ISSN: 2181-8150 Vol.118, №3 (2026)

AGRO KIMYO HIMOYA VA O‘SIMLIKLAR KARANTINI

10.63241/AKHVvol118y2026iss3m62

THE CURRENT STATE OF DEGRADATION OF IRRIGATED LANDS IN OUR REPUBLIC

Mamayusupov Jaloliddin Urozali ugli
Doctoral student of “TIIAME” NRU,
Teacher of Tashkent State Agrarian University
e-mail:jaloliddinmamayusupov6@gmail.com
Ashirov Yusufboy Rakhimberganovich
Associate Professor, Department of Agrochemistry and Soil Science,
Tashkent State Agrarian University
e-mail: ashirovyusuf39@gmail.com

Annotatsiya. Ushbu tadqiqot degradatsiyaga uchragan sug‘oriladigan yerlarning hozirgi holatini tahlil qiladi. Tadqiqot natijalaridan ma’lum bo‘lishicha, tuproq unumdorligining pasayishi, sho‘rlanish, suv tanqisligi va noto‘g‘ri boshqaruv kabi omillar yerlarning qishloq xo‘jaligida foydalanish salohiyatini keskin kamaytiradi. Zamonaviy texnologiyalar va agrotexnik choralar asosida degradatsiyani bartaraf etish yo‘llari taklif etilgan. Shu bilan bir qatorda, melioratsiya ishlarini takomillashtirish hamda elektron xaritalarni yuritish bo‘yicha tavsiyalar ishlab chiqilgan.

Kalit so‘zlar: degradatsiya, tuproq eroziyasi, (GIS), sug‘oriladigan yerlar, tuproq sho‘rlanishi, tuproq unumdorligi.

Аннотация. В данном исследовании проводится анализ современного состояния деградированных орошаемых земель. По результатам исследования установлено, что такие факторы, как снижение плодородия почвы, засоление, дефицит воды и неправильное управление, значительно снижают потенциал использования земель в сельском хозяйстве. Предложены пути устранения деградации на основе современных технологий и агротехнических мер. Кроме того, разработаны рекомендации по совершенствованию мелиоративных работ и ведению электронных карт.

Ключевые слова: деградация, эрозия почвы, геоинформационные системы (ГИС), орошаемые земли, засоление почвы, плодородие почвы.

Abstract. This study analyzes the current state of degraded irrigated lands. The results show that factors such as the decline in soil fertility, salinization, water scarcity, and improper management significantly reduce the agricultural potential of these lands. The study proposes solutions to eliminate degradation through modern technologies and agrotechnical measures. In addition, recommendations have been developed to improve reclamation works and maintain electronic maps.

Keywords: degradation, soil erosion, geoinformation systems (GIS), irrigated lands, soil salinization, soil fertility.

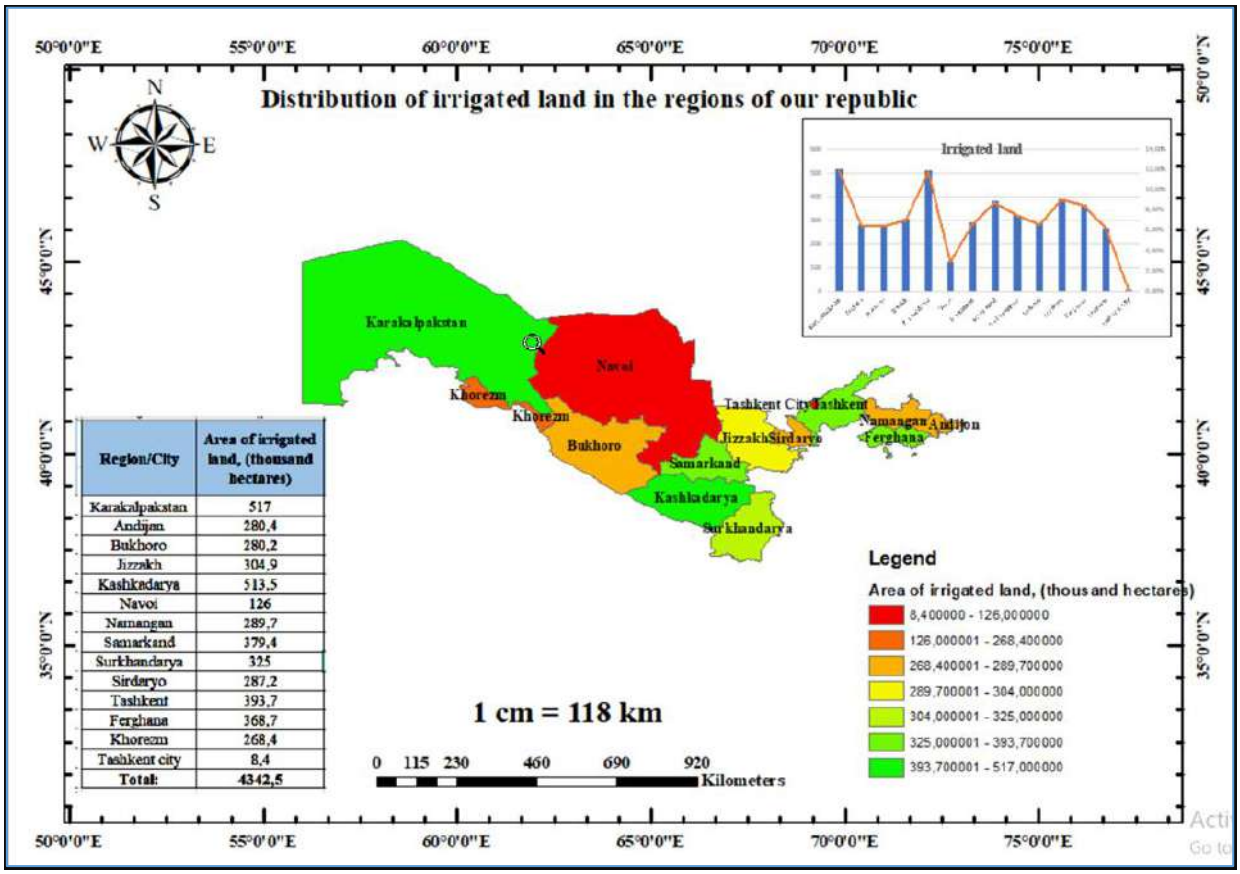
INTRODUCTION

After gaining independence and establishing a legal state, the Republic of Uzbekistan created and improved the foundations for rational use of land, improvement of its reclamation condition and protection in regulating land relations on its territory. That is, a number of laws have been adopted in the Republic of Uzbekistan in this regard, including the Law "On the State Land Cadastre", "On Farming",Land Code of the Republic of Uzbekistanand "Laws on agricultural holdings" and other laws were developed.

The Cadastral Agency under the National Committee of the Republic of Uzbekistan for Urbanization and Sustainable Development of the Housing Market has prepared a map of irrigated land in the Republic of Uzbekistan by region based on the data from the National Report as of January 1. As you can see, Figure 1 shows the area of irrigated land in the Republic of Uzbekistan by region and the total land area as a percentage.

Currently, the degradation of irrigated lands in the Republic of Uzbekistan is a serious concern. According to various sources, this problem is negatively affecting the efficiency of agriculture in our country.

As a result of soil assessment and soil science studies conducted in recent years, approximately 53.2 percent of irrigated lands are saline to varying degrees, and 10.8 percent of the 5.7 million hectares of pastures where geobotanical studies were conducted are degraded to varying degrees. These circumstances indicate the need to regulate the increase and protection of soil fertility in our country with a separate law.



Region/City	Area of irrigated land, (thousand hectares)
Karakalpakstan	517
Andijan	280,4
Bukhoro	280,2
Jizzakh	304,9
Kashkadarya	513,5
Navoi	126
Namangan	289,7
Samarkand	379,4
Surkhandarya	325
Sirdaryo	287,2
Tashkent	393,7
Ferghana	368,7
Khorezm	268,4
Tashkent city	8,4
Total:	4342,5

Figure 1. Map of irrigated lands in the regions of the Republic of Uzbekistan.

METHOD

Currently, the condition of irrigated lands in the Republic of Uzbekistan is constantly changing, mainly due to soil salinization and increased desertification. Therefore, in order to study the condition of the lands and at the same time control the proper use of the lands, monitoring and remote sensing of agricultural lands are carried out from year to year.

Nowadays, many scientists are studying the state of the earth, for example, depending on the factors that influence the occurrence or deterioration of soil erosion, it can be divided into many types. For example, water erosion, wind erosion, desertification, salinization, etc. Depending on the intensity of the occurrence and development of erosion processes, they are divided into two types, namely normal and accelerated forms.

Salinity is a major problem in irrigated agricultural areas of Uzbekistan. According to reports, up to 53 percent of the country's irrigated land has varying degrees of soil salinity, which leads to reduced or no yields from annual crops.

Geoinformation technologies are widely used in various fields today. In agriculture, they are applied to support rapid decision-making, predict, and mitigate potential negative impacts. The data presented in the National Report of the Cadastre Agency were analyzed using GIS-based software.

RESULT

Uzbekistan has a long tradition of studying and solving the problem of land degradation, relying on the expertise and research of its national scientific institutions and agricultural departments. The fact that Uzbekistan's agriculture, which has been in decline throughout the country for the past few decades, has fallen into a very deplorable state is evidenced by the annual decrease in food production from agricultural land and the increase in prices.

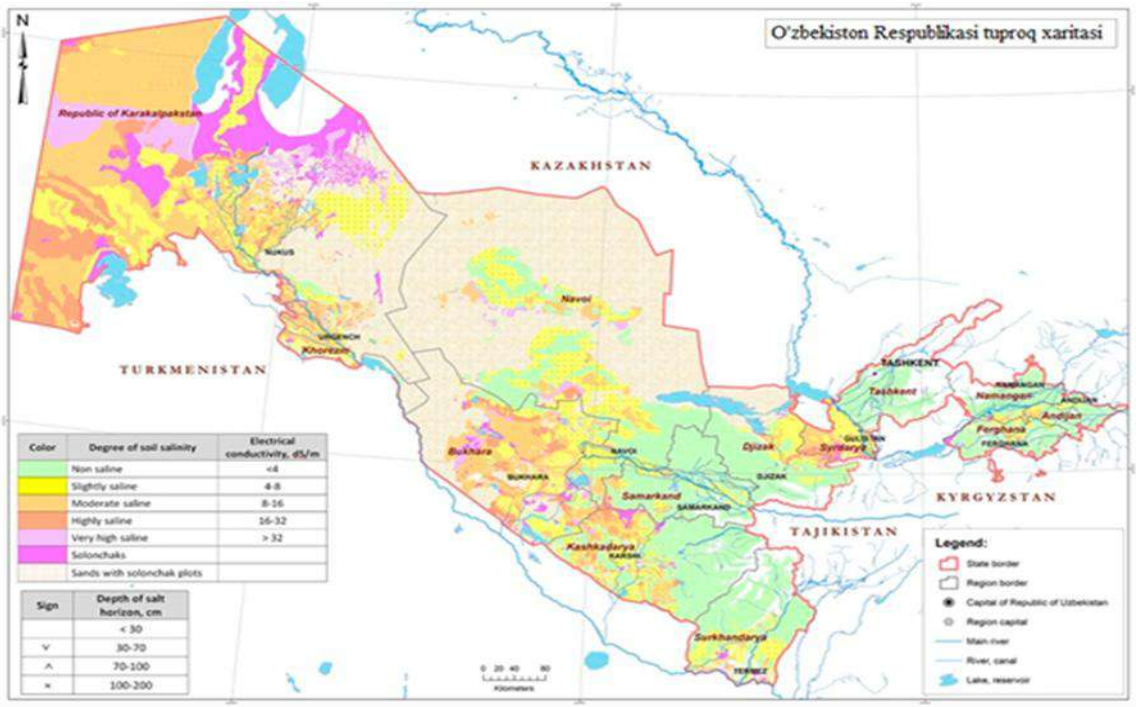


Figure 2. Soil salinity map of the Republic of Uzbekistan.[2]

In the picture you see above, many scientists and teachers are very important, including A.D. Arakelov, V.K. Ankudovich, N.V. Bogdanovich, M. Bakhodirov, N.A. Buskov, I.A. Vasiliev, V.N. Valiyev, F.A. Fedyanov, G.V. Verezub, M.N. Voskresensky, A.S. Genusov, N.G. Gnid, B.V. Gorbunov, N.A. Dimo, V.I. Yesin, A.Z. Zaychikov, N.I. Zimina, F.I. Ivanov, A.I. Kalashnikov, I.S. Kolyuzhny, T. Karimov, A.V. Kim, N.V. Kimberg, K.M. Klavdiyenko, G,M, Konobeeva, G.S. Korsak, Ye.P. Kochubey, A.P. Livanov, V.M. Maslennikov, B.D. Mikhailov, N.T. Muravyova, V.L. Mukhanova, M.A. Orlov, G.I. Olovyanishnikova, M.A. Pankov, G.P. Popov, S.N. Pustovoyt, A.N. Rozanov, V.D. Ryabov, AASavenko, V.F. Safonov, D.M. Sekirin, N.P. Serebryanikov, R.R.Senyushin, V.M.Stes, S.P.Suchkov, D.I.Tarasov, A.M.Uvkin, Z.G.Fedotova, I.N.Felitsiant A.F.Shelayeva, V.R.Shreder and S.A.Shuvalov developed this map based on the data collected, and many other scientists also contributed to this map, as you can see A.Z.Genusov, B.V. Gorbunov and N.V. Kimbergs.

[2]Soil salinity map of the Republic of Uzbekistan.

The map was created on a scale of 1:1500000. The Institute of Soil Science of the Uzbek Academy of Agricultural Sciences went down in history as the organization that created it. The map was published in 1500 copies by the Tashkent Card Factory.

DISCUSSION

The Republic of Uzbekistan's soil salinity mapping program used a combination of field observations, laboratory analyses, and aerial photographs to create detailed soil maps. These maps were used for land use and agricultural planning purposes, and many are still in use today.

A comprehensive framework for monitoring, assessing and restoring degraded lands has been created. For example, Based on the Presidential Decree of the Republic of Uzbekistan No. RP-277 dated June 10, 2022, 5 annexes were created to improve the methodology and accounting for the restoration and prevention of degraded or on the verge of degradation of agricultural lands.

Resolution of the President of the Republic of Uzbekistan dated June 10, 2022 RP-277 Based on the decision, the table in Appendix 3.2 provides a forecast table for reducing soil salinity in 2022-2025.[3]

Table 1.

Indicator of saline lands at the regional level of the Republic of Uzbekistan.

No.	Regions	Existing saline area, Thousands	From this, the reduction of the salted area:			
			2022	2023	2024	2025
1.	Karakalpakstan republic	353.3	349.7	342.8	339.4	336
2.	Andijan region	6.7	6.6	6.5	6.4	6.3
3.	Bukhara region	231.1	228.8	224.2	222	219.8
4.	Jizzakh region	225.8	223.6	219.1	216.9	214.7
5.	Kashkadarya region	229	226.8	222.2	220	217.8
6.	Navoi region	100.2	99.2	97.2	96.2	95.3
7.	Namangan region	24.2	24	23.5	23.3	23
8.	Samarkand region	6.3	6.2	6	6	6
9.	Surkhandarya region	93.8	92.8	91	90.1	89.2
10.	Sirdarya region	272.5	269.8	264.4	261.8	259.1
11.	Tashkent region	10	9.9	9.7	9.6	9.5
12.	Fergana region	91	90.1	88.3	87.4	86.6
13.	Khorezm region	258.4	255.8	250.7	248.2	245.7
Total:		**1902.30**	**1883.30**	**1845.70**	**1827.30**	**1809.0**

This table shows the forecast indicators for reducing soil salinity for 2022-2025, as provided in Appendix 3.2 of the Resolution of the President of the Republic of Uzbekistan No. RP-277 dated June 10, 2022.

[3]Resolution of the President of the Republic of Uzbekistan No. PQ-277 dated June 10, 2022.

In addition, according to the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 50 dated February 2, 2023, the procedure for developing monitoring, evaluation, and reporting forms on measures to combat land degradation and for publishing their results was established.

The main causes of land degradation are: loss of vegetation cover, including deforestation, overgrazing of pastures, and conversion of agricultural land.[4]

CONCLUSION

As we all know, the degradation of irrigated lands in our region is a pressing problem for agriculture, with wide-ranging economic, ecological and social consequences. Salinity, erosion, water resource limitations and mismanagement are reducing land productivity, threatening the well-being of the population and food security. Of course, there are many ways to solve these problems, for example, we need to regularly monitor the condition of the land every season, conduct remote sensing and inventory it using space imagery. After receiving this information, we need to go to the place itself and compare it with the data from the space imagery we have obtained, study the differences and eliminate the shortcomings.

To solve this problem, a comprehensive approach is needed to modernize reclamation systems, widely introduce water-saving technologies, strengthen environmental management, and protect the soil. Also, it is important to monitor the state of the earth with the help of modern technologies, for example, GIS systems and remote sensing methods.

During the study, a regional map of irrigated lands and saline lands in our Republic was prepared. The purpose of this work is to keep an account of eroded lands and create a database of their data, and at the same time, based on the information obtained, carry out work on the restoration of eroded lands. This is of great importance not only for the development of the regional economy, but also for improving the living standards of the population. The issue of combating degradation processes should be in the center of constant attention of the state and society.

REFERENCES

1. Based on the Presidential Decree of the Republic of Uzbekistan No. RP-277 dated June 10, 2022. "On measures to create an effective system to combat land degradation".

2. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 50 dated February 2, 2023 "On approval of the Regulation on the procedure for developing monitoring, evaluation and reporting forms for measures to combat land degradation and publishing their results". T.: Uzbekistan, 2023– p. 29.

3. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 169 dated April 29, 2023 "On measures to recultivate degraded lands, preserve the fertile soil layer and organize its rational use". T.: Uzbekistan, 2023 – p. 21.

[4] Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 50 dated February 2, 2023.

4. National report data on land resources of the State Cadastral Chamber of the Cadastre Agency under the Ministry of Economy and Finance of the Republic of Uzbekistan. As of January 1, 2024.

5. GIS Technology Center. “Monitoring and Analysis in Irrigated Lands” Tashkent, 2021.

6. Ministry of Water Resources of the Republic of Uzbekistan. “Irrigated State program for improving the land reclamation condition.” Tashkent, 2021.

7. Institute of Water Resources. “Degree of Degradation of Irrigated Lands and Ecological Consequences” Tashkent, 2020.