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PLACEMENT OF AGRICULTURAL CROPS IN THE IRRIGATED LANDS OF THE KHOREZM REGION.

“Uzdavyerloyiha” State Scientific-Design Institute

3rd-year basic doctoral studies student

Qutlimurotov Jakhongir Norbek ugli

Abstract. The quantitative status of irrigated lands designated for agricultural and special protected use, which represent a key category of our republic's land fund, and issues of placing agricultural crops on these lands were covered. In the districts of the Khorezm region, data on crop placement across main fields during recent years were analysed. A map illustrating crop placement was created using ArcGIS software.

Keywords: agriculture, irrigated land, arable land, water resources, crop types, water use, farm, monitoring, melioration activities, soil erosion, water-saving technologies.

Introduction. Since the beginning of the 21st century, approximately 1.5 billion hectares—around 10% of the world’s 13 billion hectares of land—have been plowed and cultivated. Currently, annually about 6-7 million hectares of fertile land are lost from agriculture globally [3]. In the Central Asian region, irrigated land represents the most valuable and important part of the land resources. Official data indicate that there are 271.4 million hectares of irrigated land worldwide, with around 6.8 million hectares located in Central Asia.

The water shortage observed in recent years and the deterioration of internal irrigation networks—exacerbated by global climate change—have led to a decline in the reclamation condition of irrigated croplands and their subsequent withdrawal from use.

According to the Food and Agriculture Organization of the United Nations (FAO), the increasing degradation of land and water resources threatens global food systems and complicates the task of providing food products to the world's population, which may reach 9 billion people by 2050 [4]. Therefore, effectively

using and protecting irrigated lands, by maintaining and enhancing their productivity while preventing negative processes, is of significant scientific and practical importance.

Decree №PF-5742 dated June 17, 2019, of the President of the Republic of Uzbekistan "On measures for effective use of land and water resources in agriculture" and Resolution №505 dated August 24, 2020, of the Cabinet of Ministers "On the approval of the regulation on the order of rational placement of agricultural crops" was adopted [2].

Global experience shows that natural and climatic features are major factors that influence land allocation and crop types in different countries.

In our republic, the rational placement of agricultural crops takes into account the following key conditions:

- 1) natural and climatic conditions of the region;
- 2) provision of the area with necessary resources;
- 3) domestic and foreign market demand for cultivated products;
- 4) rational placement of agricultural crops, including:
 - 4.1) focusing on specialization in the production of one type of agricultural product in the regions;
 - 4.2) placement of agricultural crops which require little water, are drought-resistant and have water-accumulating properties in water-scarce areas;
 - 4.3) forecasting the volume of gross agricultural production based on crop types.

Current issues include the effective use of irrigated cropland and organization of rational placement of crops, ensuring transparency and wide implementation of modern innovative and resource-saving technologies aimed at improving the ecological condition of the land.

Resolution of the President of the Republic of Uzbekistan №PQ-257 dated August 2, 2023, "On measures to introduce advanced digital technologies in agriculture field" was adopted [1]. According to this resolution, from September 1,

2023, the information system "Agroplatforma" was introduced as part of the unique integrated platform "Digital Agriculture".

From October 1, 2023, a unique database of agricultural land users has been established within the "Agroplatforma" information system. This platform digitizes the preferential credit allocation processes for the cultivation of cotton, grains, fruits, and vegetables, and offers services to agricultural producers based on the transparency principle. For this purpose, "CropAgro" information system was introduced to receive proposals from land users, electronic placement of agricultural crops, agreement, automatic formation of information and reports.

As of January 1, 2023, in the Republic of Uzbekistan, total agricultural land is 26,232.2 thousand hectares, of which 4,220,000 hectares are irrigated lands. [5]. In the Khorezm region, which is the focus of this study, there are 205.3 thousand hectares of irrigated land.

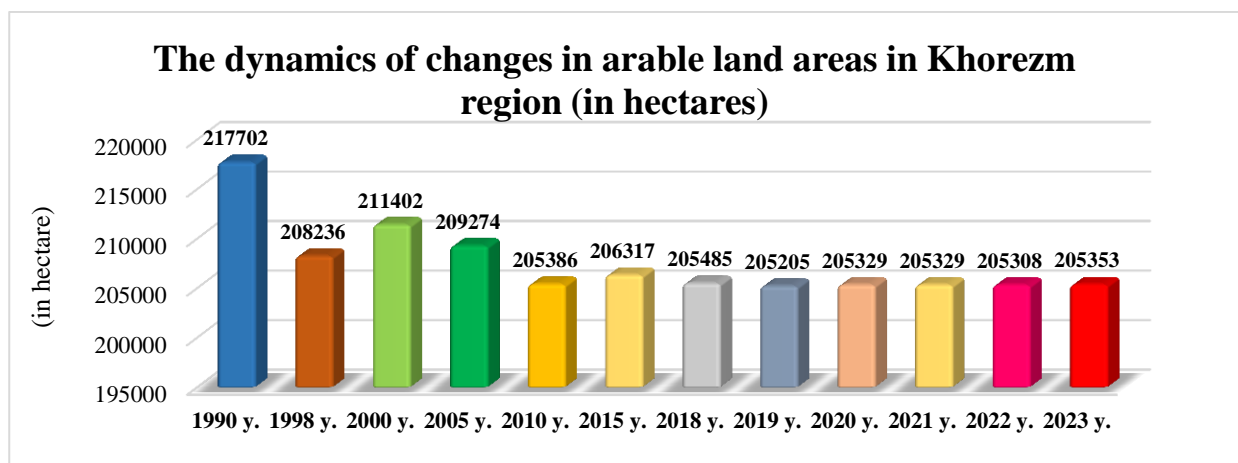


Figure 1. The dynamics of changes in arable land areas in Khorezm region (in hectares).

The area of arable land in the Khorezm region was 217,702 hectares in 1990. By 2023, this area has decreased to 205,353 hectares, reflecting a reduction of 12,349 hectares.

Currently, most of the irrigated land is managed by farms. Therefore, farms should use land resources efficiently, clean and repair reclamation networks within the farm, comply with the conditions for maintaining the plot of land, fully comply with agrotechnical requirements in the cultivation of agricultural products and carry out reclamation measures to prevent soil erosion.

**Placement of agricultural crops in the main fields for the harvest of 2020-2021-
2022-2023-2024 in the districts of Khorezm region.**

Table №1.

№	Tumanlar nomi	Bug'doy ekish rejasi					Paxta ekish rejasi					Sholi ekish rejasi				
		2020 yil	2021 yil	2022 yil	2023 yil	2024 yil	2020 yil	2021 yil	2022 yil	2023 yil	2024 yil	2020 yil	2021 yil	2022 yil	2023 yil	2024 yil
1	Bog'ot	3340	3000	2500	2500	3000	6435	6775	7275	7275	6500	880	600	800	400	800
2	Gurlan	3760	4000	4200	4500	3800	11259	11600	11400	11400	11400	2420	1000	1400	1000	3000
3	Qo'shko'pir	3455	3700	3700	4000	3700	10181	9600	9600	9600	10000	1250	450	600	300	450
4	Urganch	3750	3000	3100	3100	3500	8385	8900	8800	8800	8900	1170	600	900	500	1000
5	Xazorasp	3845	3000	3000	3000	2600	8243	5500	5500	5500	5800	2460	400	700	500	820
6	Xonqa	3900	3000	3100	2100	3500	10065	11000	10900	10900	9900	1930	1000	1000	400	1600
7	Xiva	2530	3000	3000	3000	2650	5688	5000	5000	5000	5200	770	300	600	400	350
8	Shovot	3300	4000	4000	4200	3700	8975	8100	8100	8100	8600	1230	430	800	400	680
9	Yangiariq	1800	2000	2000	2000	1900	4958	4700	4700	4700	5000	780	300	600	400	360
10	Yangibozor	3520	3000	3100	3100	3300	8568	8900	8800	8800	8600	1110	510	900	500	546
11	Tuproqqal'a		1500	1500	1700	1500		2682	2682	2682	2800		500	700	500	1954
12	Xiva sh.					50					57					
	Viloyat bo'yicha jami:	33200	33200	33200	33200	33200	82757	82757	82757	82757	82757	14000	6090	9000	5300	11560

Tumanlar nomi - District Name

Bug'doy ekish rejasi – Wheat planting plan

Paxta ekish rejasi - Cotton planting plan

Sholi ekish rejasi – Rice planting plan

Bog'ot - Bogot

Gurlan - Gurlan

Qo'shko'pir- Koshkopir

Urganch- Urganch

Xazorasp- Khazorasp

Xonqa- Khonqa

Xiva-Khiva

Shovot-Shovot

Yangiariq-Yangiariq

Yangibozor- Yangibozor

Tuproqqal'a- Tuproqqal'a

Xiv shahri -Khiva city

Viloyat bo'yicha jami: Total by region

Table 1. The analysis made by the author is based on information from the Ministry of Agriculture.

The dynamics of changes in the land area of agricultural crops planted in the main areas of Khorezm region according to the above-mentioned table show that the area for wheat and cotton planting has remained unchanged. However, the area designated for rice cultivation decreased from 14,000 hectares in 2020 to 11,560 hectares by 2024, a reduction of 2,440 hectares. This decline highlights the critical dependence of agricultural production on the Amudarya River, the region's sole water source. Therefore, one of the most urgent tasks of today is to implement practical measures related to the introduction of water-saving technologies in irrigation to further increase the efficiency of agriculture.

The agricultural crops planted in the main areas of our republic are as follows: cotton, wheat, rice, vegetables, melon crops, potatoes, perennial fruit trees, forage plants with roots and fodder, annual grasses, alfalfa, corn, tobacco.

In the M. Rakhimov array, Koshkopir district, Khorezm region, a 1:10,000 scale map of the electronic database of information on the types of crops and areas of agricultural land users placed in the section of the contours was created. This map allows for continuous monitoring of crop cultivation and conditions through geoinformation systems, remote sensing, and space and spectral imaging.

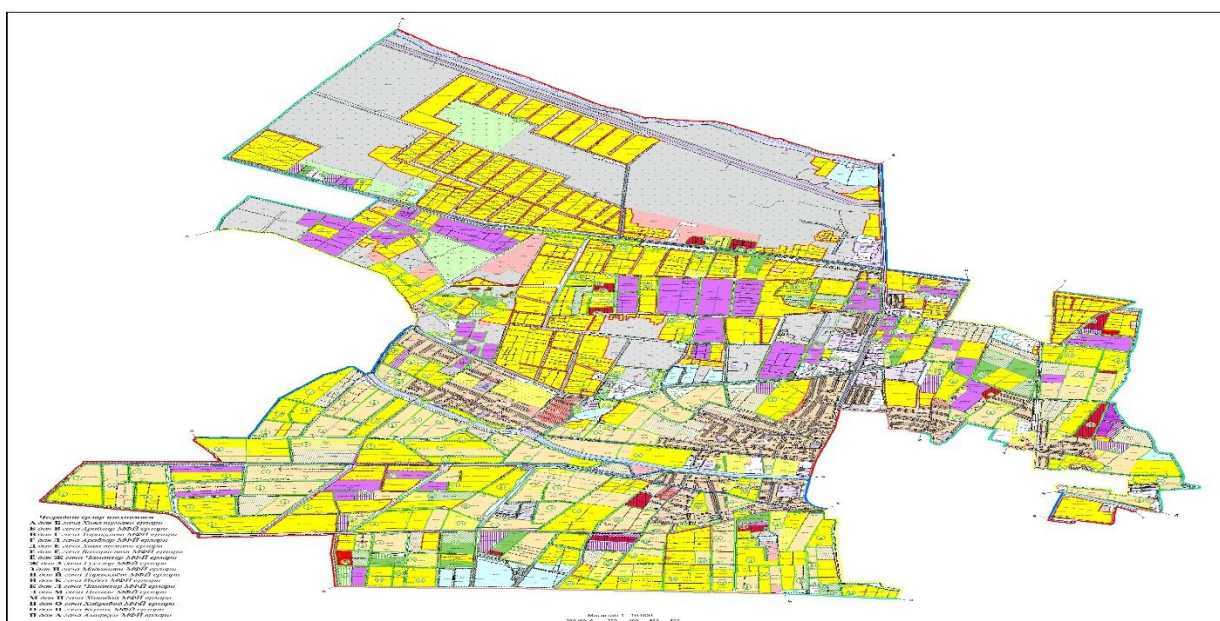


Figure 2. Array named after M. Rakhimov, Koshkopir district, Khorezm region
Map of the placement of agricultural crops on irrigated cropland for the 2024 harvest.

In the crop placement, the suitability of agricultural land users' proposals for independent placement of crops in accordance with their specialization, contour integrity assurance by crop types, the level of water supply, the yield obtained in recent years, and compatibility with predecessor crop types should be analyzed. Research highlights the need to implement a crop rotation system widely on irrigated croplands of farms. Such a system optimizes productivity and enhances soil fertility by facilitating a rational exchange of crops over time and space, science-based technologies of their cultivation, and interrelationship with the applied fertilizing system.

Conclusion: The reforms carried out in the agricultural sector of our republic and their implementation, in particular, special attention to the principles of effective use of land resources, are demonstrating their positive results. Efficient management of irrigated lands—through preserving, restoring, and enhancing soil fertility, protecting these lands, and ensuring their purposeful use—is a pressing task.

In recent years, the Ministry of Agriculture of the Republic of Uzbekistan has developed a database for agricultural crop placement within its online geoportal. This advancement enables the implementation of scientifically based crop rotation systems, aids in maintaining and restoring soil fertility, and supports the management of interactions between nature and society.

The Khorezm region is characterized by unique soil and climate conditions. The very low winter temperatures in this region significantly impact the variety of crops that can be grown. Therefore, it is essential to select salt-resistant, cold-tolerant, and heat-resistant varieties suited to these conditions. Today, the control of the placement of crops by varieties, complete planting of crop types by contours, remote sensing in monitoring the timely implementation of specified agrotechnical measures, the use of space and spectral images and other innovative technologies are required.

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