

Impact of Land Improvement Project Implementation on Comprehensive Benefits of DL County

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Abstract: The land improvement project will level the unused land through mechanical construction, which is conducive to eliminating the terrain slope and reducing the surface runoff. At the same time, agricultural measures such as field management and protective cultivation can effectively conserve water and soil, especially in favor of increasing the content of soil nutrients and organic matter. In addition, it is an important means to ensure food security in China to improve the degree of erosion resistance of cultivated land through corresponding water and soil conservation measures.

Keywords: Land improvement; Cultivated land quality; social results; Within the county.

1. Introduction

Through the establishment and implementation of the project, first, other grasslands were comprehensively renovated, and the number of cultivated land was increased through engineering measures, while the quality of cultivated land was improved; Second, improve the irrigation and drainage system in the project area and support agricultural infrastructure; Third, we will conduct intensive land use and land use supervision to promote rational, intensive and efficient land use. The implementation of the project can produce good ecological, economic and social benefits.

2. Project Area Overview

The project area is located in Xizhuang Village, Shuangquan Town, Dali County, involving two administrative villages. The geographical coordinates are $109^{\circ}58'39''\sim 109^{\circ}59'20''$ E and $34^{\circ}55'53''\sim 34^{\circ}56'32''$ N. The landform of the project area is part of the Guanzhong Plain. The terrain inclines from north to south. The terrain is complex and undulates greatly. The geological structure is characterized by the uplift of Taiyuan fault block in Weibei District, which is an alluvial proluvial fan in front of Huanglong Mountain. The original surface is cut into blocks by strong erosion of rivers, and the gullies are further developed, making the plain fragmented. The original, beam, ditch and valley are interlaced, with positive and negative terrain alternating. The project area belongs to warm temperate semi humid and semi-arid monsoon climate. The annual average temperature is 14.4°C , the precipitation is 514 mm, and the frost free period is 214 days. The winter is controlled by Mongolia cold high-pressure air mass, with the lowest temperature, rare snow and rain, cold and dry; In spring, the ocean warm air mass moves northward, and the temperature is gradually higher, sometimes cold and sometimes warm, with more wind and frost; Affected by the subtropical high pressure air mass of the Pacific Ocean in summer, the temperature is the highest, the heat is hot, and there are often summer droughts; Cold and warm air masses appear alternately in autumn, with variable temperatures, cool nights and hot days, and continuous rain. Winter and summer are long, spring and autumn are short, cold and warm, dry and wet, and the four seasons are distinct. The soil is a medium

loam formed from the parent material of loess. It is aerated and permeable, and it can keep water and fertilizer. It has good tillage and is suitable for a wide range of species.

3. Project Construction Conditions

3.1. Road Traffic Facilities

The external traffic conditions of the project area are good, with roads covering both urban and rural areas. County Highway 208 and County Highway 311 run through the area, providing necessary conditions for local villagers to travel and transport materials. However, except for a few village roads near the project area which are concrete roads, other field roads are earth roads, and the current conditions are relatively poor. According to the field survey, the existing road surface is uneven and uneven in width. It is difficult to pass through when it is muddy in rainy days, which is extremely inconvenient and is not conducive to the daily farming and mechanized operation of farmers. Therefore, the project will comprehensively improve the road system and improve the pavement standard to meet the needs of agricultural mechanization and field cultivation.

3.2. Water Conservancy Supporting Facilities

The project area is a wasteland. According to the field survey, there are no systematic field irrigation facilities and drainage facilities in the project area, and the popularization rate of irrigation and water conservancy facilities is very low. In the north of the project area, there is a main canal for pumping water from the Yellow River, which has sufficient water. Therefore, it is proposed to divert water from the Yellow River through pump wells or tributary channels to meet the needs of crops.

3.3. Power Facilities

The project area is close to villages, with sound rural power grid facilities, sufficient power resources, stable voltage, and access to electricity nearby, providing sufficient power for construction and agricultural irrigation.

4. Project Layout

4.1. Land Leveling Works

The key elements of the design section of horizontal

terraced fields are: clear width of the field surface (B), slope of the field ridge (α) And ridge height (H). The net width of the field surface shall be able to adapt to the minimum width of mechanical tillage and irrigation; The design of the slope of the ridge should not only ensure the stability of the ridge, but also minimize the labor and land occupation; The height of terrace ridge shall be determined according to such factors as ground slope, soil texture, mechanical cultivation conditions and utilization. The design width of the overall field in the project area is controlled at least 10m, and some of the fields are controlled at not less than 8m due to terrain reasons, and cannot exceed 20% of the total amount. The length is 150-300m, and rows of terraces are formed along the contour line from high to low.

4.2. Water Conservancy Supporting Project

Water conservancy supporting works in the project area mainly include water source works and water conveyance works. According to the analysis of the balance between supply and demand of water resources, the irrigation water in the project area is mainly provided by pumping wells and Yellow River water. The irrigation mode in the project area is mainly to supply water from the water source to the high-level regulating tank, and from the regulating tank to the low-level terraces through the low-pressure pipeline. The irrigation mode is water-saving irrigation. The water transmission and distribution system adopts buried UPVC low pressure pipeline for water transmission, and the pipeline shall be buried at least 0.8m above the ground. The pipeline takes water from the regulating pool, is controlled by the outlet valve, and is basically arranged along the short side of the field. The branch pipe is connected by reducing tee at a certain distance in the vertical direction. The gate valve can control two-way water diversion. Each gate valve is equipped with a valve well. The branch pipes are arranged parallel to the planting direction of crops. The water outlet pile is higher than the ground. For larger plots, one water outlet pile can be set for every 3-5 mu, and for smaller plots, one water outlet pile can be set for every two platforms. A drain valve is set at the end of the branch pipe to discharge the residual water in the pipe, and a drain well is set.

4.3. Field Road Works

On the basis of following the principles of facilitating residents' travel and farming, improving the level of agricultural mechanization, and making full use of existing field roads, new field roads and production roads will be built to form a traffic network connecting the project area with roads outside the area, and connecting residential areas and field work, so as to facilitate field operations and the transportation of agricultural materials. The production road is mainly connected to the whole project area. Field roads are mainly used to connect fields or villages with fields, so as to facilitate agricultural machinery transportation and farming.

5. Comprehensive Benefit Analysis

5.1. Social Benefit Analysis

1) After the implementation of the project, the production and living conditions of farmers will be further improved. Through land improvement, the field irrigation facilities in the project area are fully equipped, the land in the project area is leveled, and the land utilization rate and output rate are greatly improved.

2) After the implementation of the project, the quality of cultivated land in the project area is one grade higher than that of adjacent plots, and the land use potential will be greatly improved.

Through the comprehensive improvement of fields, water and roads, the agricultural production conditions have been improved, and the sustainable use of land and the sustainable development of agriculture have been guaranteed; Through the promotion of advanced agricultural production technologies and management methods, the rural tradition and backward concepts have been changed, laying a good foundation for building a new socialist countryside.

5.2. Ecological Benefit and Environmental Impact Analysis

After the project area is renovated, the ecological environment in the project area will be improved:

(1) Through the construction of various land improvement projects, in addition to developing other grasslands into cultivated land, the original unreasonable layout and scattered plots were also reorganized into regular plots, which improved the level of intensive land use.

(2) A road network has been built to facilitate mechanized operations and pedestrians, and the level of road networking has been improved.

Through the construction of the project area, there will be an agricultural park with a concentrated area of cultivated land, a network of roads and fields, and the ecological landscape of the project area will be significantly improved.

It can be seen that the social benefits generated by the implementation of the project are huge, the ecological benefits are obvious, and the economic benefits are feasible according to the agricultural project standards. The social benefits, economic benefits and ecological benefits are unified, which is in line with the goal of land remediation.

5.3. Analysis of Cultivated Land Quality

Through the implementation of the project, the original grassland in the project area has been developed, the irregular land has been leveled, the excavation of irrigation pipe trench and the matching of pipe fittings have improved the shortage of the original irrigation and drainage facilities in the project area, greatly improving the irrigation conditions of cultivated land, effectively preventing the loss of soil fertility, promoting the development of the potential of land production, and the comprehensive quality of cultivated land has been greatly improved. After the arrangement of cultivated land, the quality grade of cultivated land is slightly higher than that of adjacent plots, the grain production capacity has been improved, and the overall quality of cultivated land in the project area will reach a certain level after the application of organic fertilizer, soil fertility and other measures.

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