

The impact of high-standard farmland construction on the quality and grade of cultivated land

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Abstract

High-standard farmland construction is the main way to improve and improve the quality of cultivated land. By analyzing the impact of high-standard farmland construction on the quality and grade of cultivated land, the research shows that: After the implementation of the project, the farmland infrastructure will be more complete, and the productivity of the cultivated land will gradually increase, which will help farmers to apply advanced production technology, improve the structure of agricultural production, increase output and improve the planting structure of agricultural products, develop diversified operations, and reduce production. costs and risks, thereby increasing farmers' income, improving farmers' living conditions, narrowing the gap between the rich and the poor, and promoting the sustainable economic development of the town where the project area is located.

Keywords

High-standard farmland; farmland quality; farmland classification; engineering construction; farmland protection.

1. Introduction

The Party Central Committee and the State Council attach great importance to the protection of cultivated land and the improvement of soil fertility, and unswervingly do a good job in the construction of high-standard farmland, and improve the construction standard and quality. General Secretary Xi Jinping pointed out: "It is necessary to build high-standard farmland to truly achieve drought and flood protection, high yield and stable yield." In 2018, the "Strategic Plan for Rural Revitalization (2018-2022)" proposed to promote the construction of high-standard farmland on a large scale to ensure that it will be completed by 2022. 1 billion mu of high-standard farmland, and the quality of cultivated land has been improved by more than 0.5 grades (different) on average; No.) pointed out that the construction of high-standard farmland is a key measure to consolidate and improve grain production capacity and ensure national food security. With increasing grain production capacity as the primary goal, we should focus on arable land protection, soil fertility improvement and efficient water-saving irrigation, and vigorously promote high Standard farmland construction, and the newly added cultivated land indicators for high-standard farmland construction are included in the supplementary farmland index library, which can be used for cross-regional farmland occupation and supplement balance adjustment when it meets the demand for the balance of farmland occupation and compensation in the region; "The plan and the outline of the long-term goals for 2035 propose that 1.075 billion mu of high-standard farmland will be built; the "National High-standard Farmland Construction Plan (2021-2030)" will build 1.2 billion mu of high-standard farmland by 2030, and new high-standard farmland will be built. The average production capacity per mu of farmland will be increased by about 100 kilograms; in 2021, the No. 1 document of the Central Committee proposes that 100 million mu of farmland will be built in 2021 to ensure high-yield, stable yield and high-standard farmland.

In order to better implement the decision-making and deployment of the Party Central Committee and the State Council on strengthening the construction of high-standard farmland, in 2020, the Shaanxi Provincial People's Government issued the "Notice on Printing and Distributing the Implementation Plan for Accelerating the Construction of High-standard Farmland", it is proposed to vigorously promote the construction of high-standard farmland to lay a solid foundation for ensuring food security in the province. By 2022, the province will build 6 million mu of high-standard farmland with concentrated contiguous, drought-flood-guarantee, high-efficiency water-saving, stable and high-yield, and ecologically friendly; The Guiding Opinions on Strengthening the Construction of Newly-Added Cultivated Land and Increased Production Capacity of High-standard Farmland", which takes the newly-added cultivated land and newly-added production capacity of high-standard farmland as the balance of occupation and compensation to supplement the cultivated land index adjustment. The proceeds are used for high-standard farmland construction, further improving the high-standard farmland construction standards, and forming a virtuous circle of high-standard farmland construction and economic and social development.

2. Project area overview

The total scale of the high-standard farmland construction project in Fengxiang District, Baoji City is 2,203 hectares. The location is between 107°12'36"~107°13'48" east longitude and 34°34'12"~34°36'1" north latitude. The project area belongs to the warm temperate continental monsoon climate, semi-humid and semi-arid climate zone, with four distinct seasons, the annual average temperature is 8.9°C, and the annual average precipitation is 790mm. The rainfall is mainly concentrated in July, August and September. The main aquifers of groundwater are silt, gravel and stone layers. The thickness of the water layer is 18.6-26.38m, which gradually becomes thinner from south to north. Mining shallow water and shallow confined water, the water level of the burial zone is 20-40m deep, and the water salinity is less than 1g/L. The soil type in the project area is dominated by soil, with granular and massive structure, polycapillary pores, organic matter content of about 1%, the cohesive layer is gray-brown, and the surface of the structure has a plastic film, which is rich in bacteria. The loam soil layer is deep and has high nutrient content. It has the characteristics of vacancy in the upper part and solid in the lower part, water and fertilizer retention, drought resistance and waterlogging resistance, and is widely distributed on the gentle loess plateau in the project area.

3. Land Use Constraints

The agricultural production conditions in the project area are poor, the agricultural infrastructure is not complete, and the natural resources cannot be effectively and reasonably developed and utilized. Although the project area is adjacent to Fengjiashan Reservoir and Wangjiaya Reservoir, with abundant water resources, there is almost no irrigation in the area. Agricultural water conservancy infrastructure supporting facilities, the existing irrigated land irrigation efficiency is low, can not meet the needs of local agricultural production development. Part of the field roads and production roads in the project area are disorderly, with different widths, and there are still a lot of dead ends. The road is plain soil, the road is bumpy and muddy every rainy season. The agricultural mechanized production is greatly restricted, and field roads and production roads are in urgent need of repair and reconstruction.

For a long time, these factors have restricted the improvement of the comprehensive agricultural production capacity of the project area, and also restricted the improvement of the land utilization rate and output rate of the project area, and greatly affected the production enthusiasm of local farmers. It is urgent to solve the obstacle factors through scientific planning and design, and improve the utilization rate and output rate of land in the project area.

4. Major Improvements

(1) Strengthen the construction of farmland water conservancy projects and enhance the ability of farmland to prevent and resist disasters. Make full use of the large and medium-sized irrigation areas of the water conservancy department to build supporting facilities and water-saving renovation projects, improve and transform water conservancy engineering facilities, and improve the comprehensive utilization efficiency of water conservancy projects.

(2) Reasonably plan field roads, improve the accessibility of agricultural machinery, reduce labor production intensity, and facilitate the transportation of agricultural products. According to the transportation needs of local planting crops, the road construction standards are determined according to local conditions to meet the harvest and external transportation of agricultural products.

(3) Increase the application of organic fertilizers. The types of fertilizers are mainly various farm manures, planting green manures and straw returning to the field. Combined with the application of chemical fertilizers, the physical and chemical properties of the soil are improved, and the nutrient elements of the soil are enriched. The high fertility after soil improvement and fertilization Soil can ensure that water, fertilizer, air, heat and other fertility factors are coordinated with each other to meet the needs of crop growth and development and increase crop yield.

5. Capacity Analysis

The project is carried out in accordance with the "Notice on Doing a Good Job in Newly-Increased Cultivated Land and New Production Capacity in the Process of High-standard Farmland Construction" (Shaannongfa [2021] No. 77) jointly issued by the Shaanxi Provincial Department of Agriculture and Rural Affairs and the Shaanxi Provincial Department of Natural Resources Regional arable land productivity assessment.

The formula for calculating the productivity of cultivated land:

New production capacity = increased production capacity from new cultivated land + increased production capacity from high-standard farmland construction

Increased productivity of newly-added cultivated land = (D- average quality of newly-added cultivated land)×newly-added cultivated land area×15×100

Increased production capacity of high-standard farmland construction = (average quality of cultivated land before high-standard farmland construction - average quality of cultivated land after high-standard farmland construction)×high-standard farmland construction area×15×100

In the formula: D—the capacity calculation constant, D can be calculated (when the capacity is 0, D=16)

15 - means 1 hectare = 15 mu

100—represents mu/kg

According to the increase of one grade of cultivated land, the new grain production capacity will be 100kg/mu. The cultivated land production capacity of the project area is shown in the table below. According to statistics, the total production capacity of the project area has been increased by 3742.75 t after the planning.

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