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CREATION OF MELIORATIVE MAPS OF THE LOCATION AND MINERALIZATION OF LEACH WATERS IN THE VEGETATION SEASON IN IRRIGATED AREAS IN BUKHARA REGION USING ArcGis AND ArcMap SOFTWARE

Hasan Bakhtiyor o'gli Asadov, independent researcher, "TIQXMMI" MTU Bukhara Institute of Natural Resources Management, Bukhara, Uzbekistan

Shakhnoza Raxmatillo耶vna Sharopova, Ph.D., Assoc. Prof., Bukhara state university, Bukhara, Uzbekistan

This article presents information on the land areas in the districts of Bukhara province, the location level and mineralization of underground water during the vegetation period of the land, and it is used to create reclamation maps using ArcGis and ArcMap programs and collect analytical data of farm land areas. work, land reclamation cadastre, technical devices needed to create a land reclamation map, hydrochemical laboratory analyzes of water taken three times a year, i.e. on March 1, July 1, and September 1, are entered into the ArcMap program through GPS device location coordinates. , a map of groundwater mineralization during the vegetation season of the irrigated areas is prepared, as well as the depth of the underground groundwater level is determined by areas, and suggestions are made for the necessary agrotechnical activities and the placement of agricultural crops. scientific research works are being carried out.

The Bukhara region is located in the central part of the Kyzylkum desert, it is bordered by the Republic of Turkmenistan to the northwest, Kashkadarya region to the southeast, Navoi region to the northwest, Khorezm region and the Republic of Karakalpakstan to the northeast. It is located in the lower and middle part of the peninsula. The main part of the land area consists of barrens and pastures.

Bukhara region was established on January 15, 1938. The area is 4 million 193705 hectares, of which 20909 hectares (0.5%) are parks, 2674186 hectares (63.77%) are pastures, 205616 hectares (4.9%) are forests and 1002295 hectares (23.9%) are other land areas. makes up the remaining 6.9 percent of land areas are abandoned (zalez) lands. The irrigated land area is 276309 hectares, 30034

hectares in Bukhara district, 21515 hectares in Vobkent district, 32982 hectares in Jondor district, 18771 hectares in Kogon district, 21521 hectares in Olot district, 22776 hectares in Peshko district, 27221 hectares in Romitan district, 19126 hectares in Shafirkon district. It is 26,466 hectares in Karakol district, 19,308 hectares in Qarovulbazar district and 27,007 hectares in Gijduvan district [1, 2, 4].

The soil consists mainly of meadow-alluvial, brownish-gray and desert sandy soils. The climate is continental dry, precipitation is 110-140 mm per year, frost-free days are 246-272, useful effective temperature is 2430-2690 degrees C. Precipitation is mainly observed in winter and spring seasons.

The regional center is the city of Bukhara. The main water source for the Bukhara region is the "Amu Darya" basin, and the main waterways that meet the water needs of the irrigated lands are the I-II turn of the "Amu-Bukhara" machine canal and the "Amu-Korakul" canal.

In addition to these, "Quyi-Mozor", "Todakol" and "Shorkol" water reservoirs are additional water sources for the region. Also, mainly in the spring months of the year, the water coming from the "Zarafshan" river is also used to meet the water needs of the region [3, 5-7].

In addition, the hydrographic network of the region consists of a large number of irrigation facilities, a collector and its networks. The main reclamation networks in the province are: "Central-Bukhara", "Shimaliy", "Parallel", "Dengizkol", "Tashkuduq", "Parsankol" and "Ogitma" reservoirs.

The climate of the region is continental, and the air temperature changes sharply throughout the year. Summer is hot and dry, and winter is short and cold. About 60 percent of the annual rainfall is from January to the end of April. The wind, which is the main factor of climate in the region, blows almost all year round, the direction of the wind is mainly south and south-east. In some cases, the wind speed is 20-26 meters per second. In the conditions of the Bukhara region, the above-mentioned features of the climate, i.e. dry air and very hot summer months, very little rainfall, underground water with a lot of mineral salts near the surface of the earth slightly accelerates evaporation,

the amount of water used for transpiration increases, which in turn leads to re-salination of lands prone to salinity.

Control wells serve to measure the level of seepage water every 10 days and determine mineralization in irrigated lands. Taking into account the state of land reclamation, the mechanical composition of the soil, water permeability, and the level of provision of collector-drainage networks for an area of 100-200 hectares it is recommended to build one monitoring well. Locally, pre- and post-irrigation samples are taken to check the mineralization and level of leachate in these wells.

Creation of reclamation maps in ArcGis software. Geographical information systems (GIS) is a wide-ranging field - it is widely used in reclamation maps, architecture, hydrology, geology, geography, surveying, cartography, remote sensing, land surveying, natural resource management, ecology and other fields.

Let's get acquainted with the ArcGIS program (Fig. 1), which is a component of geoinformation systems and forms its basis.



Figure 1. ArcGIS software

The establishment of a laboratory in the activity of the regional reclamation expedition and the analyzes of the composition of soil, waste and collector waters, and underground seepage water carried out in this department are of important reclamation importance and determine the planning of the further work of the expedition.

In particular, in recent years, in order to reduce the time spent on hydrochemical laboratory analysis, analysis tools created by scientists have been put into practice, resulting in accurate and high-quality analysis. The water taken from the control wells on March 1, July 1, and September 1 every year is taken to the hydrochemical laboratory. Information on water analyzed by the hydrochemical laboratory

is submitted to the Department of Information Technologies and Implementation of New Equipment of the Reclamation Expedition Department.

The presented information is entered into the Arcmap program (Figure 2) and a map of the mineralization of seepage water during the vegetation season is prepared in the irrigated areas.

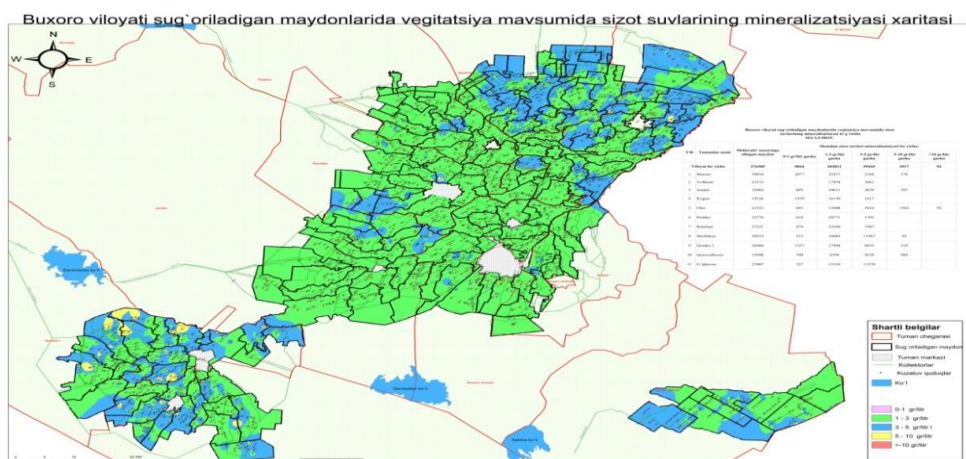


Figure 2. Bukhara Region 2022 irrigated areas map of seepage water mineralization during the vegetation season

In the irrigated areas of the Bukhara region, the mechanical structure of the soil is very complex and the soils are prone to salinity. Therefore, based on many years of experience, the characteristic period of soil salinity determination is carried out, that is, before the growing season, in the case of April 1, and after the growing season, in the case of October 1. This event, in turn, is an important factor in determining measures to improve soil fertility. For this reason:

- in the case of April 1, after the saline washing of the land, the efficiency of the salt washing event is determined, planting salt-resistant crops in the areas where its effectiveness is less after the salt washing, increasing attention to agrotechnical work and vegetation in these areas during the season, recommendations are made to land users for works related to irrigation;

- In the case of October 1, the increase in the salinity level of the soil during the growing season will be determined in the section of the contours, and recommendations on the rate of salt leaching for the next year's crop, its time and

the preparation of land for salt leaching will be developed and presented to land users. will be done.

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