Application Research of Computer Technology in Agricultural Land Use and Ecological Environment Construction

Hanyu Yang*, Ruhai He, Qin Rao, Xili Zhang
Anhui agricultural university, China, 230000

*E-mail: baojixiomam123@.com

Abstract. The utilization of farmland resources has an important impact on the local ecological environment. At the same time, with the development and update of computer technology, it also provides us with more technical means in the application of agricultural land use and ecological environment construction. This paper studies the changes of land resources in the construction of new urban areas, analyzes the changes of the ecological environment in new urban areas, and puts forward the measures for the application of agricultural land use combined with computer technology and the construction of ecological environment. It is concluded that the ecological environment of the new district of a city is greatly affected by the change of land use pattern, and shows positive and negative effects in different regions.

Keywords: Agricultural Land, Ecological Environment, Construction

1. Introduction

Agricultural land resource is an important basis for human survival and development, and an important guarantee for the development of human social economy and the improvement of material life[1]. In the process of construction and development of a new area of a city, the utilization mode of agricultural land resources has also changed significantly, which has a certain impact on the local ecological environment. This study provides basic research data for the transformation of the utilization mode of agricultural land resources in the future by analyzing the impact of the utilization change of agricultural land resources on the ecological environment in a new area of a city.

The new area of a city is located in Qinwangchuan basin, with a basin area of 1797km², and the planned area of the new area is 806km². It is a typical temperate continental monsoon climate, with an average annual precipitation of 300-350mm and an average annual evaporation of 1880mm; the annual average temperature is about 6.9℃, the annual sunshine time is 1709-2768h, and the frost free period is
about 139d.

2. Agricultural land resource utilization and ecological environment impact

2.1. Current situation of land resources

(1) Type of land resources. The new area of a city has a flat terrain and good engineering geological conditions, but some agricultural land salt shouting phenomenon is serious, farmland water conservancy facilities are not perfect, and most of the farmers have abandoned the land, and this part of land is not within the scope of basic farmland, which is the most important land reserve resource area of a city (see Table 1)[2].

| Land Type                  | Area hm² | %     |
|----------------------------|----------|-------|
| Farmland                   | 30319.4  | 37.6  |
| Garden                     | 1095.3   | 1.4   |
| Woodland                   | 2745.6   | 3.4   |
| Pasture                    | 8.9      | 0.02  |
| Other Agricultural Land    | 7251.8   | 9.0   |
| Sum                        | 41420.9  | 51.4  |
| Urban                      | 8095     | 10.0  |
| Industrial & Mining        | 4195.4   | 5.2   |
| Building                   | Traffic & Water | 997.9 | 1.2 |
| Other Building Land        | 262.6    | 0.3   |
| Sum                        | 6261.7   | 7.8   |
| Other Land                 | Nature Reserve | 32914.2 | 40.8 |
| Sum of All                 | 80596.7  | 100   |

(2) Changes in agricultural land resources. In 2010, the agricultural land area of a new district was 41421 hectares, increased to 51409 hm² in 2015, of which the cultivated land area changed greatly, from 30319.4 to 24420.9 hm², the forestry land area increased from 2745.5 hm² in 2010 to 17398.4 Hm², and the garden land area, pasture land area and other agricultural land area changed little (see Table 2).

| Land Type                  | Area hm² |
|----------------------------|----------|
| Urban                      | 8095     |
| Industrial & Mining        | 4195.4   |
| Building                   | Traffic & Water | 997.9 |
| Other Building Land        | 262.6    |
| Sum                        | 6261.7   |
| Other Land                 | Nature Reserve | 32914.2 |
(3) Agricultural land use function division. The basic farmland reserve covers an area of 1055hm2, accounting for 13.72% of the total land area of the new area; the forestry area includes the existing forest land, shrubbery, sparse forest land, unfinished forest land, nursery and other sporadic land. An agricultural area includes cultivated land outside the basic farmland protection area, land for orchards, livestock and poultry, aquaculture, grassland and urban green belt[3].

2.2. Ecological environment of a new district

(1) Current situation of ecological environment in the new area. In the new area of a city, the wind sand erosion is serious, the agricultural land accounts for a large proportion, and the unused land is more seriously affected by the wind sand; due to the single species of cultivated land and the lack of species diversity, most of the land environment in the new area has the lowest capacity, the resistance to the change of ecological environment is weak, and the stability of the ecological system is poor; the local rainfall is small, the agricultural land drought is serious, and the soil salinization is serious The questions are outstanding[4].

(2) The possible changes of ecological environment brought by the utilization of agricultural land in the new area. Due to the change of agricultural land use, the original ecosystem balance has been destroyed, the habitat of indigenous organisms has been destroyed, and the habitat has been broken, which may threaten the survival of Aboriginal organisms. After the adjustment of agricultural land resources, with the development of the new area, the population scale has been increasing, but some agricultural land resources are idle, which may aggravate soil erosion and land desertification. Agricultural land has been transformed into After the forestry land is used, it can improve the ecological environment in some areas, conserve the regional water resources. In addition, the huge amount of water diversion from the project can meet the water demand of Mani New Area in the medium and long term, and then improve the ecological environment in some areas of the New Area.

3. Ecological environment improvement measures

3.1. Developing ecological agriculture

In the northern part of the new area, the basic farmland is mainly used for the development of ecological
agriculture except for the special grain production area. Relying on the dense ecological resources of the water network, a modern agricultural area, an efficient agricultural area for water-saving irrigation and a high-tech agricultural demonstration area are formed, integrating production, sightseeing, experience, leisure and ecological protection. At present, the trend of agricultural development is large-scale, intensive and ecological agriculture. Especially for cities with certain basic tourist flow and cities far away from the core tourist area, the development of ecological sightseeing agriculture is the main direction of agricultural development. The city is located in the northwest of China[5]. Affected by the land desertification all the year round, the agricultural output value and output have not been able to get a breakthrough. However, its sandy soil and loess soil adapt to the growth of more economic crops, so its development of ecological agriculture is a development mode suitable for local characteristics.

3.2. Improve soil quality

Through improving and supporting the field water conservancy facilities and sand pit treatment, soil improvement and salinization treatment were carried out to increase the thickness of soil layer, landfill the field sand pit and improve the soil quality. According to the above analysis, the phenomenon of land desertification in the city has been the main contradiction that plagues the city's agricultural development. Therefore, the city invests a lot of money and teams to improve the soil quality every year. The problems of soil shallow water environment can be alleviated by machine well irrigation, construction of diversion canal, and the problem of soil humus can be alleviated by introducing circular agriculture. After many years of efforts, as well as many years of measures of returning farmland to forest and grassland, the number of cultivated land in the region has been moderately reduced, the quality of cultivated land has been improved, the desertification of local farmland has been restrained to a certain extent, and the yield of many farmland per mu has been greatly increased[6].

3.3. Strengthen the construction of ecological forestry

Focus on the development of ecological forestry production, combine with mountain ecological resources, appropriately develop sightseeing and experience tourism, improve the utilization rate of agricultural land after transformation, and encourage the development of barren mountain greening. In the development of forestry, through the introduction and cultivation of trees suitable for local climate and soil and water environment, the transformation from rough forestry to ecological forestry is realized. At the same time, we should make use of the project of forest cultivation, defoliation recovery and decay, and the project of scattered cultivation and fecal accumulation, so that the quality of soil in the forest can be fully improved. At the same time, we can also transport a lot of green manure and manure for the local farmland, which promotes the rapid development of agriculture in the whole region.

4. Summary

The city's agricultural land has been transformed into ecological, large-scale and intensive land, focusing on the optimization of soil quality, vigorously expanding the development of ecological planting and ecological forestry, and actively converting the difficult land into cultivated land, thus realizing the comprehensive development of agricultural land. At the same time, it also promotes the growth of local economy, improves the local business environment, and promotes the local investment promotion.
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