

Application of Arcgis software in the analysis of unused land reserve resources in land engineering

--Take Baishui County as an example

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Abstract

The rapid development of the economy and society has led to a rapid expansion of the volume of territorial and resource data in China, which has brought certain difficulties to the development of the land engineering industry. However, ArcGIS software not only overcomes many inconveniences in land data statistics, but also can be applied to all aspects of land use change. It can modify, organize and output the final change statistics summary table of the huge volume of territorial data in land engineering one by one. The operation is simple and the query is convenient. This article analyzes the application of ArcGIS software in the analysis of unused land reserve resources, the production of standard sheet maps, and the superimposition of surveying and mapping and land use status maps in land engineering one by one, and points out that the development prospects of ArcGIS software in the field of land engineering are huge, ultimately achieving the goal of efficient utilization and development of land resources in China.

Keywords

Arcgis software; Unused land; Cultivated land reserve resources.

1. Introduction

With the rapid development of social economy and the continuous advancement of urbanization, China's demand for construction land is increasing, and the area occupied by agricultural land is increasing. In the four years from 1997 to 2001, the country's construction projects occupied 73.73hm² of cultivated land, and the reduction of agricultural land has threatened the security of food production. Faced with such a severe situation, the state put forward the national policy of "sticking to the red line of 1.8 billion mu of arable land", and it is imperative that non-agricultural land becomes agricultural land. The ways of transforming non-agricultural land into agricultural land engineering include land development, land consolidation, homestead reclamation and other related land improvement activities. As a new term put forward in recent years as a land and resources system, land improvement is more of a general concept. It includes the renovation of agricultural land, the renovation of rural construction land, the renovation of abandoned urban industrial and mining land, land reclamation and the development of reserve land suitable for agriculture. China's land use is

facing a serious problem, that is, the development of reserve land resources is limited by poor quality, difficult reclamation and ecological environment constraints. Therefore, it is an inevitable trend of land engineering development to develop and manage non-agricultural land such as sandy land, desert land, saline-alkali land, abandoned old river channels and abandoned residential land in a scientific and rational way, so as to improve blood supply for agricultural land [1].

From the existing rural land use status management and urban cadastral management system software, there are some shortcomings: first, the running speed is slow, the computer hardware configuration requirements are high; Second, 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]. Arcgis software integrates ownership management with land use management, and establishes a unified rural and urban cadastral management system with unified software, data structure, organization and management mode, which can also meet the current situation of rural land use and urban cadastral management requirements. A powerful software that integrates land consolidation and development to achieve seamless and integrated management of rural land and urban cadastre.

The land resources in our country can have different classification methods according to the non-essential nature and use, among which the rural land survey land status can be divided into three big categories (see Table 1) by nature, which are agricultural land, construction land and unutilized land. This paper mainly focuses on how to use Arcgis software to change unused land into agricultural land and ensure the cultivated land resources of our country while managing the environment.

Table 1 Classification of land status in rural land survey

Class name	Class name	Class coding	Class name	Class name	Class name	Class coding	Class name
Agricultural land	plowland	011	Paddy field	Construction land	Towns and villages and industrial and mining land	204	Mining land
		012	Irrigated land			205	Scenic spots and special sites
		013	Dry land			101	Railway land
	Garden plot	021	orchard		102	Highway land	
		022	Tea plantation		105	Airfield land	
		023	Other gardens		106	Port terminal land	
	Forest land	Forest land			107	Land for pipeline transportation	
		031	bushland		Land for water conservancy facilities	113	Reservoir surface
		032	Other forest land			118	Water construction land
	grassplot	041	Natural rangeland	unutilized	waters	111	River surface
		042	Artificial pasture			112	Lake surface
		104	Rural road			115	Coastal flat
	Other agricultural land	114	Pond surface ditch			116	Inland beach
		117				119	Glaciers and permanent snow
		122	Facility agricultural		other	043	Other grassland

Class name	Class name	Class coding	Class name	Class name	Class name	Class coding	Class name
		123	land Field ridge			124	Saline-alkali land
Construction land	Towns and villages and industrial and mining land	201	city			125	marshland
		202	Organized town			126	Sand
		203	Hamlet			127	Bare land

2. Analysis of unused land reserve resources in land engineering

Using Arcgis software, it is easy to find out the situation of unused land in a region, and the conversion of unused land can be carried out after field investigation according to the unused map.

In Arcgis software, open the land use status map of the area to be changed, select "land class map spot" in the element bar, click the right button, and "Property browsing" is displayed in the menu, and "Map block attribute list" appears. Select the unused land number from the land class code, such as No. 043 indicating other grasslands, and then select all the unused land and copy and paste it into the new project. The situation of all unused land in an area is clear. Figure 1 shows the distribution of other grasslands in Baishui County, Shaanxi Province.

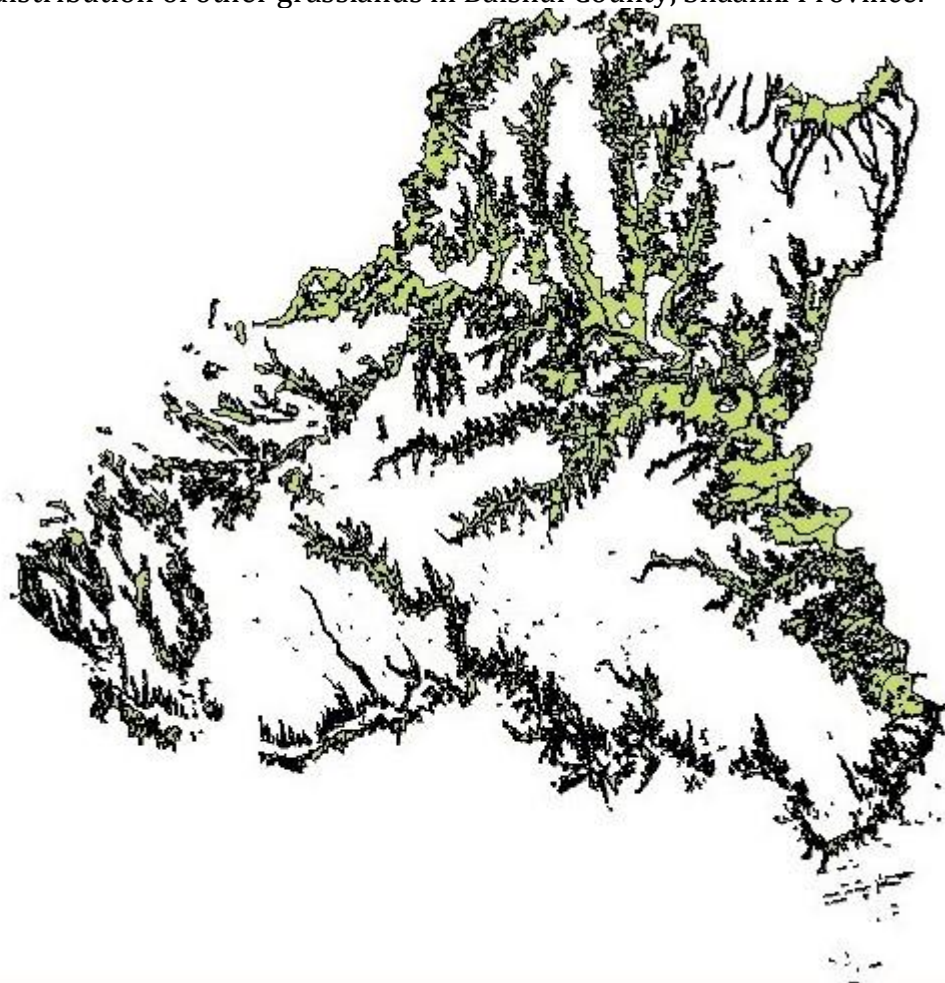


Figure 1 Distribution map of unused land in Baishui County

At present, the unused land is generally converted into agricultural land, or directly regulated into cultivated land, so as to increase the cultivated land area and achieve the purpose of environmental protection and ecological protection. As can be seen from Figure 1, looking at other grasslands alone, Baishui County has a large number of unused land to be developed, and the development situation depends on the actual situation. Arcgis software plays an auxiliary and inquiry role here, so as to facilitate operators to have a general understanding of the land use situation in the whole region.

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