

# Current Situation and Improvement Suggestions of Cultivated Land Quality in Shaanxi Province

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## Abstract

China has a vast territory and abundant resources. Agriculture is a fundamental industry in China, and cultivated land is also a very important part of agricultural production. The quality of cultivated land is crucial. By continuously improving the quality of cultivated land, the quality of agricultural products can be improved, forming a virtuous cycle. Farmers should actively respond to the call of the country, use idle land to continuously expand the area of arable land, and the government should play a corresponding regulatory role.

## Keywords

Cultivated Land Quality; Improvement; Suggestions.

## 1. Current Situation of Cultivated Land Resources in Shaanxi Province

### 1.1. Lack of Arable Land Per Capita

The survey shows that the per capita arable land area in China is only about 40% of the world average, and the reserve resources of arable land in China are severely insufficient. For example, in some ecologically weak areas of the northwest and northeast, the problem of arable land is also more obvious, and there are problems such as excessive cultivation and serious damage to the ecological environment. If measures are not taken in a timely manner for optimization, it will lead to the depletion of reserve resources of arable land in the future.

### 1.2. Poor Quality of Cultivated Land

Among all arable land in China, the proportion of high-quality arable land is only 30%, while medium and low grade arable land reaches 70%, and is affected by natural erosion, water content, and slope. It can be seen that the quality of arable land in China is generally low. The rapid development of some cities has occupied a large amount of high-quality farmland, mainly reflected in some central and eastern regions. At the same time, more and more farmers are entering big cities, and the population and labor force in rural areas are constantly decreasing, leading to the abandonment of a large number of high-quality farmland. Therefore, when reclaiming wasteland, people mostly choose cultivated land with weak ecological environment and insufficient production capacity, resulting in the phenomenon of occupying the superior and compensating for the inferior[1].

### **1.3. Poor Soil Fertility and Severe Degradation in Cultivated Land**

According to a survey by the Food and Agriculture Organization of the United Nations, the average organic matter content in China's arable soil is 1.86%, which is significantly insufficient compared to other countries in terms of soil fertility. Although a small number of regions have recognized this issue and taken relevant measures to improve soil fertility, achieving certain results, there are still some areas where soil organic matter content has decreased, such as the Northeast region. In addition, pH value is also an important indicator for determining soil fertility in cultivated land. The pH value of cultivated land in many southern regions is continuously decreasing, showing a relatively serious phenomenon of soil acidification. There are also some industrial areas with severe heavy metal pollution in their arable land. Overall, the heavy metal pollution in the southern region is higher than that in the northern region. In recent years, although China has vigorously promoted the technology of soil testing formula fertilization and carried out the protection and improvement of farmland quality [2], the level, structure and proportion of fertilizer input are still unreasonable, and the amount of organic fertilizer input is relatively small. Although the amount of potassium fertilizer input has increased, there is still a certain gap with the standard of soil testing formula fertilization.

### **1.4. Farmland Desertification, Salinization, and Soil Erosion**

In many areas of China, the cultivated land layer is becoming thinner, and the plow bottom layer is increased, which improves the soil compactness, and there are very obvious obstacles to soil permeability, such as the cultivated land layer in the North China Plain has been reduced. In addition, the phenomenon of farmland desertification is also very serious, such as in the Hexi Corridor. The largest proportion of sloping farmland is in the Loess Plateau and the upper reaches of the Yangtze River, where there are varying degrees of soil erosion problems. Overall, the quality of arable land resources in China has not improved, but has actually decreased to a certain extent. The quality of agricultural and sideline products is based on the quality of arable land, so from the perspective of sustainable development, it is impossible to achieve sustainable use of arable land.

## **2. Suggestions for Improving the Quality of Cultivated Land**

### **2.1. Fully Understand the Necessity of Improving the Quality of Cultivated Land**

The sustainable development of agriculture is closely related to the quality of cultivated land, which is a key factor affecting the quality of agricultural products, thus affecting the economic benefits of farmers and the livelihood of China. Therefore, it is necessary to recognize the importance of agricultural product quality and food security in order to gain the attention of the leadership. We need to increase the promotion of agricultural technology content and promote it through short video platforms, To spread knowledge to more farmers, fully mobilize their production enthusiasm, and promote sustainable agricultural development, the agricultural technology department also needs to increase the testing of arable land, combine local geological environment and climate conditions, establish arable land quality testing points, record various data, and finally organize and archive [3].

### **2.2. Utilizing Science and Technology to Improve the Quality of Cultivated Land**

With the continuous development of science and technology, more and more high-tech technologies have been applied to the production process of modern agriculture, thereby improving the level of agricultural production and providing more high-quality services. This requires relevant departments to continuously summarize experience and appropriately introduce agricultural technicians and advanced scientific and technological personnel based on actual situations. Establish a large-scale demonstration area for replacing chemical fertilizers with organic fertilizers, and a demonstration area for efficient application of formula

fertilizers and slow-release fertilizers, vigorously promote formula fertilizers and slow-release fertilizers, and optimize the structure of chemical fertilizers; Reduce the use of fertilizers and improve the quality of cultivated land. In addition, scientific research departments also need to collaborate with major universities to leverage their technological, human, and financial advantages, in order to continuously improve the quality of agricultural services. At the same time, a technical guidance group of experts in farmland quality construction and management can be established to propose detailed technical plans for farmland quality construction based on different regions and soil types. Organize research, teaching, and promotion units to collaborate and jointly tackle key areas and technical difficulties, thereby forming a technical model for protecting and improving farmland quality[4]. By combining the new vocational farmer training project and the quality improvement plan for rural practical talent leaders, we aim to enhance the ability of agricultural and rural new business entities to improve the quality of arable land and scientific fertilization technology. Each city (county, district) should select technical backbone from local agricultural and rural departments, "production experts", and "soil experts", establish corresponding technical teams, and provide technical guidance services around the construction of cultivated land quality.

### **2.3. Methods for Improving the Quality of Cultivated Land**

(1) Based on the actual local situation, analyze specific problems, strictly follow the principle of adapting to local conditions, select suitable crops based on soil types, encourage farmers to learn knowledge related to agricultural production, and avoid improper cultivation.

(2) In the traditional cultivation process, farmers use a large amount of fertilizer to increase crop yield and increase income, which is also the main reason for the destruction of farmland. From the survey and research reports in China, it can be seen that the utilization rate of commonly used potassium and phosphorus fertilizers is not high, so targeted measures need to be taken to continuously improve the utilization rate of fertilizers.

And ensure the balance of fertilizer use. With the continuous improvement of people's living standards, the development of animal husbandry is very rapid, so the resources of farm manure are relatively abundant. During the planting process, inorganic fertilizer and farmyard manure can be combined to reduce environmental pollution and reduce the use of chemical fertilizers, thereby improving soil acidification to a certain extent.

(3) In order to increase the yield of agricultural products, farmers use a large amount of pesticides during the crop planting process, which pollutes the soil environment and leads to a continuous decline in soil quality, which is not conducive to sustainable agricultural development. This requires reducing the use of pesticides in the process of disease and pest control, reducing the harm to soil, improving soil bearing capacity, and protecting the ecological environment.

(4) In the process of agricultural production, the soil is prone to compaction, because after long-term cultivation, the land in the same area is prone to thinning of the arable land layer and shifting of the plow bottom. A combination of deep plowing and deep loosening can be adopted for treatment.

(5) Returning straw to the field is a common phenomenon in agricultural production in China, and it is also a problem that must be solved at present. If we continue to use incineration to achieve straw returning to the field, it will cause waste of straw resources, and burning straw will produce a large amount of smoke and dust, which will pollute the surrounding ecological environment. In recent years, the government has introduced policies related to straw returning to the field, mainly including two methods: returning to the field and covering. Taking the mechanical rotary tillage technology of full wheat straw returning to the field as an example, this technology utilizes the power of technology to treat wheat straw returning to the field. At the same time, straw ripening agents can be used according to actual situations to accelerate

fertilizer cultivation, thereby increasing the yield of agricultural products and further increasing farmers' income [5].

(6) There is a serious phenomenon of soil acidification in some regions of China, which reduces the fertility of the soil and affects the yield and quality of crops. According to the actual degree of acidification, soil acid regulators can be used to regulate soil acidity while increasing the calcium content in the soil. When the phenomenon of soil acidification is severe, quicklime can be sprinkled onto the farmland after autumn harvest, or quicklime can be sprinkled in the ditch during spring sowing, and sowing can begin after spring rain has fully penetrated into the ground. For soils with less severe acidification, dolomite powder can be used while watering more. The principle of using soil amendments is to improve the physical properties of the soil by bonding soil particles, thereby promoting the absorption of nutrients by crops. However, soil amendments themselves do not contain nutrients.

#### **2.4. Increase Investment in Farmland Quality Construction**

Based on the central government's farmland protection and quality improvement project, we actively strive for financial, insurance, tax and other policy support, increase funding investment, and support the protection and improvement of farmland quality. Actively explore effective ways for the government to purchase services, and support new agricultural business entities to carry out land quality construction and scientific fertilization services. Strengthen the construction of soil and fertilizer systems, Focus on optimizing county-level soil and fertilizer work institutions, enriching technical capabilities, upgrading facilities and equipment, and improving service capabilities and levels.

#### **2.5. Strict Management**

Strengthen the management of the units responsible for the construction of cultivated land quality, urge all project units to strictly carry out their work in accordance with the project construction and investment plan, and shall not arbitrarily change the construction location, scale, standards, and content. We need to implement a bidding system for engineering and subsidy materials, and strengthen supervision over the use of projects and funds. Commend personnel or units who have diligently completed construction tasks and achieved outstanding results, and give preferential treatment when arranging projects in the next year; For projects that fail to meet the acceptance standards, rectification should be carried out within a specified period of time and criticism should be circulated to improve the quality of cultivated land.

### **3. Conclusion**

To improve the quality of agricultural products and achieve sustainable development, relevant personnel need to strengthen their attention to the quality of cultivated land. Based on the actual situation and specific analysis of specific issues, we will organically combine the construction of standard arable land, arable land grade, and modern agricultural construction. By utilizing modern science and technology as well as advanced farming methods, we can protect arable land while promoting agricultural production and income increase, and increase the income of farmers.

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