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Practice of Ecological Comprehensive Improvement Project of Low-efficiency Forest and Grassland

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Abstract

Land consolidation is the main measure to increase the quantity and quality of cultivated land. There are a large number of low-efficiency forest and grassland resources in Chencang District, Shaanxi Province, China, which can be developed as cultivated land. Through the comprehensive development of fields, water, roads, and forests, agricultural production conditions have been greatly improved; land resources are rationally allocated, agricultural structure adjustment is promoted, and farmers' incomes are increased; through project construction, waste grassland is transformed into arable land, and finally the land productivity is comprehensively improved. The ecological environment has been significantly improved.

Keywords

Land Consolidation; low-efficiency Forest and Grassland; Waste Grassland; Engineering Practice.

1. Introduction

Cultivated land is my country's most precious resource and an important prerequisite and guarantee for food production. As a basic system of cultivated land protection, the balance of cultivated land occupation and compensation is of great significance for achieving the goal of dynamic balance of total cultivated land and ensuring national food security. In order to better implement the spirit of the central government's opinions on strengthening the protection of cultivated land and improving the balance of land occupation and compensation, Shaanxi Province issued the "Implementation Opinions of the Shaanxi Provincial Committee of the Communist Party of China and the People's Government of Shaanxi Province on Further Strengthening the Protection of Land (2018) No. 9) document that "under the premise of protecting the ecological environment, fully demonstrate and rationally plan cultivated land development reserve areas, garden plots, low-efficiency forests and grasslands that are not included in the scope of cultivated land protection, and suitable agricultural land for development. According to the evaluation and demonstration by the provincial-level land and resources department, the provincial land and resources department will make overall plans and incorporate it into the scope of land remediation after rechecking and confirming it. The newly added cultivated land will be used for the balance of occupation and compensation. This paper conducts engineering practice on the land improvement project of Jiaoyugou Village, Gongzheng Town, Chencang District, in order to provide some reference for the development of related projects.

2. Project location profile

Chencang District is located at the western end of Qinchuan, Guanzhong, Shaanxi Province, between 106°18'24″-107°34'58″ east longitude and 34°7′36″-34°44'38″ north latitude. The project is located in the inland area of Northwest China, with a semi-humid and semi-arid climate in the warm temperate zone of the mid-latitude continental monsoon region. The annual average temperature is

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12.8 ℃, and the frost-free period averages 224 days per year. The annual average sunshine hours is 1913.9 hours. The average annual precipitation is 647.1 mm. The study area has a total area of 2,517 square kilometers and a permanent population of 604,000. The region's GDP in 2018 was 21.284 billion yuan, a year-on-year increase of 7.3%. Among them, the added value of the primary industry was 2.243 billion yuan, an increase of 2.5%; the added value of the secondary industry was 13.333 billion yuan, an increase of 8.8%; the added value of the tertiary industry was 5.708 billion yuan, an increase of 6.7%. The ratio of the three industrial structures is 10.54:62.64:26.82. Calculated based on the permanent population, the per capita GDP of the whole district is 35,212 yuan, and the added value of the non-public economy of the whole district is 13.234 billion yuan, accounting for 57.95% of the total economic output of the district.

3. Infrastructure conditions in the study area

3.1 Road traffic facilities

The township roads in the project area are all hardened, and most of the inter-village branch roads have hardened, which is conducive to the passage of construction machinery, vehicles and personnel. With the construction of the new countryside, the remaining branch roads will also be improved, and the traffic around the project area will be convenient and the roads accessible. There are no production roads in the project area and most of them are soil pavements. The road conditions are poor, which brings inconvenience to the construction of the project. It is necessary to plan and build production roads to improve the road conditions in the project area and meet future agricultural production needs.

3.2 Status of irrigation and drainage facilities

There is no available surface water around the project area, and it is difficult to use groundwater. Through land development, waste grassland and low-efficiency forest and grassland are developed into dry land.

3.3 Farmland protection and ecological environment preservation facilities

The The project area is dominated by agriculture, there is no industrial pollution source, and the farmland ecological environment is good. The forest network is mainly arranged along main rivers, canals and roads, and the forest network leading to the field roads and production roads in the project area has not yet been constructed.

4. Project layout

4.1 Plot layout

Considering reasonable distribution and balance of excavation and filling nearby, reducing the amount of work as much as possible, and designing to level each plot in the project area to balance the amount of excavation and filling within the plot.

After leveling, field standards are required in principle. According to the design specifications of terraces, the design of field length should help improve the efficiency of mechanical operations, and be conducive to rationally organizing the field production process, irrigation organization and land leveling. Considering the topographical conditions, the width of the field should be no less than 10m, and the narrowest should be no less than 8m. Combined with the actual topography of the project area, the design length of the field in the project area is finally controlled within 150m-300m, and the width of the field is controlled at about 10m. Due to the irregular shape of the plot, the length of local strips varies with topographical conditions.

4.2 Field Road Engineering

The production road is the main road connecting the field and the field. The project plans to build a production road of 5822m. The production road has a pavement width of 3m and a height of 0.3m above the ground. The lateral slope is 2%.

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4.3 Farmland Protection and Ecological Environment Conservation Project

On the basis of protecting the original vegetation on the ridges and slopes of the project area, plant the survivable and perennial herbs such as coronaria and alfalfa seeds on the exposed topsoil area, and plant purple plum and prickly ash on both sides of the field roads and inside the ridges There are 4366 trees in total, and they are regularly sprinkled with water for maintenance. Such engineering measures can reduce wind and water erosion and enhance the benefits of water and soil conservation in the area.

5. Concluding remarks

After the implementation of the project, it can increase the rate of arable land, increase the utilization rate of land, and improve agricultural production conditions, which has important practical significance for ensuring local food security and improving people's living standards. At the same time, it has promoted the industrialization and large-scale development of the agricultural economy, strengthened the stamina of agricultural production in the region, and played a certain role in accelerating the process of modern agricultural construction and promoting regional economic revitalization and rapid development. The construction of supporting agricultural infrastructure has improved agricultural production, increased vegetation coverage, optimized the structure of forest belts, improved the ecological environment, and increased the ability to resist natural disasters. The regional ecological environment has been significantly improved and created for the local people a beautiful living environment.

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