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Analysis of the Application of Cangqiong Cadastre in Land Engineering

Lu Zhang[1, 2, 3, 4, a]

[1]Shaanxi Provincial Land Engineering Construction Group, Co., Ltd, Xi'an 710075, China.

[2]Institute of Land Engineering and Technology, Shaanxi Provincial Land Engineering Construction Group Co., Ltd.. Xi'an 710021, China.

[3]Key Laboratory of Degraded and Unused Land Consolidation Engineering, the ministry of Natural Resources, Xi'an 710021, China.

[4]Shaanxi Provincial Land Consolidation Engineering Technology Research Center., Xi'an, Shaanxi 710075, China.

[a]luluqiaofeng@126.com

Abstract

Rapid economic and social development so that land and resources data rapidly expand, which brings some difficulties to land engineering industry. Beijing cangqiong cadastre software not only can overcome the inconvenience that people use Arcgis, it can be applied to all aspects of land utilization change. This software can change and sort huge amount of land data, and the final summary sheets be outputted one by one, which is simple and easy to query. This paper done some analyses of cangqiong cadastre in land engineering from analyzing reserve resources of unused land, making standard framing map and nesting measurement and land use map, and pointed out cangqiong cadastre has huge prospects in the field of land engineering, ultimately realizing efficient use and development of land resource.

Keywords

Cangqiong cadastre, Land utilization, Change, Farmland.

1. INTRODUCTION

With the rapid development of social economy and the continuous advancement of urbanization, my country's demand for construction land is increasing, and the area occupied by agricultural land is increasing. During the four years from 1997 to 2001, 73.73hm2 of cultivated land was occupied by construction projects nationwide, and the reduction of agricultural land has threatened the safety of food production. Faced with such a severe situation, the state has put forward the national policy of "adhering to the red line of 1.8 billion mu of arable land unshakable", and it is imperative for non-agricultural land to be transformed into agricultural land. The conversion of non-agricultural land to agricultural land projects includes land development, land consolidation, homestead reclamation and other related land consolidation activities. As a new term put forward by the land resource system in recent years, land consolidation is more of a generalization. The concept of agricultural land remediation, rural construction land remediation, urban industrial and mining waste land remediation, land reclamation, and the development of reserve land suitable for agriculture. my country's land use is facing serious problems, that is, the development of reserve land resources is subject to poor quality, difficult reclamation and ecological environment constraints, and the development

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potential is very limited. Therefore, scientific development, reasonable governance, and increasing the remediation of non-agricultural land such as sandy land, desert land, saline-alkali land, abandoned old rivers and abandoned homesteads are the inevitable trend of land engineering development, and increase blood supply for agricultural land [1].

Table 1. Classification of land status in rural land survey

Classification name		Category code	classification name	Classification name		Category code	classification name
Agricultural land	Arable land	011	Paddy field	Construction land	Towns, villages and industrial and mining land	204	Mining land
		012	Irrigated land			205	Scenic spots and special land
		013	Dry land		Land for transportation	101	Railway land
	Garden	021	Orchard			102	Road land
		022	Tea garden			105	Airport land
		023	Other gardens			106	Port land
	Woodland	031	Have woodland			107	Pipeline transportation land
		032	Shrubland		Land for water conservancy facilities	113	Reservoir water surface
		033	Other woodland			118	Hydraulic construction land
	Grassland	041	Natural pasture	Unused land	Waters	111	River water surface
		042	Artificial pasture			112	Lake surface
	Other agricultural land	104	Rural road			115	Along the beach
		114	Pond water surface			116	Inland beach
		117	Ditch			119	Glaciers and permanent snow
		122	Facility agricultural land		Other	043	Other grassland
		123	Tian Kan			124	Saline soil wetlands
Construction land	Towns, villages and industrial and mining land	201	City			125	
		202	Organizational town			126	Sand
		203	Village			127	Bare land

Judging from the current rural land use management and urban cadastral management system software, although ArcGIS is the industry leader, it still has the following shortcomings: first, it runs slowly and requires higher computer hardware configuration; When making topographic maps, it is not as easy to use as domestic software such as MapGIS and SuperMap; third, it lacks many elements of 3D GIS. These bring a lot of inconvenience to land registration, statistics, change, summary, and comprehensive analysis in land engineering [2]. The Beijing Cangqiong Land Use Status Management System (hereinafter referred to as Cangqiang Software) is a combination of the characteristics of cadastral management and the realization of comprehensive office automation of land and resources with the domestic land and resources bureaus. The basic cadastral data requirements are jointly proposed and put into research and development. Ownership management and land use management are integrated, and the rural and urban cadastral management system software is unified, the data structure is unified, and the organization and management methods are unified. At the same time, it can meet the

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current situation of rural land use and the requirements of urban cadastral management, and realize rural land and urban cadastral The latest software that integrates land consolidation and development for seamless and integrated management has the following advantages: first, it integrates land use management and ownership management; second, unified data structure and organizational management mode; third, facing the grassroots Land management personnel, the operation is simple; the fourth is to ensure the continuity and current status of the cadastral survey results.

China's land resources can be classified according to different natures and uses. The current status of rural land survey land can be divided into three categories according to the nature (see Table 1), which are agricultural land, construction land and unused land. Focus on how to use Cangqiang software to turn unused land into agricultural land, and protect our country's arable land resources while managing the environment.

2. THE APPLICATION OF CANGQIANG IN THE ANALYSIS OF UNUSED LAND RESERVE RESOURCES IN LAND ENGINEERING (TAKING BAISHUI COUNTY AS AN EXAMPLE)

Using Cangqiang software, it is easy to find the unused land in an area. According to the unused map, the unused land can be converted after field inspection.

Open the current land use map of the area that needs to be changed in the software, select "land map spot" in the element column, click on the "attribute browsing" item in the right-click menu, and a "map attribute list" appears. Select the unused land number in the code. For example, the number 043 indicates other grassland, and then select all the unused land, copy and paste it to the newly built project, then all the unused land in an area can be seen at a glance. Figure 1 shows the distribution of other grasslands in Baishui County, Shaanxi Province.

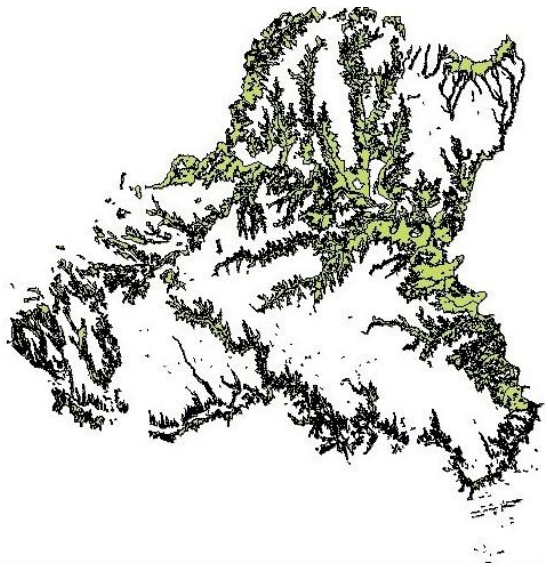

Figure 1. Distribution map of unused land in Baishui County

At present, the unused land is generally converted into agricultural land, or directly converted into cultivated land, in order to increase the area of cultivated land, and at the same time achieve the purpose of environmental protection and ecological management. It can be seen from Figure 1 that looking at other grasslands alone, Baishui County has a large amount of unused land to be developed, and the development situation depends on the actual situation. Cangqiong

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software plays an auxiliary and query role here, so that the operator can have a general understanding of the land use situation in the entire area.

3. THE APPLICATION OF THE SKY IN THE PRODUCTION OF STANDARD FRAMING MAPS IN LAND ENGINEERING

The standard framing is to cut the orthophoto according to the predetermined scale, the width of the format, the coordinates of the southwest corner and the interval of longitude and latitude, which is self-evident for engineering. In land engineering, all topography can be clearly presented through a map, which brings clear and clear map data for land consolidation, land leveling, and land reclamation to facilitate the construction of the site. The cadastral of the sky fulfills this process well, and can accurately derive the sub-maps of each county.

To export the framing map of each county, you must first set the framing letter. In the "System Settings" in the software interface, select "framing information settings", click "Generate Framing Information", fill in the scale, central longitude, horizontal offset and other information according to the selected county, then select "Country 80 Coordinate system", and then according to the form of "custom", manually take the points at the bottom left and top right of the screen, save and close, reconnect to the database that has just completed the framing information, open the sky software, click on the bottom left of the software "Fractional map", a list of symbols of the county's map will appear on the left side of the software. In this way, we need the information of which picture symbol we need, right-click the picture and print it out to the file, and save it in JPEG format. As shown in Figure 2 is a standard picture of Baishui County with the symbol I49GO20025. Enlarge the picture according to the purpose. Can clearly know the land use type, area and ownership of each place, so as to serve the land remediation work.

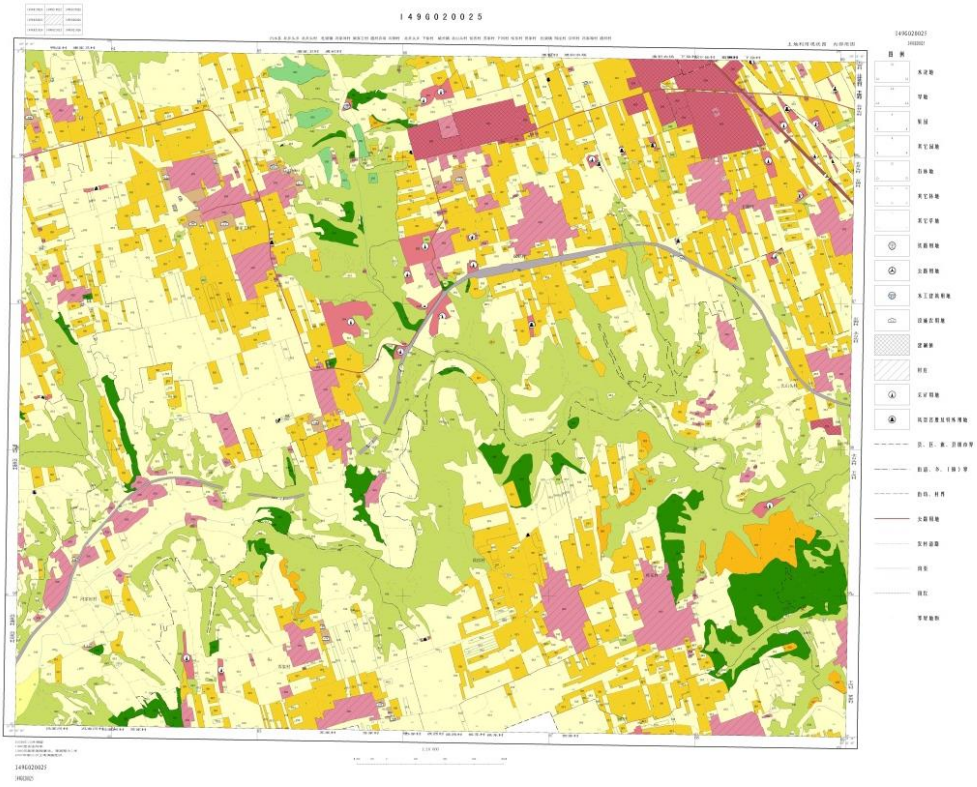

Figure 2. Sub-map of I49GO20025 in Baishui County

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4. THE APPLICATION OF THE SKY IN THE COMBINATION OF LAND ENGINEERING SURVEY AND LAND STATUS MAP

Cangqiong can not only present the unused land well, but also can produce standard framing maps for the field of land engineering like ArcGIS. It also has a powerful function to cover certain blocks in the survey and measurement. Integrate with the known land use status map, look at the fit relationship between these blocks surveyed and measured in the project and the known blocks.

To export the surveyed and surveyed blocks in the Cangqiang cadastre, you must know the latitude and longitude code prepared for the block, and import it into the known land use status map in txt format through the "text generation graphics" in the "processing function" in the Cangqiang software. As shown in Figure 3, an engineering survey measurement block and a land status map are combined. The blue lines in the picture are the engineering survey measurement blocks. The combination of the two blocks makes the specific operation and implementation of the land engineering clear, understand the type of land use in the specific construction area, and better guide the project construction.

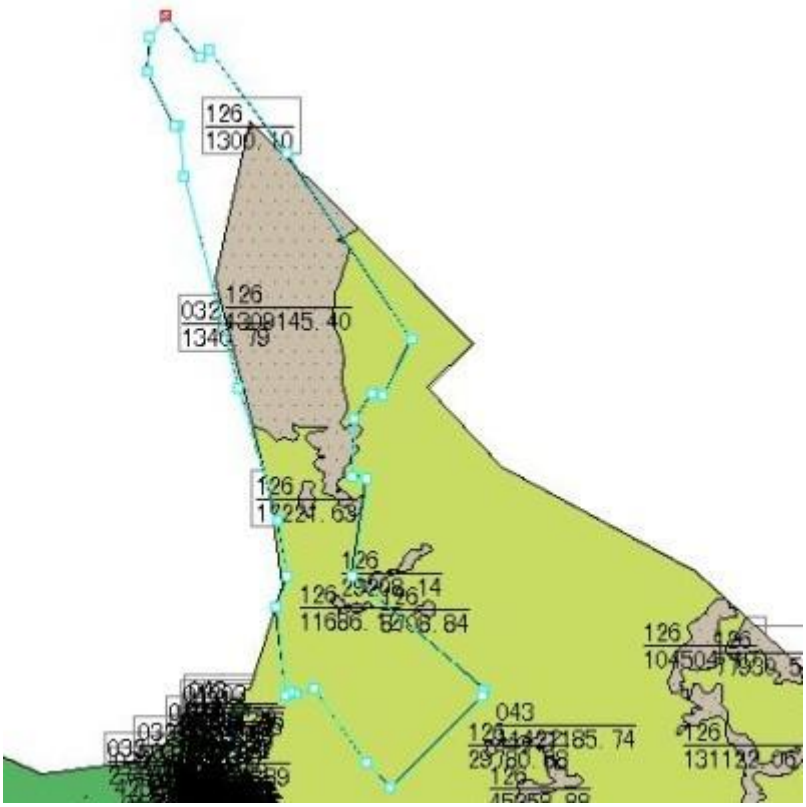

Figure 3. The combination of engineering survey survey and land status

5. THE APPLICATION PROSPECT OF THE SKY IN LAND ENGINEERING

The wide application of Cangqiang in land engineering is not only a tool in the operation of land engineering, but also a need for the development of information technology in the application of land engineering [3].

Cadastre is not only a map editing software, but also can be used in scientific research. Combining computer software with experiments is nothing new, but combining cadastral software with land engineering experiments and applying them to each other is a long way to go. Cangqiong can integrate land consolidation, land leveling and land reclamation in land engineering with their respective soil physics, chemistry, and biological experiments, which

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facilitates the conduct of experiments and inquiries, and makes Cangqiang better for land engineering in terms of scientific research. Industry services.

We believe that with more and more attention to efficiency and the rapid increase of information, the software with powerful calculation and processing functions will play a more important role in the field of land engineering, providing powerful technology for the effective and rational use of land resources. Guarantee to make the land engineering industry flourish.

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