



PROBLEMS OF CREATION OF LAND INFORMATION BASES IN UZBEKISTAN LAND CADASTRA MANAGEMENT

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Article history:	Abstract:
Received: 10 th August 2022 Accepted: 10 th September 2022 Published: 13 th October 2022	Today, the development of a clear, reliable, systematic, land cadastral information base for the agricultural sector of the new modern developing economy, whether it is the agricultural sector or another type of non-agricultural sector, is one of the unique features compared to other sectors. Creating a set of state land cadastre information for the purposes of agricultural production is associated with additional complexities. Due to the complexity of the process of preparing the land cadastre information set, it should be ensured that it is constantly updated to keep the information up to date.
Keywords: Land cadastral information, electronic map, technology, land areas, ArcGIS, ENVI, CorelDRAW, QGIS, Land reform, Land use economics, spatial imaging, satellite, geographic location, land law.	

INTRODUCTION

The rational and effective organization of the use of any conditions of production is first of all integrally related to the problems of the organization of land use because it forms the basis of all activities of the human society.

According to official data, the total land area of the Republic of Uzbekistan is 44,892.4 thousand hectares as of January 1, 2020[1]. Establishing a rational and effective use of these areas in economic sectors, first of all, requires a complex of various - districts, and legal information about these land areas. Such a set of information is obtained as a result of the state land cadastre maintained in the country, brought into one system, processed, stored and given to interested organizations and agencies for use in their activities.

It should be noted separately that in today's development of economic sectors modern technologies, in particular, digital technologies are entering everyday life, the state policy in the Republic of Uzbekistan on the transition to the digital economy, the research of the scientific and methodological issues of digitizing the land cadastre and the results of the new type creates the need to mobilize to create a land cadastre.

In Uzbekistan, the state land cadastre is a system of necessary and accurate information and documents about the natural, economic, legal regime, categories and sizes of lands, their distribution among landowners, land users, and lessee owners [2]. According to this rule, the state land cadastre includes the state registration of rights to land plots, accounting for the quantity and quality of land, soil audit, land valuation, as well as the integration, storage and updating of the above-mentioned information on the land cadastre. [3]. It is clear from this that the successful management of the state land cadastre in the country based on a single methodological basis requires the collection, processing, storage of legal, quantitative, quality and value information of each land plot obtained separately.

It is necessary to create a "digital" or "smart" land cadastre in order to facilitate this process, to bring various district information about land into a single system, to form a single information base and to constantly update it. If we take into account that today there are more than 6.5 million land users in the republic and their number is increasing, it becomes clear how important it is to solve this problem from a scientific point of view.

METHODOLOGY

To maintain the digital land cadastre in the republic, to maintain it at the level of daily demand, it is necessary to create a single database, to constantly fill it with new information. Therefore, land cadastre management in the country is a continuous process. The process should be defined according to the strategy chosen by the person, it should be implemented using various tools and methods [4]. Forming, updating and digitizing the database developed for the creation and maintenance of the state land cadastre will have a positive effect. Information technology is a process that uses a set of tools and methods of data collection, processing, updating and transmission to obtain new quality information about the state of an object, process or event (information product) [5]. Computers, modern electronic programs, modern measuring instruments and equipment will be the technical means of the process in

processing, bringing to a single system, updating and storing information. The use of computers and electronic programs in the field of information and communication in telecommunications has initiated a modern stage in the development of information technologies, in particular, in the creation of a "smart" land cadastre. Taking this into account, systematic analysis, grouping, and monographic research methods were widely used in scientific research. The use of computers and electronic programs in the field of information and communication in telecommunications has initiated a modern stage in the development of information technologies, in particular, in the creation of a "smart" land cadastre. Taking this into account, systematic analysis, grouping, and monographic research methods were widely used in scientific research. The use of computers and electronic programs in the field of information and communication in telecommunications has initiated a modern stage in the development of information technologies, in particular, in the creation of a "smart" land cadastre. Taking this into account, systematic analysis, grouping, and monographic research methods were widely used in scientific research.

RESULTS AND DISCUSSION

The results of several studies on the creation and maintenance of the state land cadastre in the republic, its digitization and, in general, making land cadastral information available to a wide range of users, testify that the land information base necessary for the creation and maintenance of the state land cadastre in the country is based on the five main It is necessary to include a group of important information. The importance of this information is that it includes not only agricultural land plots, but also quantitative data on non-agricultural land, land evaluation, information on land users, as well as information on the melioration status of soils scattered on agricultural land. This can also be seen through the following cluster structure (Figure 1).

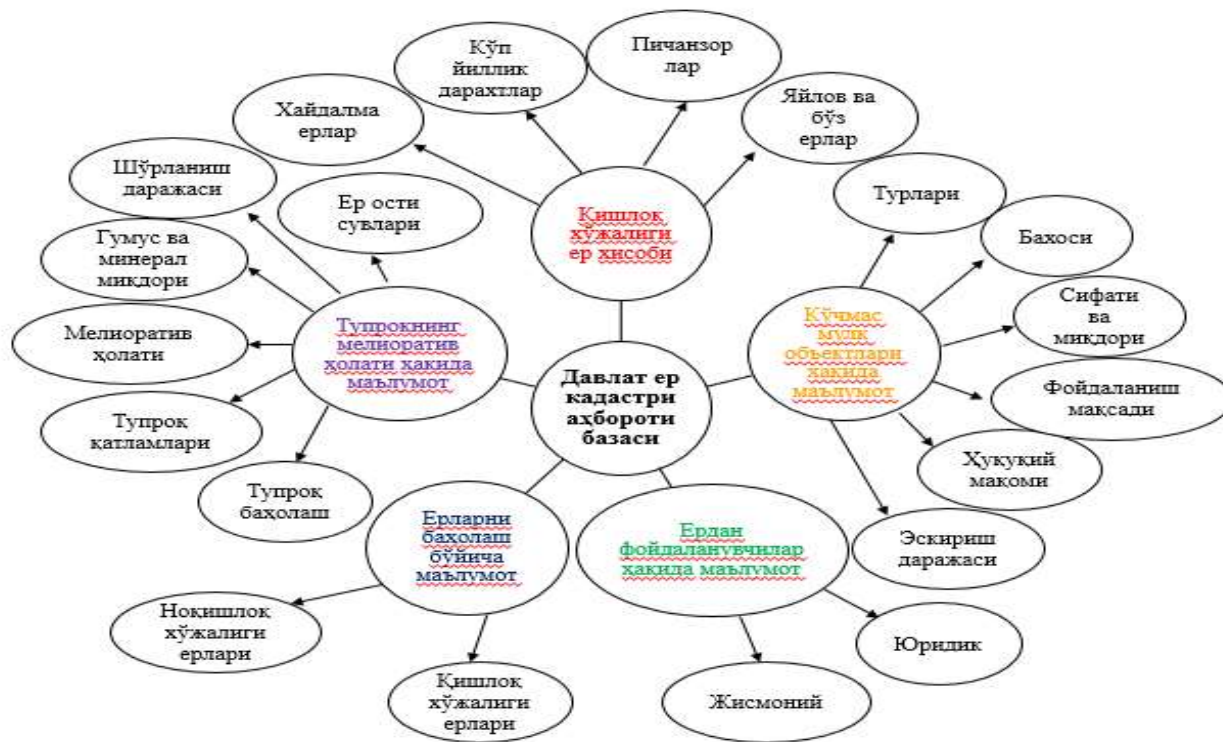


Figure 1. Information complex of land cadastre system

It can be seen from picture 1 that in the creation and management of the land cadastre, not only the plot of land but also a large amount of data closely related to it constitute the land cadastre information base.

Studies show that the expansion of economic reforms in the republic, first of all, implements the requirements for land cadastral information. In particular, the development of the business activity, the rapid growth of the economy as a whole require the timely and prompt registration of rights to land plots, the improvement of the quantitative calculation of land plots, and finally the regulation of the system of calculating the cadastral value of the land. Completing such works promptly with high accuracy, collection and analysis of data on land plots with the help of new ArcGIS, ENVI, CorelDRAW, QGIS programs and various types of unmanned aerial vehicles (drones) for inclusion in the land cadastre information base will give effective results.

In recent years, the use of spatial imaging materials has entered the practice of land calculation in the republic, like other developed countries (Russian Federation, Germany, Hungary, England, etc.), which will become one of the activities that will become of significant economic importance in the near future. With the help of satellites that improve land relations on the basis of further deepening of land reform, privatization and expropriation of land plots, it is possible to quickly update the land database. The use of such technology in the creation of the information base of the state land cadastre, but also with the help of other attributive databases related to the cadastre, not only the shape of the land but also the underground layers with the help of images taken from space, that is, it has the

advantage of quickly determining the soils and their properties distributed here. In addition, the use of such technology in the land cadastre allows for the transition to a digital land cadastre system in the districts based on quantitative and qualitative land accounting. This is clearly proven by the following issues (Figure 1 (A,B,C)).



Figure 1. Use of technologies in creating the information base of the state land cadastre

A seven-point satellite image of the existing lands of the Shavot district was selected as a research object using the ENVI program. In this case, 2 - the cut of the desired area taken by the satellite image, 3 - adjusting the geographical location of the area by adjusting the cut of the image to the selected object, 4 - separating the selected and cut-and-adjusted area in the seven-point color section. From the above three pictures, it can be seen that as a result of land monitoring of agricultural and non-agricultural land in the Shavot district of Khorezm region, soil salinity, crop vegetation index, soil moisture and temperature in this area were monitored using satellite images obtained through the ENVI program in order to obtain data. It was possible to obtain such information with great accuracy. Clear proof of this can be seen from the following table (Figure 2).

ROI Name	Color	Pixels	Polygons	Polylines	Points	Fill	Orien	Space
ekin	Red	114,581	6/114,572	0/0	9	Solid	45	0.10
shudgor	Green	7	0/0	0/0	7	Solid	45	0.10
aholi	Blue	8	0/0	0/0	8	Solid	45	0.10
* suv	Yellow	10	0/0	0/0	10	Solid	45	0.10

Figure 2. Analysis of rural and non-rural lands by different colors

From this picture, we can see that the cultivated land is red, the plowed land is green, the residential area is blue, and the land occupied by water (canals, collectors, etc.) is yellow.

The use of this method allows us to obtain more accurate information on the object of the research being conducted. Because it was found that the color analysis of cultivated land used in agriculture has 93% accuracy compared to the information determined by going to the place itself.

As a result of working with such spatial images, it is observed that "Sentinel" 2A satellite - every 5 days up to 10 meters height, "Landsat" 8 satellite - every 16 days up to 30 meters height allowed to receive data. At the same time, the experiment showed that before analyzing each image, it is required to obtain at least 3 years of data on the frequency of planting of agricultural products. The main reason for this is that the comparison of the data collected over the years through the images obtained allows achieving high accuracy. This allows for an accurate analysis of the situation with the help of all the collected information even on the spot. Indeed, the use of modern programmed systems in the management of land cadastre, in particular, gives positive results in data sets for land cadastre purposes. Carrying out such work on a large scale from a practical point of view is not only in carrying out scientific and research work, but also in the creation of agricultural maps in its regional divisions of the republican scientific and

design institute "Uzdaverloyiha", conducting land monitoring, determining the areas of crops and land types, and the natural quality of soils scattered in the territories. it is effective in evaluating and determining the changes that have occurred in the land plots in recent years. This, in turn, allows to increase in the quality of work performed in project organizations, reduces time consumption and achieves positive results in the expansion of the electronic information base on the work in progress, in particular, in the creation of a digital land cadastre. Carrying out such work on a large scale from a practical point of view is not only in carrying out scientific and research work, but also in the creation of agricultural maps in its regional divisions of the republican scientific and design institute "Uzdaverloyiha", conducting land monitoring, determining the areas of crops and land types, and the natural quality of soils scattered in the territories. it is effective in evaluating and determining the changes that have occurred in the land plots in recent years. This, in turn, allows to increase in the quality of work performed in project organizations, to reduce time consumption and to achieve positive results in the expansion of the electronic information base on the work in progress, in particular, in the creation of a digital land cadastre. Carrying out such work on a large scale from a practical point of view is not only in carrying out scientific and research work, but also in the creation of agricultural maps in its regional divisions of the republican scientific and design institute "Uzdaverloyiha", conducting land monitoring, determining the areas of crops and land types, and the natural quality of soils scattered in the territories. it is effective in evaluating and determining the changes that have occurred in the land plots in recent years. This, in turn, allows to increase in the quality of work performed in project organizations, to reduce time consumption and to achieve positive results in the expansion of the electronic information base on the work in progress, in particular, in the creation of a digital land cadastre. rather, the republican scientific and design institute "Uzdaverloyiha" has a good effect in creating agricultural maps, conducting land monitoring, determining the areas of crops and land types, assessing the natural quality of the soils scattered in the territories, and determining the changes that have occurred in the land plots in recent years in its regional divisions. This, in turn, allows to increase in the quality of work performed in project organizations, to reduce time consumption and to achieve positive results in the expansion of the electronic information base on the work in progress, in particular, in the creation of a digital land cadastre. rather, the republican scientific and design institute "Uzdaverloyiha" has a good effect in creating agricultural maps, conducting land monitoring, determining the areas of crops and land types, assessing the natural quality of the soils scattered in the territories, and determining the changes that have occurred in the land plots in recent years in its regional divisions. This, in turn, allows to increase in the quality of work performed in project organizations, to reduce time consumption and to achieve positive results in the expansion of the electronic information base on the work in progress, in particular, in the creation of a digital land cadastre. it is effective in determining the changes that have occurred in the land plots in recent years. This, in turn, allows to increase in the quality of work performed in project organizations, to reduce time consumption and to achieve positive results in the expansion of the electronic information base on the work in progress, in particular, in the creation of a digital land cadastre. it is effective in determining the changes that have occurred in the land plots in recent years. This, in turn, allows to increase in the quality of work performed in project organizations, to reduce time consumption and to achieve positive results in the expansion of the electronic information base on the work in progress, in particular, in the creation of a digital land cadastre.

It is known that the main link of any land cadastre is a set of data collected on the quantity, quality, location, legal status, and value of land areas [6]. Hence, a clear technology is required to capture the above data in a primary way and to process and organize it in a systematic manner. It is the modern information technologies entering the field of data processing that are designed to solve the above tasks. In addition, the use of information technology systems for the information base for land cadastre purposes increases the efficiency of employees' work [7]. In particular, in the scientific research carried out by the authors on the land areas of existing farms in the Shavot district of Khorezm region, irrigation water for land cadastre, crop vegetation, residential buildings, two methods were used in the process of forming the information system on free land areas. The first method is to collect and analyze data on the above in field conditions. In the second method, the analysis of digitized, high-resolution satellite data was carried out. In both methods, 12 farms specializing in cotton-grain production were selected. The results obtained in both methods show that the second method reduced labor costs by 8 times compared to the first, the material costs decreased by almost 6.2 times, and the accuracy of the obtained information was much higher in the second method. In addition, dividing the information obtained using the second method into thematic groups, classifying,

As can be seen from the above, the state land cadastre, as well as various sectors of the economy, is managed in a fast, digitized manner, for this purpose, the preparation of multi-colour, high-quality cartographic data, in solving problems related to the distribution and redistribution of land in the districts and regions, the state of land uses and general land areas. Compilation of reports on land cadastre and other activities related to land cadastre management with the use of modern information technologies allows to formation of the information base in a short period of time and on the basis of economic savings.

It should be noted that the creation and permanent management of the state land cadastre in the republic is entrusted to the "Land Resources, Geodesy, Cartography and State Cadastre" Committee of the Republic of Uzbekistan, which is responsible for conducting the unified state land policy in the country, and its regional offices and regional branches in administrative districts. . According to the adopted "Regulations" and relevant regulatory documents, they are given a number of powers to manage the land cadastre. Among these powers, "compilation of annual reports (land balance) on the availability, distribution and use of lands" is singled out. The fact is that such

reports are prepared once for each administrative district, region and republic and are confirmed by the decisions of the relevant state authorities. But in today's era of rapid development, such reporting information quickly becomes obsolete. In order to avoid this situation and to ensure that the information is constantly updated, it is advisable to update such land reports using digital information technologies.

In addition to the above, land cadastre management in the district (city) is carried out based on:

- Implementation of cadastral surveys;
- Obtaining information from landowners, land users, tenants and owners of land plots, checking their authenticity, and making current changes to land cadastre documents[8,9].

It is the constant implementation of these issues in the administrative districts (cities) of the republic with a single methodology that is of great importance in maintaining the land cadastre in the country. This requires a wider use of the modern programs that we offer. Therefore, collecting, processing, analyzing and constantly updating the legal, quantitative, quality and value data of each land plot based on the recommended programs, as well as their digitalization, is the first step in solving the problems of creating and maintaining a new type of state land cadastre in the country. will be

CONCLUSION

Based on the results of the above researches, which allow to solve the problems of state land cadastre maintenance like developed countries in general, it can be concluded that the introduction of modern information technologies into the system will lead to the fundamental improvement of land cadastre maintenance in the near future, like other fields, to maintain it in digital form and, ultimately, "intelligent " allows conversion to land cadastre. The use of land cadastral data obtained as a result of this creates an economic basis for regulating the economy of the republic and increasing the income of the state budget.

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