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**MELIORATIVE MONITORING ORGANIZING MELIORATIVE LAND
MONITORING ON THE BASE OF GEOINFORMATION SYSTEM**

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ABSTRACT

The article presents the role and importance of modern digital technologies in the effective use of agricultural land and monitoring of agricultural land reclamation, the correct organization of land reclamation and crop control based on Geoinformation System data, the development of necessary, rapid measures based on the collected data, and scientifically based analytical materials, conclusions, and recommendations by researchers who have conducted scientific research in this area.

Keywords: monitoring, reclamation lands, ArcGIS program, "R-GIS" portal geodatabase, remote sensing, salinity, leachate.

INTRODUCTION:

In the world, work is being carried out to monitor agricultural lands and enter land information into geodatabases based on innovative methods, obtain land information using online platforms, and integrate field research into geodatabases. In this regard, special attention is paid to scientific research aimed at obtaining timely information about the land and forming a single geodatabase on land and land users.

In our republic, systematic measures are being implemented in connection with the rational and effective use of land resources, the proper organization of land formation and land monitoring, in particular, the digitalization of all information collected on the basis of land monitoring, the development of the agricultural land control system, and specific results are being achieved on this basis. The Decree of the President of the Republic of Uzbekistan No. PF-60 dated January 28, 2022 "On the Development Strategy of the New Uzbekistan for 2022-2026" sets out important tasks for "...developing an electronic database for inventory and monitoring their implementation." In implementing these tasks, it is important to conduct scientific research on the formation of a geodatabase through monitoring agricultural lands and land accounting using modern methods.

This research work will to a certain extent serve to implement the tasks set out in the Resolution of the President of the Republic of Uzbekistan No. PQ-5006 dated February 24, 2021 "On additional measures to improve the system of use and protection of agricultural lands", the Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 22 dated January 14, 2022 "On approval of regulatory legal acts regulating monitoring work on agricultural lands, land protection and land development activities", and other regulatory legal acts related to this activity.

LITERATURE ANALYSIS AND METHODOLOGY.

Many scientists in our republic have been at the center of studying socio-economic issues in the national economy and the rational use of land and water resources in agriculture using modern methods. Scientific research on monitoring agricultural lands based on remote sensing data has been carried out by R.A. Turaev, E.Yu. Safarov, M.I. Ruzmetov, O.U. Davronov, R.N.

Sharopov, Zh.S. Usmonov, B.Yu. Makhsudov, H.Kh. Tashbaeva, S.S. Ibrokhimov and others using modern digitized methods.

Through the Land Information System portal, created in 2021 by R.A. Turaev, PhD, the borders of administrative territorial units - regions, districts, massifs, neighborhoods and the borders of agricultural producers, as well as the contours of land plots and land areas in our Republic, are digitized, changes in them are introduced and improved in a timely manner. This portal ensures the identification of the activities of land users and the online updating of newly established land use boundaries and complete information about them, the display of the results of the agricultural crop placement plan and its implementation monitoring on the "Land Information System" portal. (R.A. Turaev. Improving the methodology for monitoring irrigated lands: PhD ...dissertation.-Tashkent, 2021.-167 p.)

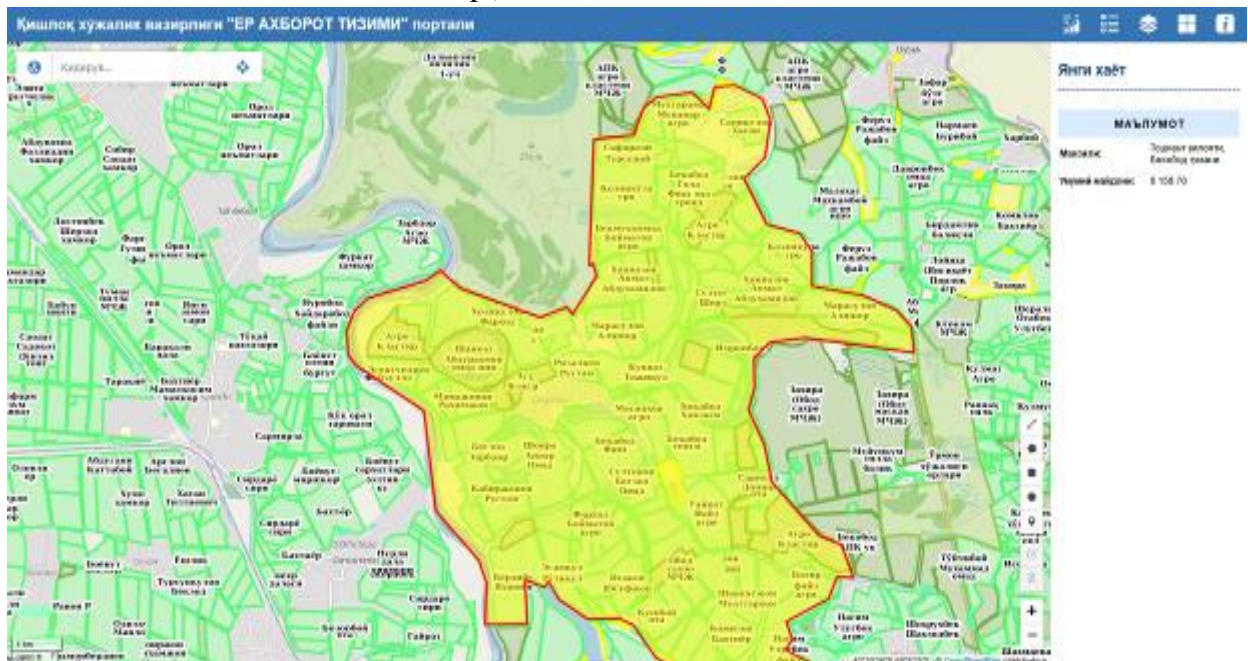


Figure 1. View of the "Land Information System" portal.

Developed by PhD S.S.Ibrokhimov, M.T.Abdullaeva. The “R-GIS” portal was based on the high human factor in monitoring agricultural crops, in this regard, the use of the sequence mechanism of the following: agricultural crop placement plan > ArcGIS program > traditional monitoring > Field Map mobile application > space image (Sentinel 2 NDVI) > ArcGIS program > “R-GIS” portal allowed to provide complex information to land users and provide interactive services to agricultural specialists through rapid and effective data collection and storage for the correct placement of agricultural crops.

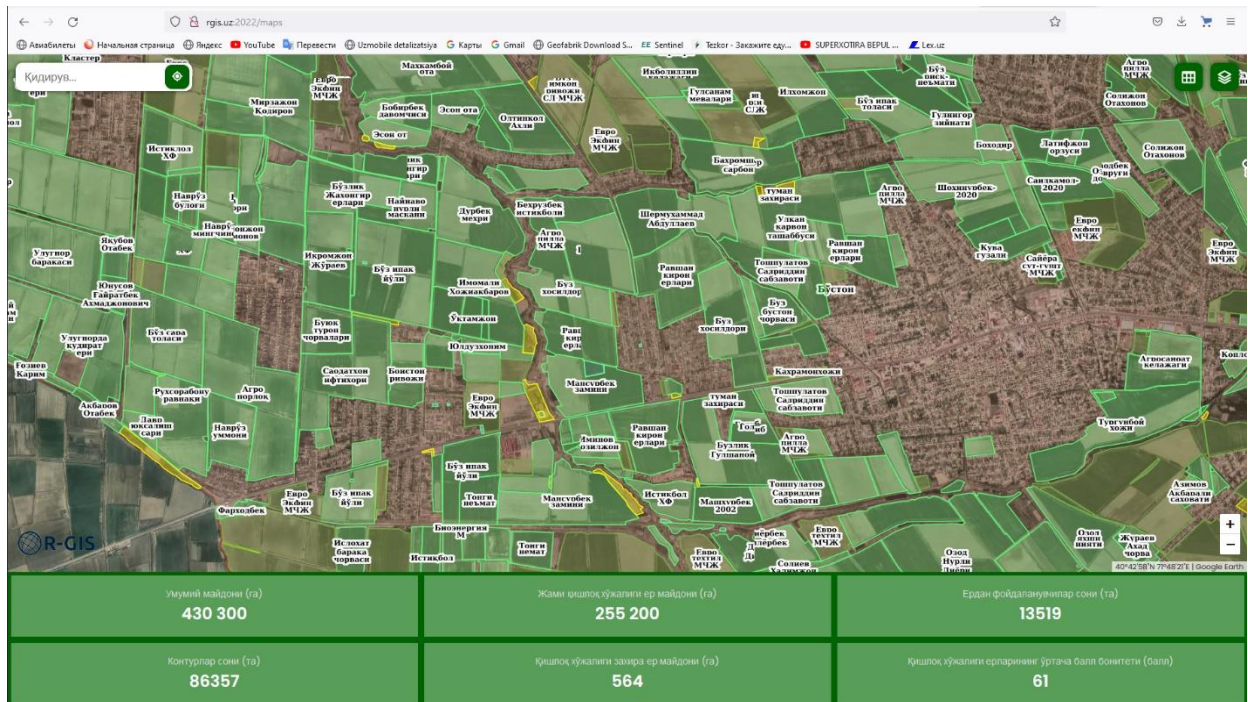


Figure 2. Working window of "R-GIS" (Real Geoinformation system) portal.

Research results and their discussion. The portal "Land Reclamation Monitoring Geoinformation System" developed by us currently contains electronic data on the borders of the republic and regions, as well as the borders of districts and cities. This portal contains real-time information and a description of the layers of all administrative-territorial units of the republic. The portal data is regularly updated. (Figure 3).

Specifically, data (Figure 3):

- Regions;
- Districts;
- Total undeveloped land area;
- Lands that will be restored as a result of improving their condition;
- Lands in poor condition;
- Lands whose reclamation condition has deteriorated as a result of the rise of underground seepage waters;
- Lands with a high level of salinity and secondary saline lands;
- Lands with insufficient water supply and irrigation facilities that have become unusable;
- Lands that have failed due to non-operation of melioration systems;
- Lands with very rocky and gypsum layers;
- Due to the rise of river waters, lands along the coast were washed away by agricultural land;
- Lands where spring waters have dried up and are not being used;
- Lands that have become unusable due to non-planting of agricultural crops;
- Lands that have become gray without use;
- Lands where agricultural crops are grown;
- Lands that have been chronically unused since 2000.

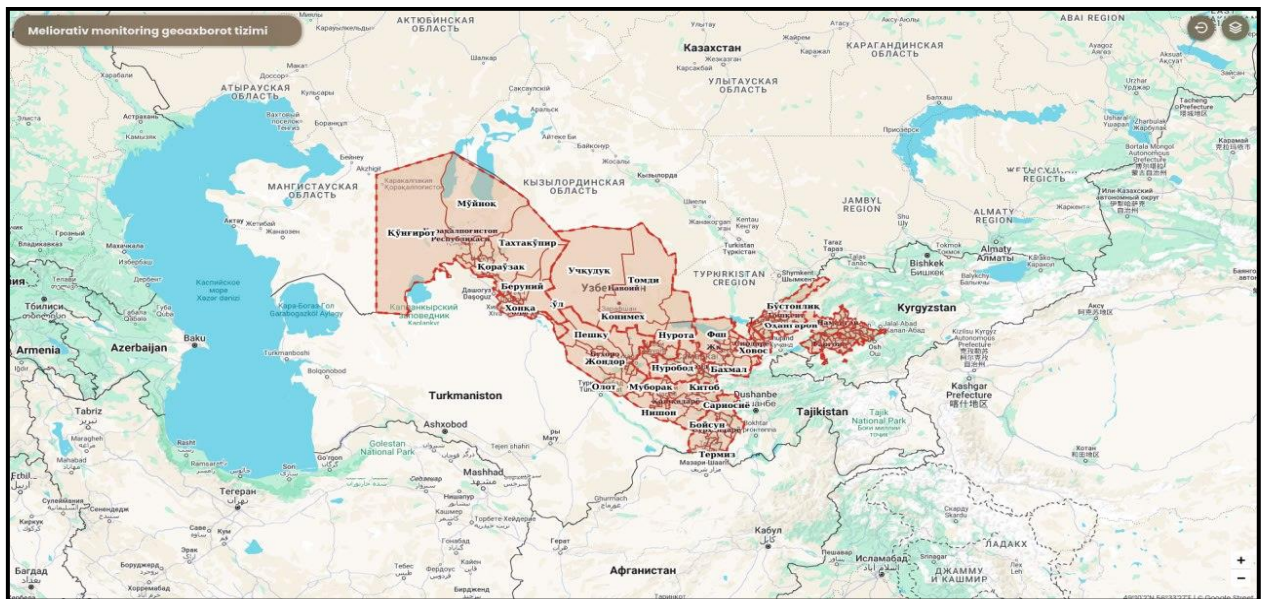


Figure 3. A view of the main page of the melioration monitoring geoinformation system.

The developed geoportal side window displays information on the selected district. For example, the data on the land with poor reclamation status in the Konimekh district of the Navoi region is presented (Fig. 4). Including:

- total identified bad lands (ha);
- Lands whose amelioration condition has worsened as a result of the rise of underground seepage waters (ha);
- land(s) with a high level of salinity;
- land(s) where water supply is insufficient and irrigation facilities have become unusable;
- a general information window is created in the section of land user types (Fig. 4).

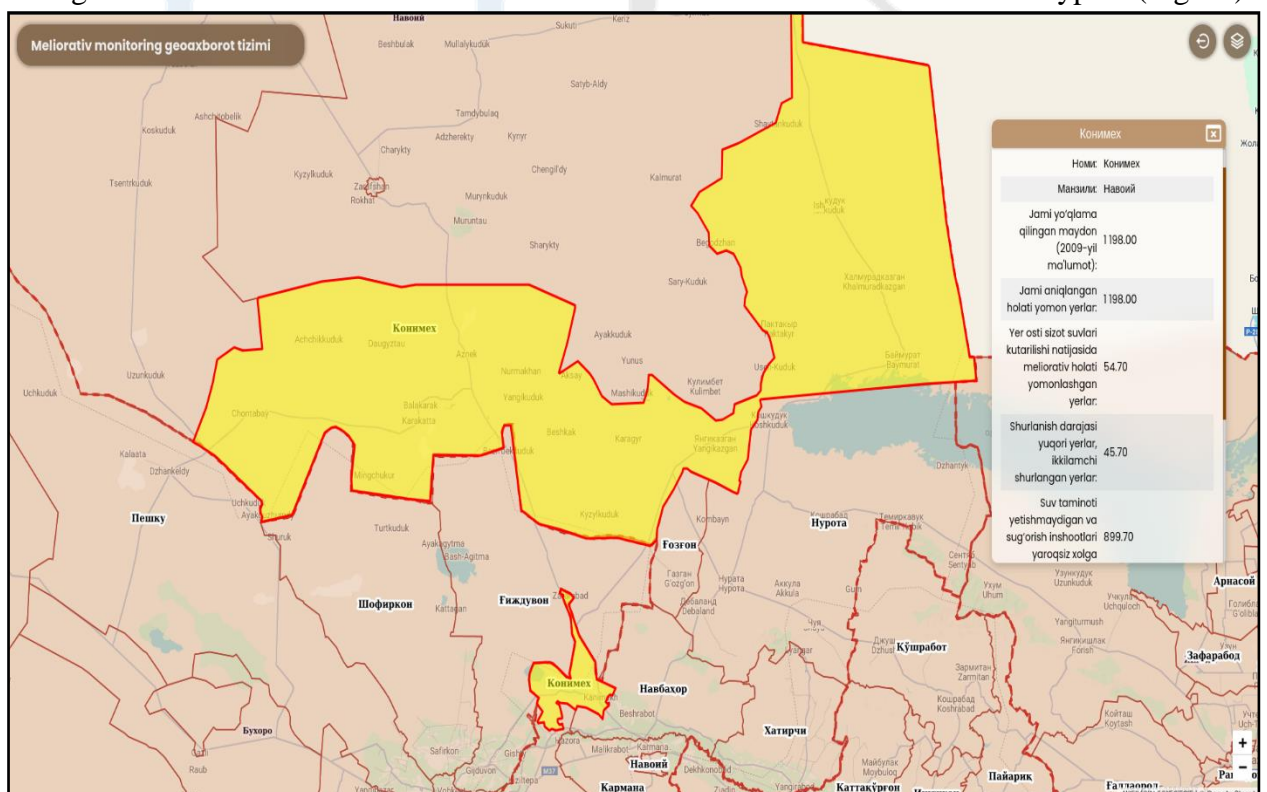


Figure 4. Reclamation condition of agricultural lands of Konimekh district, Navoi region.

In the same way, the next layer of the program will reflect the currently approved information in the section of the relevant massif and MFY (OFY, QFY) regions of the district (Fig. 5).

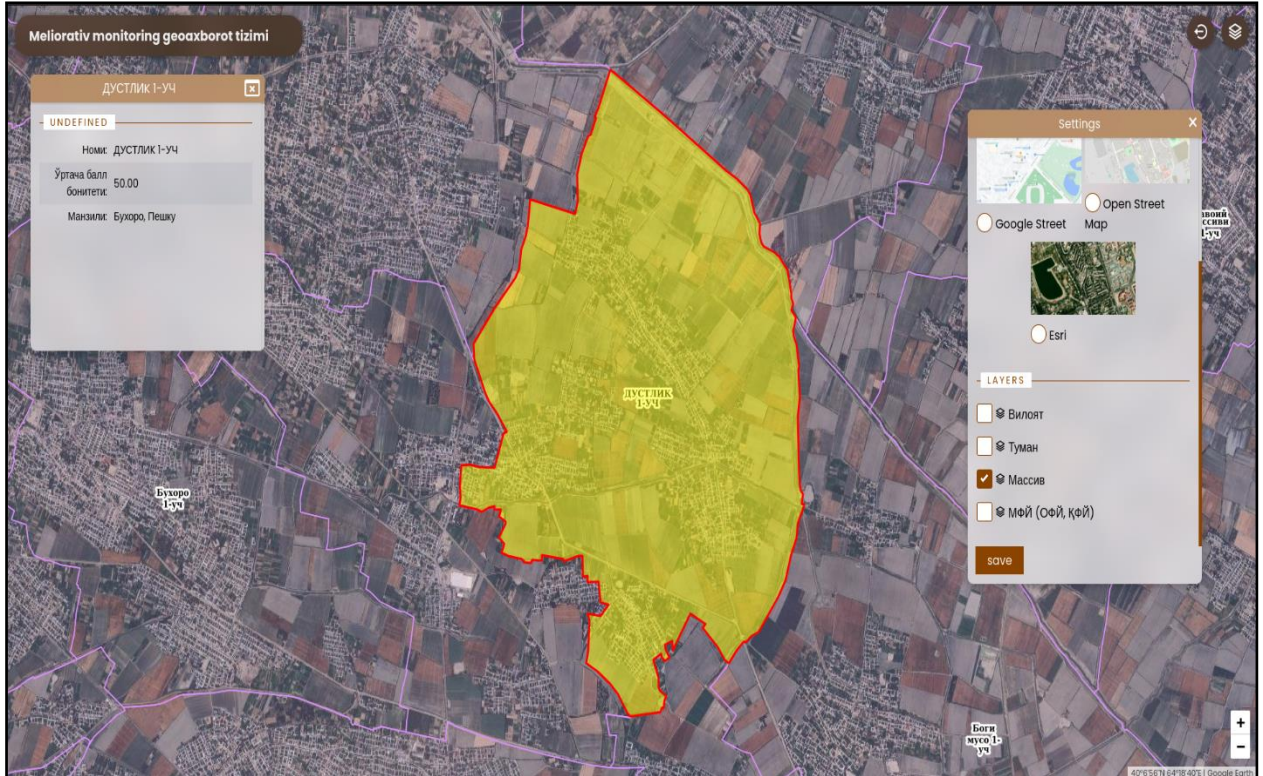


Figure 5. Reclamation status of agricultural land areas of "Dostlik" massif, Peshku district, Bukhara region.

The program has the ability to activate the required layer by accessing the layer panel from the main menu (Figure 3.3.7).

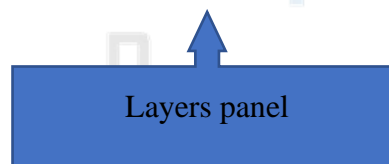


Figure 6. Layers panel access

window.

After selecting the necessary region, district, massif, and municipal data from the program, it is possible to automatically download tabular data from the system in Excel format.

Farg'ona viloyatidagi sug'oriladigan yerlarning meliorativ xolatini yo'qlama (inventarizatsiya)dan o'tkazish ishlarini yakuni to'g'risida Ma'lumot																
T/r	Viloyatlar nomi	Jami yo'qlama qilingan maydon	Shu jumladan													
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					Yer osti siazot suvlari kutarilishi natijasida meliorativ holati yomonlashgan yerlar	Sharlansh darajasi yuqori yerlar, ikkilamchi shirlangan yerlar	Suv taminoti yetishmaydigan va sug'orish inshootlari yaroqsiz xolga kelgan yerlar	Meliorativ tizimlari ishlatilmasligi oqibatida ishlab chiqqan yerlar	Uta tashloq va gips qatlami mavjud yerlar	Daryo suvlarining ko'tarilishi oqibatida qirg'oq buyi ekin yerlari yuvilib ketgan yerlar	Buloq suvlari qurib qolib foydalanilmayotgan yerlar	Qishloq xo'jalik ekinlari ekilmasligi oqibatida yaroqsiz xolatga tushgan yerlar	Foydalanilmasdan hozir xolatiga aylangan yerlar	Qishloq xo'jalik ekinlari ekilib ketmayotgan yerlar	Surumkaltir ravishda 2000-yildan buyon foydalanilmayotgan yerlar	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
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Figure 7. Access window to the panel of layers of reclamation of agricultural land.

The main page of the reclamation monitoring geoinformation system has a Settings section, where you can change the working window to one of the following: Fon, Google Earth, Google Street, Open Street Map, and Esri open raster maps (Figure 8).



Figure 8. One of the OpenStreetMap, Google Earth, Google Street, and Esri open maps located on a map layer

Here:

OpenStreetMap is an online project that allows you to create and use free and open maps of the world. OSM users can add their own data to the maps, which helps to keep the maps constantly updated. OpenStreetMap maps are freely available to anyone and are used in many

different areas, such as navigation, geolocation services, geographic analysis and other applications.

Google Earth is a free software that allows you to work with 3D maps and images of the world. Google Earth allows users to virtually explore the Earth, identify geographical locations, or travel to different places. The program displays the surface of the Earth, cities, mountains, rivers and other geographical features using 3D models.

Conclusions, suggestions and recommendations. The creation of the “Land reclamation monitoring geoinformation system” portal is an important step in the effective study of land resources management and land reclamation work. This portal provides an opportunity to monitor the land reclamation situation, obtain accurate and timely information, and control land reclamation work. With the help of a geoinformation system, various types of information are visualized, which simplifies the decision-making process and creates the opportunity for the effective use of agricultural land. At the same time, it is an important basis for the correct assessment and recording of the land reclamation situation, the introduction of early warning systems, and the effective use of natural resources. This portal also serves to coordinate scientific research and practical work, and to strengthen cooperation between the public and private sectors.

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