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## ЭКОЛОГИЧЕСКОЕ СОСТОЯНИЕ ПОЧВ СЕВЕРНОЙ ФЕРГАНЫ И ЕГО АНАЛИЗ

### THE ECOLOGICAL STATE OF THE SOILS OF THE NORTHERN FERGHANA AND ITS ANALYSIS

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**Аннотация.** С помощью полевых экспедиционных и статистических методов выявлено влияние природных и антропогенных факторов на почвенно-экологическую обстановку Северной Ферганы и разработаны мероприятия по их устранению.

**Abstract.** In this article, the impact of natural and anthropogenic factors on the soil-ecological situation of Namangan region is identified through field expedition and statistical methods, and measures to eliminate them are developed.

**Ключевые слова:** почвенно-экологическое состояние, засоление почв, водная эрозия, плодородие почв, оптимизация.

**Keywords:** soil-ecological condition, soil salinity, water erosion, soil fertility, optimization.

In the world, the development of new lands and more intensive use of the acquired lands is increasing in order to ensure the needs of the population and national economic sectors for land resources. This leads to the change of the natural-landscape composition of the land fund, the reduction of biological diversity and the violation of its optimal condition under external anthropogenic pressure.

Today in the world, it is salty, humus and biogenic substances are reduced, and it is polluted land is 2.4 million hectare. Also in the countries of the world land degraded and salinized by natural and anthropogenic factors. Development of measures aimed at preventing areas, increasing productivity, conservation, and ecological-ameliorative status improvement is one of the urgent issues.

Reforms and measures in the field of agriculture in our country focus on the effective use of irrigated land and the development of agricultural crop productivity by increasing soil fertility. In particular, as of 2020, there is a total of 4.3 million hectares of irrigated land in our country, of which 44.7 % of irrigated land is of varying degrees, 31.0 % is weak, 11.9 % is average, and 1.9% is due to strong salinity and poor land reclamation, its productivity has decreased and it is being excluded from agricultural use. Such processes, the irrigated crop area in Northern Ferghana in 2019 is 1413834 hectares, and during the research process, taking a permanent soil sample and analyzing it, it was found that 89929 hectares are weakly saline, 29577 hectares are moderately saline, and 3698 hectares are strongly saline.

Northern Ferghana is one of the regions that is clearly distinguished from other regions by its natural conditions and diverse landscape complexes, well-developed agricultural farming, developed agro-economy and recreation systems, and the fact that nature has been mastered as a result of human economic activity, as well as its large population. The topic covered in this article is devoted to a number of scientific recommendations on the dynamics of salinization of the soils of Northern Ferghana, their melioration, improvement of their ecological situation, recultivation, and prevention of the influence of natural and anthropogenic processes on their fertility.

The goal of the research work was to study the dynamic state of saline soils, factors affecting their productivity, improvement of their ecological situation, and the impact of natural and anthropogenic processes on their productivity, as well as studying effective experiments in this regard. The purpose of the research work is to reveal actual problems such as determining the impact of anthropogenic processes on the development of the Northern Ferghana's soil salinization, erosion, biological diversity, decreasing productivity as a result of the increase in the population, studying the ecological situation, analyzing them and carrying out recultivation works. is one of the main tasks.

The scientific novelty of the article is revealed by the method of mutual comparison of saline soils in Northern Ferghana, the development of geoecological conditions due to the exploitation of the territories bordering the deserts of Central Fergana was determined, optimization of the unpleasant ecological conditions in the microzones of Namangan region is characterized by the development of guidelines. The practical importance of the article is characterized by the fact that the influence of natural factors on the emergence of soil-ecological problems in the microzones of Northern Ferghana is determined and the changes of flora and fauna under the influence of anthropogenic pressure are analyzed.

In the Northern Ferghana, the Karakalpok, Kosonsoy-Syrdarya, Karakalpok-Syrdarya, Karadarya, Namangansoy-Chortoksoy and Norin-Syrdarya reclamation systems are formed. Also, to determine the soil salinity of irrigated croplands in the Northern Ferghana and to provide and implement the developed scientific recommendations to all farms in order to carry out salt washing in a timely manner, to determine the areas with poor amelioration conditions and to study their causes, specific contours in the lands with unsatisfactory soil fertility. Increasing the productivity of agricultural products is one of the urgent issues of today.

The history of irrigated agriculture here includes a long period, significant changes in soil salinity occurred by the end of the 20<sup>th</sup> century. In particular, there have been significant changes in the soil cover during the past times, the process of soil formation has shifted from the automorphic regime to semi-

hydromorphic soil formation.

Northern Ferghana consists of hills and plains, formed and developed due to human economic activity, irrigated lands are irrigated by stream waters coming from the southern slopes of the Kurama and Chotkal ridges. There are about 10 streams on these mountain slopes, two of which are formed by the collection of spring waters. Especially on the slopes of the "Eski earth" reservoir of Yangikurgan district, in the parts adjacent to the Central Fergana deserts, the process of weak, moderate and strong saline soils is very active, as we can see in Table.

*Table. Soil salinity of Northern Ferghana*

No	Name of districts	Unsalted thousand	strongly salted thousand	moderately salty thousand	low salted thousand
1	Mingbulok	23,138	0.090	2,932	12,030
2	Kosonsoy	24,977	0.030	0.061	0.138
3	Namangan	21,673			0.075
4	Norin	16,938			
5	Pop	32,954	0.512	1,862	5,331
6	Torakurgan	18,774			0.261
7	Uychi	20,450			0.063
8	Uchkurgan	24,103			
9	Chortok	20,195		0.009	0.153
10	Chust	33,526	0.090	0.110	0.216
11	Yangikurgan	27,698		0.033	0.106

Based on the results of the chemical laboratory analysis, it was shown that soil salinity is mainly composed of sulfate types. Also, in irrigated lands, weak and moderately salinized lands show 2015-2017, and very strongly salinized lands correspond to 2018-2019. If we analyze the level of soil salinity on the example of some districts of Northern Ferghana, that is, moderately and strongly salinized lands correspond to Pop, Mingbuloq and Chust districts ( 99 % ), and very strong salinity lands also correspond to Pop, Mingbuloq, Yangikurgan and Chust districts ( 98 % ). data and determined in the laboratory process.

The reasons for the origin of such geocological processes in Northern Ferghana are related to the increase in the number of people, their increasing need for soil resources, the development of animal husbandry, the increase in soil moisture, and the rise in the level of underground water. In particular, the level of underground water is 1.5-2.5 m in Mingbulok, 1.5-2.0 m in Namangan district, 1.5-2.2 m in Kosonsoi, 1.4-2.3 m in Norin, 1 in Pop, 4-1.5 m, 1.3-1.7 m in Torakurgan, 1.7-1.9 m in Uychi, 1.7-2.5 m in Uchkurgan, 1.9-2.15 m in Chust, 3 in Chortok, It varies in the range of 9-4.2 m.

In the course of the operation, it is desirable to pay special attention to the control of salt washing, leveling of the hilly land and floor work. Because, in salt washing, the formation of land and the size of checks are of great importance. In order to ensure that the water supplied to the outside areas is fully absorbed, dissolves the salts contained in the soil, and flows out with it into the water bodies, it is necessary to pay great attention to avoid dumping. Saline lands are washed twice and three times in fields, and after salt washing, soil samples are taken and analyzed in the laboratory.

Improvement of the ecological and meliorational condition of the land depends on the organization of washing of saline areas based on the given recommendations. In the implementation of these works, all farm managers in the district should ensure the regular cleaning of water bodies, take water according to the specified limit for irrigation, level the land and prepare the floor for washing the salt of the land, develop complex measures for the use of local and mineral fertilizers to increase soil productivity, and it is advisable to establish systematic work on soil degradation detection, assessment, monitoring and elimination of its negative consequences. According to him, in order to prevent such unpleasant soil-ecological conditions in Namangan region, it is necessary to implement a number of measures, including:

- it is necessary to establish and develop artificial forests in the newly developed part of the deserts and in the areas where wind erosion is observed;
- it is necessary to apply organic and mineral fertilizers in a stratified manner in the areas where saline soils are spread, and to improve land cultivation techniques;
- allocation of subsidies for improving land reclamation and ecological condition and their effective use;
- revision of the characteristics of the location of agricultural crops, adapting them to soil types and giving ample space to the fruit and vegetable industries;
- to protect the soil cover by planting and developing sticky grasses such as sedge and other forage grasses.

As a result of the above soil reclamation measures, the ecological condition of the irrigated areas is improved, and the productivity is ecologically competitive and at a high level.

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