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REDUCTION OF SIGNS OF FERTILITY IN SOILS AND SOIL PROTECTION

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Annotation: the degradation of the Earth is considered one of the most pressing environmental problems in the world, and the world's population suffers from one aspect or another of degradation. A number of measures are being taken by the government of Uzbekistan on the reasons for the emergence of degradation processes in the lands and measures to prevent them. In this article, analyzes were carried out in the regions of the “Babur massif” and “Ibrahim mouminov “massif of the Shofirkon District of the Bukhara region, and a number of cases of degradation were identified in these regions, and data on the Prevention of the causes of degradation and factors of occurrence are presented in this article.

Keywords: soil fertility, degradation, groundwater, drought, climate, temperature, erosion.

Introduction: Combating land degradation in the country and mitigating its negative consequences, preventing desertification and drought in the regions, preserving biodiversity, maintaining and increasing soil fertility, restoring degraded lands, advanced scientific developments in this direction and on the basis of wide use of innovations, in order to achieve sustainable development of regions, measures are being developed to create an effective system of land protection and combating degradation, and effective work is being carried out to improve productivity indicators. On August 15, 2023, it was adopted by the Legislative Chamber on soil protection and increasing its productivity.

According to the Food and Agriculture Organization of the United Nations, if the degradation processes on the earth continue in this direction, by 2050, soil degradation may make up 90% of agricultural land. Currently, the annual damage due to degradation in the world is about 490 billion dollars. In many areas, 2.6 billion people are suffering from soil degradation. As a result of degradation, approximately 73% of pastures and 47% of drylands have been degraded. [2,3].

Information on the agrochemical properties of the soils of the "Ibrahim Mominov" massif.

(Table 2)

Cross line	Depth, cm	Gumus %	P_2O_5mg/kg	K_2Omg/kg
1	0-32	0,6	10,3	127,6
2	32-68	0,4	8,6	102,0
3	68-95	0,4	6,4	95,3
4	95-137	0,3	5,0	88,0

As the layer goes to the bottom, the amount of mobile phosphorus also decreases, and fluctuated between 8.6 mg/kg and 5.0 mg/kg.

The analysis of indicators on the amount of exchangeable potassium shows that it belonged to the low supply group with 127 mg/kg in the surface 0-32 cm layer of the soil, this indicator was

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102 in the 32-68 cm layer. was .8 mg/kg, and as the layer went to the bottom, the amount of exchangeable potassium decreased, and it belonged to the very poor group, and the indicators were 95.3 and 88.0 mg/kg . According to the degree of salinity, the area we studied is weakly saline. According to him, according to the level of alkalinity, which changes the parameters of the soil environment, it was 0.038% in the upper driving layer of the soil 0-30 cm, this indicator is 0.069% in Cl- anion, 0.069% in SO_4 anion. in this layer, according to the amount of cations, the amount of Ca^{2+} is 0.018%, and the amount of Mg^{2+} is 0.010%. The combined share of Na+ cation and K^+ cation was 0.020% when calculated based on the generally accepted method. The total amount of water-soluble salts, that is, the amount of dry residue in this layer, is 0.178%. (Data is presented in Table 1).

Information on the agrochemical properties of the soils of the "Ibrahim Mominov" massif, Shofirkon district, Bukhara region.

(Table 1)

Cross line	Depth cm	Alkalinity	CL	SO_4	Ca	Mg	Anion	Cation	Dry residue	Sum of salts
		General HCO_3 m.e	Milli gr. ekvival	Milli gr. ekvival	Milli gr. ekvival	Milli gr. Ekvival				
	0-32	0.62	0,49	1,44	0,90	0,79	2,55	1,69	0.178	0.153
	32-68	0.56	0,39	1,19	0,75	0,64	2,14	1,39	0.142	0.128
	68-95	0.52	0,49	1,19	0,80	0,79	2,20	1,59	0.148	0.130
	95-137	0.50	0,39	1,19	0,75	0,79	2,08	1,54	0.142	0.123

The amount of salinity changes slightly towards the lower layers of the soil, which is not significant. For example, in the subsoil layer of 32-68 cm, the total amount of alkali was 0.5 mg/eq, while Cl^-;SO^-_4 anions were 0.39; 1.19 mg/eq. These indicators are relatively higher than cations, i.e. Ca^{2+};Mg^{2+} and K^+;Na^+ cations, 0.75; 0.64; is 0.75 mg/eq, the ratio of anions and cations is 2.14 mg/eq. The sum of anions and cations in the 65-95 cm layer of the soil was 2.20 mg/eq, in the 95-137 cm layer these values were 0.142% of the dry residue, while anions and cations were an equality is formed according to That is, it is observed that it is from 2.08 mg/eq. It is observed that the salinity level is X-C in all soil layers [5,6].

There are the following signs of soil deterioration in the agricultural system: soil salinization, soil dehumification, desertification, irrigation disruption, irrational land use, humus depletion.

Soil protection and resource-saving technologies in agriculture

- no plowing or direct sowing (working <15cm/25%)

-Plant residue or mulch (covering the soil with plant residue >100% min30%

-Crop variety or rotation (>3 types of crops)

What are the other benefits of soil-protecting and resource-saving technologies in agriculture?

Infiltration increases, evaporation decreases, water flow rate decreases, planting is carried out in short periods, and the temperature is low in the soil with plant residues.

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Degradation of soils has a negative effect on the agrochemical parameters that can be assimilated by plants. We can see this in the decrease in the amount of mobile phosphorus and exchangeable potassium in the soil. One of the main factors determining the fertility of the soil is the amount of humus. For example, if the amount of humus is 0.6% in the surface layer of the soil, that is, in the 0-32 cm layer, it decreases due to the decrease in the amount of organic matter in the lower layers of the soil, which is 32-68% of the soil; 68-95; 0.4 in accordance with the sequence of layers in layers of 95-137 cm; 0.4; It is 0.3 percent.

In the process of land degradation, carbon and nitrogen oxides are released from the soil into the atmosphere. This makes it one of the most important factors of climate change. As a result of scientific research, scientists found out that we are losing almost 24 billion tons of fertile soil per year. 3.2 billion people worldwide suffer from land degradation. Therefore, this chosen topic is relevant.[4]

Material and methods. Researches were carried out in the conditions of meadow alluvial soils in the "Babur" and "Ibrahim Mominov" massifs of Shafirkon district, Bukhara region.

It should be noted that soil sections and soil samples were taken from genetic horizons. The amount of water-soluble salts from the obtained soil samples was determined based on water absorption analysis, and the agrochemical parameters of the soil were determined based on generally accepted methods. Mathematical analysis of the results was also carried out.

Results: Soil salinization is one of the important degradation processes. If we look at the results of the experiment, the soils of Shafirkon district of Bukhara region are considered to be more or less saline. According to salinity levels, the area we studied is weakly saline. According to him, according to the level of alkalinity, which changes the indicators of the soil environment, it was 0.038% in the upper driving layer of 0-30 centimeters of the soil, this indicator was 0.069% in Cl^- anion, 0.069% in SO_4 anion. in this layer, the amount of Ca^{2+} was 0.018%, and the amount of Mg^{2+} was 0.010%. The combined share of Na^+ cation and K^+ cation was 0.020% when calculated based on the generally accepted method. The total amount of water-soluble salts, that is, the amount of dry residue in this layer was 0.178% (Table 1).

Degradation of soils has a negative effect on the agrochemical parameters that can be assimilated by plants. We can see this in the decrease in the amount of mobile phosphorus and exchangeable potassium in the soil. Humus content, one of the main factors determining soil fertility, is observed to decrease sharply in degraded soils. For example, if the amount of humus is 0.6% in the surface layer of the soil, that is, in the 0-32 cm layer, it decreases due to the decrease in the amount of organic matter in the lower layers of the soil, which is 32-68% of the soil; 68-95; 0.4 in accordance with the sequence of layers in 95-137cm layers; 0.4; It was 0.3 percent.

One of the main agrochemical indicators of the soil is 10.3 mg/kg in the surface 0-32 cm layer of the soil, which is in the very low supply group in terms of the amount of mobile phosphorus (Table 2).

Conclusions and recommendations. Scientific analyzes show that in the last 30-40 years, with the reduction of the duration of irrigation at some points of the massifs, salinity increased and the amount of humus decreased in these areas. It can be seen that the formation of agro-irrigation horizon and its thickening as a result of irrigation has a very effective effect on the humus stock. Also, humus reserves in irrigated meadow alluvial soils are higher than those in newly developed and newly irrigated meadow alluvial soils. Apart from the agricultural area, there are also salt marshes, barrens, and barren sands, and their phytoremedial condition should be improved.

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Seasonal use of pastures is necessary for efficient use of farm pastures. In order to improve the productivity of pastures, it is recommended to artificially plant black saxophone to strengthen the sands. As a result of wind erosion, many shrubs and semi-shrubs are dying due to exposure of their roots. Pastures are the main source of food and means for raising and breeding livestock. Therefore, it is necessary to protect the existing pastures, prevent their decline, increase the productivity of pasture plants, and in general, establish a rational and efficient use of pastures.

To do this, to organize the use of livestock in some pastures in order to prevent overgrazing; Careful use of existing wells, repair of damaged ones, opening of new water sources in remote areas (drilling of wells and wells) in order to improve water supply of pastures. It is necessary to carry out work on the restoration and development of the world of plants in the soils of the degraded area of 11.8 thousand hectares identified as a result of the study.

Also, in order to fundamentally improve land reclamation and to wash off the salt of the soil, it is necessary to increase the depth of the collectors, ditches and drains on farms and between farms to a depth of 2.5-3.0 m, and ensure their drainage. These works can be carried out using complex agrotechnical and reclamation measures. As a result, the area of saline soils on farm land is reduced, their productivity increases, the yield of agricultural crops increases, and soil fertility improves.

The analysis shows that with the shortening of the irrigation period for 30-40 years, an increase in salinity and a decrease in the amount of humus were observed in some points of the massifs in these regions. From this we can know that the formation of agro-irrigation horizon and its thickening as a result of irrigation has a very effective effect on humus reserves. Consequently, humus reserves are higher in irrigated grassland alluvial soils than in newly developed and newly irrigated grassland alluvial soils. In addition to agricultural land, there are also salt marshes, dunes, and sand dunes that need to be improved in their phytoremedial condition. Seasonal use of pastures is necessary for effective use of pasture lands of the farm. In order to increase the productivity of pastures, it is recommended to artificially plant black saxovole in order to strengthen sand dunes. As a result of wind erosion, many shrubs and semi-shrubs dry out from the root effect. Pastures are the main source of food and a means for raising and breeding livestock. Therefore, it is necessary to preserve the existing pastures, prevent degradation, increase the productivity of pasture plants, and establish rational and efficient use of pastures in general [4]. For this purpose, in order to prevent overgrazing of livestock, crop rotation is organized in separate pastures (in the method of crop rotation). Careful use of existing wells, repair of damaged ones, opening of new water sources in remote areas (drilling of wells and boreholes) to improve pasture water supply. It is necessary to carry out work on the restoration of flora in 11.8 thousand hectares of degraded areas identified as a result of research [5]. According to monitoring studies, cattle should not graze on degraded fields, given that the weather is dry only once every 10-3 years, because grazing on these degraded fields leads to the proliferation of plants that are harmful to livestock and poisonous. and this is the main one. a factor that leads to the crisis of pastures [6]. In order to improve land reclamation and soil salinity, it is necessary to increase the depth of intra-farm and inter-farm collectors, ditches and drains to 2.5-3.0 m and ensure their good drainage. These works can be carried out using complex agrotechnical and reclamation measures. As a result, the areas of saline soil in agricultural fields will decrease, and the productivity and yield from agriculture will increase.

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