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SOILS OF THE KOKAND OASIS AND THEIR ECOLOGICAL RECLAMATION

***Annotation.** This article describes the soil-ecological conditions of the Kokand oasis and the impact of erosion processes on the changes occurring in them, including soil fertility, and measures to combat them. Also, based on statistical data, the processes of soil erosion, development of planting system, proper accounting of soil potential, increase of productivity of irrigated lands, development of complex measures on wide use of organic fertilizers, creation of artificial forests, improvement of meliorative-ecological condition and salinization were analyzed.*

***Key words:** oasis soils, erosion processes, soil fertility, chemical polymers, soil salinity, precipitation, deflation, environmental problems, anthropogenic factors.*

Introduction. Reforms and measures in the agricultural sector in recent years have also focused on the efficient use of irrigated land and the development of agricultural productivity by increasing soil fertility. It also uses more than 20 million hectares of agricultural land, including 3.2 million hectares of irrigated land, to grow food and raw materials for the economy.

Despite the small area of irrigated land, the population growth rate is very low. The main reason for this is that in the 1980s and 1990s, an average of 90,000 hectares of new land was developed in the country per year, but in recent years, due to water shortages, this figure is 5-6 thousand hectares. As of 2020, there are 4.3 million hectares of irrigated land in the country, of which 44.7% of irrigated land is at various levels, including 31.0% weak, 11.9% average, 1 , 9

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percent are declining due to high salinity and poor reclamation, and are being phased out of agriculture [1]. It should be noted that in the irrigated gray-oasis cultivated soils of the country, the level of groundwater is about 3-5 m, which is directly involved in the re-salinization of soils with different levels of mineralization.

The diversity of landscape complexes in accordance with the natural conditions and geosystems of the Fergana Valley in accordance with the latitudinal and altitude zoning, well-developed agriculture from ancient times and the strong development of nature due to human activities, the most densely populated In all areas of the valley, which are clearly separated from the regions, there are favorable natural geographical conditions for the development of agro-economic and various industries and recreation systems of agriculture [2; 54-87 p.]. The topic of this article is the measures taken to prevent the impact of natural and anthropogenic processes on the soils of the Kokand oasis and their reclamation, ecological condition and fertility.

Goals and objectives of the work. The purpose of the study was to study the soils of the Kokand oasis and their reclamation, the impact of anthropogenic processes on its fertility, as well as the study of effective practices in this area. The main purpose of the research is to determine the impact of anthropogenic processes on the decline and development of oasis soils due to salinization, erosion, reduced biodiversity, to study and analyze their ecological status, to reveal current problems such as oasis soils and their reclamation.

The main part. The history of irrigated agriculture in the Kokand oasis covers a long period of time, during which time there have been significant changes in soil cover, the process of soil formation has shifted from the automorphic regime to the formation of semi-hydromorphic soils. . According to him, the soils of the oasis have a unique morpholigenetic structure and agrochemical, agrophysical and reclamation properties.

Many years of scientific research by local soil and erosion scientists have shown that the fertile soils cultivated over a large area in the Kokand oasis have

been left under sandy loam due to wind erosion. According to their analytical calculations, there are about 10 thousand hectares of such lands in the oasis, which contain 2 - 3% humus and 40 - 50% water-resistant granules - at a depth of 50 - 70 - 100 cm from the structure and the earth's crust. buried in sand. However, if this soil layer is overturned in the plantation plow, it is recommended to take measures in autumn to make the oasis soils resistant to wind erosion and fertile [3; 48-94 p.].

A large area of the Kokand oasis consists of light-colored and gray-brown soils and sandy desert soils reinforced with bushes, the mechanical composition of such soil types is permeable and washed away without water accumulation on the surface. The flow is much slower. The reason it does not wash out is that the topography is flat. However, the wind can easily dust and blow away these soils, and the deflation of the Kokand wind is noticeable in the areas where the oasis soils are scattered. In particular, during our field research, we witnessed a 100-hectare cliff 80 meters long, 5 meters wide and 2 meters deep. In the formation of such a cliff, we witnessed the loss of about 300-400 cubic meters of soil cover, the removal of a 1-centimeter-thick layer of 90 hectares of land, resulting in the loss of 1,200 m³ of soil cover.

The sharp decline in the area of fences and trees planted to prevent wind erosion is paving the way for the development of erosion. In particular, the risk of erosion is further exacerbated by the fact that the area of the western and central parts of the oasis is shrinking every year due to the inadvertent felling of shrubs in the enclosures and woods established to strengthen the mobile sands [5; 89-108 b].

The reasons for this can be directly attributed to the rapid population growth in the Kokand oasis (Table 1). According to him, issues such as soil and environmental degradation in the oases have not yet been sufficiently studied in practice [4; 44-47 p.].

Table - 2

Population growth in the Kokand oasis index (1989–2019)

Districts name	Population, thousand people			
	1989 year	1999 year	2009 year	2019 year
Besharik	140.9	181.2	208.1	224.6
Baghdad	108.0	174.8	193.3	210.4
Buvayda	111.2	178.9	206.4	222.2
Dangara	87.3	144.1	158.0	170.1
Three bridges	113.9	183.3	206.6	224.4
Furqat	-	97.1	107.6	115.8
Uzbekistan	142.6	194.5	217.3	234.3

The table was compiled by the author using data from the Fergana regional statistics office.

It is known that the Fergana Valley is one of the most densely populated regions in the country. As can be seen from the table, the Kokand oasis differs from other oases in the valley in that it has the fastest population growth. Lithological-geomorphological, mechanical composition of soil, water and air regime, physical, agrochemical and chemical-biological properties of arable lands due to the development of agriculture on irrigated lands, pastures and meadows, as well as the use of arable lands for various purposes. zgartaradi [6;85-86p.]. Also, in the middle and lower sloping micro-zones of the Kokand oasis, where mineralized groundwater lies close to the surface, moderately and strongly decomposed irrigated meadows, swamp-meadows and swampy soils and saline soils are well developed. [7;54-68p.]. The salinization and swamping process is very active in these soils, which can be seen in the following figures.

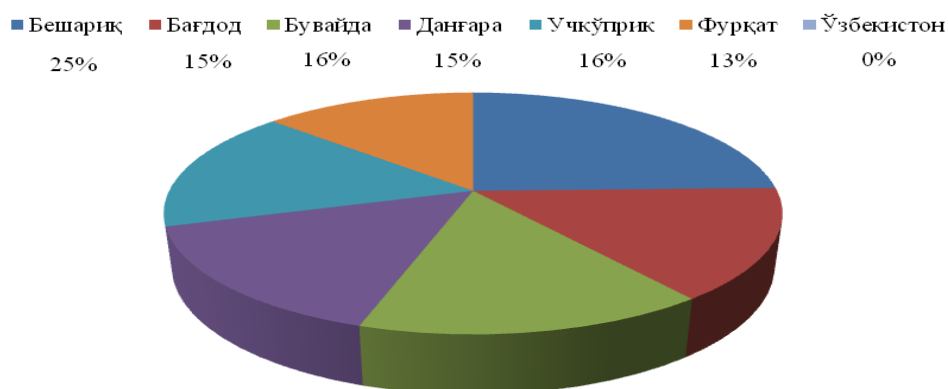


Figure 1. Saline and weakly saline soils

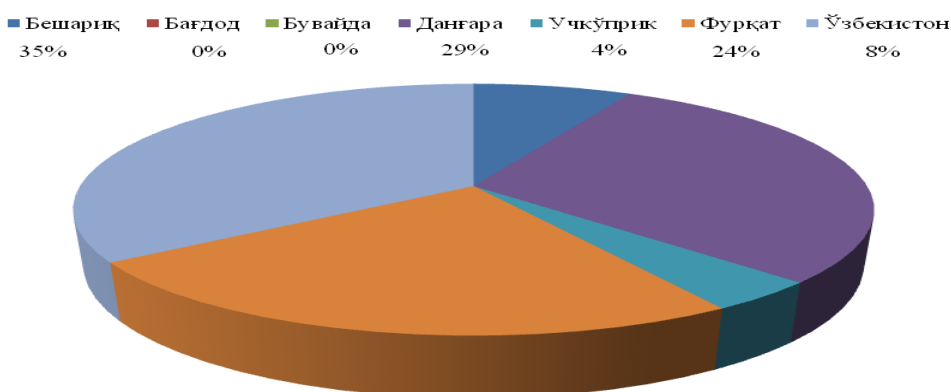


Figure 2. Average salinity of soils

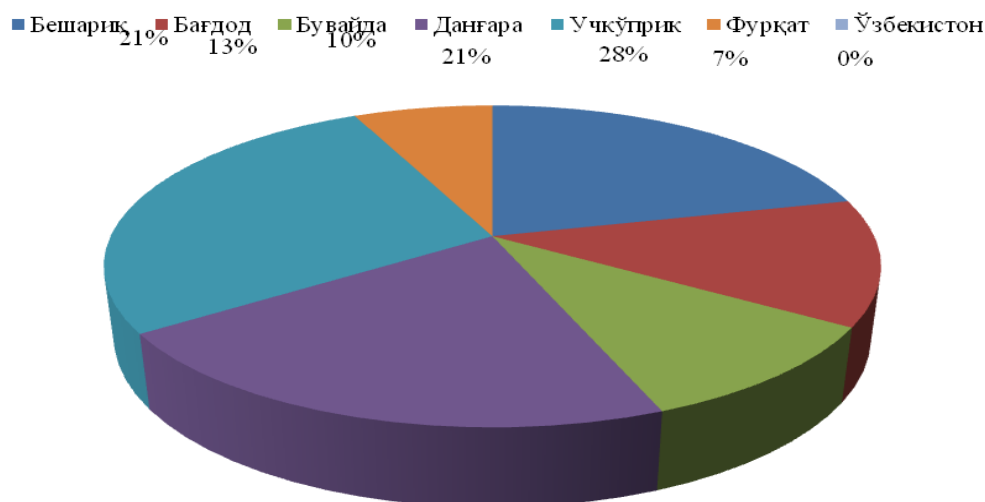


Figure 3. Strongly saline soils

Development of a set of measures to increase soil fertility by users of all agricultural lands of the Kokand oasis, especially the widespread use of organic fertilizers, as well as the detection, assessment, monitoring of soil degradation and all the negative effects on soils. it is expedient to carry out systematic work on elimination [6;32-36p.].

Conclusion. The results of field research in the Kokand oasis showed that the development of lands without taking into account the specific features of arid areas, the washing of soil layers over large areas, various manifestations of erosion, rising groundwater levels, and other processes such as rto and salinization. Therefore, the development of arid lands, land and water use should be based on the latest achievements of science and technology, as well as the positive impact of human activities. To do this, it is important to implement the following recommendations:

- As the properties, properties and composition of the soils of the Kokand oasis formed as a result of irrigation are the result of human activities, it is necessary to study and analyze them in detail;
- Adequate implementation of comprehensive measures for the widespread use of organic fertilizers by agricultural land users is needed;
- The mechanical composition of the soils of the Kokand oasis is prone to wind erosion due to the presence of sand and dust particles, and in irrigated agriculture it is important to develop and implement measures to combat and protect against deflation;
- During the irrigation process, the groundwater level in the soils of the Kokand oasis rises and this process makes the soils saline to varying degrees. This requires proper design of vertical and horizontal drainage systems, rehabilitation of existing irrigation and land reclamation systems.

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