

Research on Agricultural Resource Protection and Sustainable Utilization from an Ecological Perspective

Yongjin Liu, Wenhui Su, Liqun Chang

Ningxia Hui Autonomous Region Agricultural Exploration and Design Institute, Yinchuan 750002, Ningxia, China

Abstract: China's agricultural resources play a very important role globally, serving as the foundation for the development of China's agricultural economy and playing an irreplaceable role in China's socio-economic development. However, due to various factors such as population growth, economic growth, and social progress, China's agricultural resources are facing unprecedented pressure. To effectively protect and reasonably utilize agricultural resources, relevant departments in China should actively take measures to ensure the sustainable utilization of agricultural resources. From an ecological perspective, the protection and rational utilization of agricultural resources can further promote the healthy and rapid development of the agricultural economy. Therefore, based on ecology, this article explores specific measures for the protection and rational utilization of agricultural resources, aiming to provide some reference and inspiration for the sustainable development of agriculture in China.

Keywords: Ecology, Agricultural resources, Sustainable development

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1 Reasonable use of fertilizers and scientific fertilization

In agricultural production activities, fertilizers are an important input resource that can effectively promote agricultural economic development. However, due to incorrect methods used by farmers in the process of using fertilizers, some areas have encountered problems of resource waste and environmental pollution. ^[1] Therefore, in order to effectively protect and reasonably utilize agricultural resources, relevant departments in China should actively take measures to reduce the impact of fertilizers on agricultural resources. ^[2] Firstly, in order to effectively reduce the cost of fertilizer use, fertilizers that meet national quality standards and requirements should be selected, and the dosage should be strictly controlled

during use to avoid excessive use of fertilizers as much as possible. Secondly, use chemical fertilizers reasonably. In the process of using fertilizers, factors such as soil physical and chemical properties and crop growth characteristics should be fully considered, and fertilizer varieties should be reasonably selected based on the actual growth of crops. At the same time, appropriate fertilization methods should be selected according to the fertilization purpose. Finally, in the agricultural production process, efforts should be made to avoid soil pollution as much as possible. ^[3] To effectively reduce pollution levels, increase agricultural product yields, and promote sustainable agricultural development, relevant departments should actively promote scientific fertilization techniques and reduce the use of fertilizers in agricultural production processes. Determine reasonable fertilization

methods based on the different growth conditions of different crops and regional environmental differences. For fertilizer loving crops, a combination of basal and topdressing fertilization methods can be used.^[4] For crops that do not like fertilizer, methods such as returning straw to the field and deep application can be used; For areas with polluted soil, rotation and soil testing formulas should be adopted to improve soil fertility.

During the use of fertilizers, it is necessary to strictly control the amount and duration of fertilizer use, ensuring that fertilizers can be fully absorbed by crops.^[5] At the same time, in order to ensure the quality and yield of agricultural products, it is necessary to avoid environmental pollution as much as possible during the fertilization process. For example, during the fertilization process, avoid mixing harmful substances into crops, and minimize the impact on the environment as much as possible.

2 Control pesticide pollution

Due to the toxicity of pesticides, improper use can cause serious pollution to the ecological environment and even endanger human life safety. Therefore, in actual production and life, attention should be paid to the control of pesticide pollution. When controlling pesticide pollution, multiple perspectives and measures should be taken to reduce the pollution caused by pesticides to the ecological environment. Firstly, we should strengthen our publicity efforts. Relevant departments should actively organize personnel to carry out publicity and education, so that the public can fully understand the harm of pesticides to the ecological environment, and reduce the pollution caused by pesticides to the ecological environment through effective means. Secondly, we need to strengthen our research efforts. Relevant departments can identify the problems in the currently used pesticides through investigation and research, and effectively reduce the pollution caused by pesticides to the ecological environment through the development of new pesticides. At the same time, new technologies and processes can also be introduced to reduce the harm caused by pesticides during use. Relevant departments should establish

sound, scientific, and reasonable management systems and measures to control pesticide pollution and avoid poisoning caused by ingestion of excessive or excessive amounts of pesticides. In addition, relevant departments can also ensure the quality and safety of agricultural products by establishing a sound mechanism for quality inspection of agricultural products.

From an ecological perspective, the protection and sustainable utilization of agricultural resources are of great significance and role, which can effectively promote the healthy and rapid development of agricultural resource protection and sustainable utilization. In order to effectively ensure the healthy and rapid development of sustainable utilization of agricultural resources, relevant departments should actively take measures to strengthen the management and level of agricultural resource protection and sustainable utilization from multiple perspectives, ensuring the healthy and rapid development of agricultural resource protection and sustainable utilization.

3 Strengthen the ecological construction of farmland

Strengthening the ecological construction of farmland is an important aspect of sustainable utilization of agricultural resources. Firstly, relevant departments should attach importance to the ecological construction of farmland, utilize modern means, and improve the stability of farmland ecosystems. Secondly, strengthen the rational layout of agricultural resources. Finally, relevant departments should actively encourage farmers to use ecological technologies such as straw returning technology and soil testing formula fertilization technology to improve the efficiency of agricultural resource utilization and further promote sustainable agricultural development. In order to further strengthen the ecological construction of farmland, relevant departments should actively advocate and promote efficient agricultural production technologies. For example, modern agricultural machinery and equipment such as transplanters and drones used in rice cultivation belong to high-efficiency agricultural production technologies. The

use of efficient agricultural production technology in rice cultivation can effectively improve crop yield and quality, and reduce the degree of damage to farmland caused by crop cultivation. Therefore, relevant departments in our country should attach great importance to the application of efficient agricultural production technology, and use efficient agricultural production technology to further improve crop yield and quality. In addition, relevant departments should vigorously advocate and promote green and environmentally friendly agricultural production models, and promote the development and promotion of ecological and environmentally friendly agriculture. By applying green and environmentally friendly agricultural production models, the degree of damage to farmland can be further reduced.

4 Establish a sound agricultural ecological compensation mechanism

In China, due to the lack of an ecological compensation mechanism, some ecological and environmental problems in certain regions have not been resolved in a timely and effective manner. This is also a key issue that must be addressed in the protection and sustainable use of agricultural resources. A sound agricultural ecological compensation mechanism needs to achieve the following points:

1. Establish a sound legal system for agricultural ecological compensation. Firstly, it is necessary to strengthen the binding role of relevant laws and regulations, and establish corresponding supervision and inspection mechanisms to effectively regulate the protection of agricultural resources. Secondly, it is necessary to increase the publicity efforts for ecological environment protection work, improve the understanding of relevant departments on ecological environment protection work, and lay a good foundation for establishing and improving agricultural ecological compensation mechanisms.

2. Increase investment in agricultural ecological compensation funds. Agricultural resource protection is a long-term and sustainable project, and establishing a sound agricultural ecological compensation mechanism requires

a large amount of investment. Therefore, it is necessary to increase the investment in funds required for the protection and utilization of agricultural resources, thereby increasing the proportion of government financial expenditure and promoting the smooth development of agricultural resource protection and utilization work.

Strengthen the supervision of the construction of ecological compensation mechanisms. In order to effectively promote the smooth progress of the construction of ecological compensation mechanisms, it is also necessary to strengthen the supervision of the construction of ecological compensation mechanisms, so as to ensure the smooth progress of all work.

5 The latest technologies and methods for agricultural ecological environment protection and governance

1. Application of nanotechnology in agriculture: Through its tiny size, nanotechnology can monitor and control key processes in agriculture, such as disease diagnosis and improving the absorption capacity of plants for nutrients. The use of nanofertilizers and nanopesticides can reduce the amount of chemicals used, reduce soil and water pollution, and improve crop yield and quality.

2. Non point source pollution control technology: With the development of the economy and society, agricultural non-point source pollution has become an important environmental problem. The research and application of rural domestic sewage treatment, garbage treatment and disposal technology, ecological interception technology for farmland runoff, and reduction technology for fertilizers and pesticides are the key directions for the current control of agricultural non-point source pollution in China.

3. Development of ecological agriculture: Ecological agriculture emphasizes the circular utilization of energy and resources, optimizes agricultural structure, and improves production efficiency. Although there are some challenges, such as low professional quality of technical personnel and insufficient policy support, the introduction of new plant protection technologies can effectively solve these problems

and promote the rapid and stable development of ecological agriculture.

Innovation and application of environmental protection technologies: In order to promote the healthy and orderly development of ecological agriculture, it is necessary to strengthen the innovation and application of environmental protection technologies. This includes soil improvement technology, seed magnetization treatment technology, etc., and the application of these technologies can help achieve environmental protection goals in agricultural production.

5. Comprehensive application of multidisciplinary technologies: The comprehensive application of multidisciplinary technologies such as biotechnology, information technology, nuclear technology, remote sensing technology, new material technology, automation technology, etc. provides new ideas and methods for agricultural environmental protection. The application of these technologies can improve the efficiency and sustainability of agricultural production, while reducing negative impacts on the environment.

6 Conclusion

China is a major agricultural country, and agriculture is an important component of our national economy. With the acceleration of economic globalization, China's agricultural development is also facing enormous challenges. China is a populous country. With the continuous development of the economy and society, the population growth rate is faster than the growth rate of land resources, resulting in a decrease in per capita arable land area and enormous pressure on agricultural resources. From an ecological perspective, based on ecological theory, some specific measures have been proposed. Firstly, it is necessary to strengthen the protection of land, control soil erosion, and prevent soil salinization; Secondly, we need to strengthen

the protection of water resources and improve agricultural water conservancy facilities; Finally, we need to strengthen the protection of biodiversity. On this basis, from a macro perspective, some macro measures and suggestions have been proposed. In short, protecting and reasonably utilizing agricultural resources is one of the important contents of China's socio-economic development. Therefore, relevant departments should actively take measures to protect and reasonably utilize agricultural resources. At the same time, it is also hoped that the research in this article can provide some reference and inspiration for the protection and sustainable utilization of agricultural resources in China.

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