. Measurement Of Sediments Of Industrial And Civil Buildings And Structures By High-Precision And Accurate Levelling Of Short Rays //The American Journal of Engineering and Technology. – 2021. – Т. 3. – №. 05. – С. 65-71.
8. Мадумаров Б. Б., Манопов Х. В. НАЧАЛО РАБОТЫ С ARCGIS. ARCMAP //Central Asian Journal of Theoretical and Applied Science. – 2022. – Т. 3. – №. 6. – С. 325-333.
9. Makhmud K., Khasan M. Horizontal Survey of Crane Paths //Middle European Scientific Bulletin. – 2021. – Т. 18. – С. 410-417.
10. Rakhimjonovna K. K., Mukhddin M. K. TYPES OF GEODETIC WORKS IN THE CONSTRUCTION OF HIGH-RISE BUILDINGS AND STRUCTURES //British Journal of Global Ecology and Sustainable Development. – 2022. – Т. 10. – С. 98-103.

11. Rakhimonovna K. K., Abdulhay o'g'li A. A. Create a Layer of Maps Those are Part of the Livestock and Poultry Astral //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 11. – C. 61-67.
12. Khakimova K. R. et al. MAP VISUALIZATION IN ARCGIS AND MAPINFO //Galaxy International Interdisciplinary Research Journal. – 2022. – T. 10. – №. 4. – C. 220-225.
13. Abbosxonovich M. A., Abduvaxobovich A. A. Measures for the Protection of the Historical and Cultural Heritage of Fergana and the Mode of Monitoring of Cultures with the Help of Geoinformation Systems //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 6. – C. 342-348.
14. Abduraxmonov A. A. et al. DAVLAT YER KADASTRIDA GIS TEXNALOGIYALARIDAN FOYDALANISH //INTERNATIONAL CONFERENCES ON LEARNING AND TEACHING. – 2022. – T. 1. – №. 8. – C. 228-233.
15. Axmedov B. M. et al. Knauf Insulation is Effective Isolation //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 6. – C. 298-302.
16. Marupov A. A., Ahmedov B. M. General Characteristics of Zones with Special Conditions of use of the Territory //Middle European Scientific Bulletin. – 2021. – T. 18. – C. 446-451.
17. Yusufovich G. Y. et al. Formation of a Personal Database of Data in the Creation of Soil Science Cards in GIS Programs //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 6. – C. 303-311.
18. Baxodirjon G. Y. Y. B. et al. TUPROQSHUNOSLIKDA GISNING ROLI VA TUSHUNCHASI //IJODKOR O'QITUVCHI. – 2022. – T. 2. – №. 20. – C. 67-72.
19. Mamatqulov O. O. O. PARRANDACHILIKDA NASILCHILIK ISHLARINI RIVOJLANTRISHNING ISTIQBOLLARI //Oriental renaissance: Innovative, educational, natural and social sciences. – 2022. – T. 2. – №. 10. – C. 1077-1084.
20. Mamatqulov O. O. O., Muqimov S. A. O. BATAT O'SIMLIGI BIOLOGIYASI VA AGROTEXNIKASI //Oriental renaissance: Innovative, educational, natural and social sciences. – 2022. – T. 2. – №. 10. – C. 1334-1340.
21. Alakhanov Z. M. et al. THE STATE CADASTRE FOR THE REGULATION OF INFORMATION RESOURCES FOR THE FORMATION AND IMPROVEMENT //Educational Research in Universal Sciences. – 2022. – T. 1. – №. 1. – C. 47-53.
22. Mukhriddinkhonovich A. Z. Actual Issues of Design of Small Towns in Uzbekistan //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 6. – C. 576-580.
23. Arabboevna A. M., Shavkat o'g'li Y. S. The Use of Geoinformation Systems in the Study of the Land Fund of Household and Dekhkan Farms //Texas Journal of Multidisciplinary Studies. – 2022. – T. 8. – C. 163-164.
24. Arabboyevna A. M. Biological Activity of Typical Irrigated Gray Soils //Central Asian Journal of Theoretical and Applied Science. – 2022. – T. 3. – №. 6. – C. 285-289.
25. Abdukadirova M. A. The Role Of Builder And Building In The Development Of The Country Is Invaluable //The American Journal of Interdisciplinary Innovations Research. – 2021. – T. 3. – №. 05. – C. 81-84.

26. Khudoynazarovich T. H. et al. Complex of Anti-Erosion Measures to Increase the Efficiency of Irrigated Lands //Central Asian Journal of Theoretical and Applied Science. – 2022. – Т. 3. – №. 10. – С. 194-199.

27. Турдикулов Х. Х. Анализ Устойчивости Аякчинской Грунтовой Плотины При Сейсмических Нагрузках //CENTRAL ASIAN JOURNAL OF THEORETICAL & APPLIED SCIENCES. – 2022. – Т. 3. – №. 6. – С. 1-6.

28. Baxodirjon o‘g‘li M. B., Muxsinjon o‘g‘li Q. L. TUROQSHUNOSLIKDA GAT TEXNOLOGIYALARIGA DOIR TADQIQOTLAR //IJODKOR O'QITUVCHI. – 2022. – Т. 2. – №. 20. – С. 73-76.

29. Mavlyankulova S. Z. et al. THE ESSENCE OF CARTOGRAPHIC MAPS IS THAT THEY ARE USED FOR CARTOGRAPHIC DESCRIPTION OF THE TERRAIN. GENERALIZING WORKS IN THE PREPARATION OF MAPS //RESEARCH AND EDUCATION. – 2022. – Т. 1. – №. 4. – С. 27-33.

30. qizi Olimova D. S. et al. THEORETICAL BASIS FOR THE USE OF MODERN GIS TECHNOLOGIES IN THE CREATION OF NATURAL CARDS //RESEARCH AND EDUCATION. – 2022. – Т. 1. – №. 4. – С. 4-10.

31. O‘G‘Li S. Y. S., Zuxriddinovna M. S., Qizi A. S. B. THE USE OF MAPINFO PROGRAM METHODS IN THE CREATION OF CADASTRAL CARDS //Science and innovation. – 2022. – Т. 1. – №. A3. – С. 278-283.

