

On Protection and Improvement of Ecological Environment in Agricultural Cultivated Layer

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Abstract: Over the years, people's intensive development and utilization of cultivated land, as well as the pollution caused by the occupation of agricultural land by rural industries, coupled with some measures promulgated in the process of social and economic development that are not friendly to the natural environment, have caused the agricultural cultivated layer in some areas to be damaged to varying degrees, and some damages are even irreversible. The main forms of agricultural cultivated layer damage are vegetation degradation, soil desertification, soil pollution, water pollution and so on. For the sustainable development of China's agriculture, it is necessary for the relevant administrative departments to actively seek measures for the protection and improvement of agricultural cultivated layer ecological environment, and comprehensively promote the construction of agricultural ecological civilization. For example, under the unified and coordinated deployment of relevant state departments, relevant laws and regulations should be improved and perfected as far as possible, the management and control of regional ecological environment should be strengthened, the protection mechanism of agricultural cultivated layer ecological environment should be more detailed, the perfect pesticide quality standards should be formulated, and the construction of supervision and management system should be strengthened to minimize adverse effects. In addition, with the help of local government, the fertility of cultivated layer can be enhanced to protect and improve the ecological environment of agricultural cultivated layer.

Keywords: Agriculture; Cultivated Layer; Ecological Environment

China is the most populous country in the world, and it is also a developed agricultural country. Farmers are the occupations with the largest population in the country. Therefore, in order to comprehensively promote China's social development, the prerequisite is to solve the three rural issues. In recent years, because of the intensive and unreasonable development and utilization of cultivated land, there are still many policy environments and natural conditions that are not conducive to the recuperation of cultivated land, which have seriously damaged the ecological environment of agricultural cultivated layer. The quality of agricultural cultivated layer

directly affects the production of grain, so we need to protect and improve the ecological environment of soil. The specific measures are to strengthen greening, establish a complete and effective farmland ecological monitoring system, and enhance soil fertility, so as to fundamentally solve the problems of agriculture, rural areas and farmers in China.

1. Reflections of damages in ecological environment of agricultural

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doi: 10.18686/pes.v2i3.1354

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cultivated layer

1.1 Vegetation degradation

In some areas, the cultivated layer is overexploited and utilized, which squeezes the living space of the original vegetation in the natural environment, resulting in vegetation degradation. In other areas, because of unfavorable natural conditions, in Northeast China, there are perennial droughts, long wind seasons and heavy sandstorms, which lead to the surface soil being blown away by strong winds and the vegetation growing hard. Under these circumstances, vegetation cannot effectively prevent soil erosion, which further deteriorates the soil ecological environment and is unfavorable to the subsequent agricultural development.

1.2 Land desertification

It can be seen from the above that the high-intensity use of agricultural cultivated land in some areas of China leads to the degradation of the original vegetation and aggravates the local soil erosion. The reason is that the high-intensity use of agricultural cultivated land will lead to excessive consumption of local groundwater resources, which will lead to the decrease of local groundwater content and soil water content over time. When the vegetation grows, it cannot absorb enough water, and the vegetation on the surface will wither and die in a large area, thus effectively preventing soil erosion. When vegetation is degraded to a certain extent, and a large area of surface is exposed, wind erosion will occur, resulting in a large area of land desertification. Nowadays, land desertification is a very serious ecological environment problem, which not only damages the local natural ecological environment seriously, but also leads to a huge amount of sand deposition on the surface^[2]. Damage to the natural environment will make the local vegetation scarce, reduce the moisture in soil and air, make it unsuitable for human habitation, and reduce the available land resources. The massive deposition of sand will cause serious damage to local and surrounding areas, even endangering the safety of human life and property, such as sandstorm erosion.

1.3 Deterioration of water quality

Human life and production activities not only cause damage to cultivated land and soil, but also have a negative impact on local water ecological environment. In

recent decades, China's population has increased dramatically, and human activities related to agriculture have become more frequent. With the development of society and the progress of science and technology, the destructive power of human activities has gradually increased, causing the deep underground groundwater resources to be destroyed, and even the water quality content has changed, which is a serious damage to the underground water quality structure. For example, in some industrial developed areas, the change of water ecological environment is mainly due to the pollution of water resources. When the content of undesirable components in groundwater quality is too high, which exceeds the bearing standard of groundwater, the soil in agricultural cultivated layer will also be eroded, which makes the soil unsuitable for cultivation and has a serious impact on agricultural production activities.

1.4 Soil salinization

Excessive use of agricultural farmland leads to serious soil moisture loss, which leads to soil salinization. The detailed explanation is that in some areas, especially in high temperature areas, frequent ploughing and sowing of cultivated land makes the water in the surface soil more easily evaporated. When the water in the soil is evaporated, the mineral components and salt in the water quality will continuously accumulate in the soil. Over time, the minerals and salt in the soil will exceed the standard, resulting in soil salinization. There is another reason. In some areas, when using external fertilization methods such as pesticides and fertilizers, the amount of minerals and salt in soil and water quality exceeds the standard, which eventually leads to soil salinization. It should be noted that different cultivated layer has different sensitivity to minerals in groundwater, and the most sensitive cultivated layer is surface soil.

1.5 Soil pollution

Water resources and land resources have ways been inseparable parts. Pollution of water resources will affect land resources, and pollution of land can also affect water resources. The frequent agricultural activities of human beings have seriously damaged the groundwater ecosystem and polluted the groundwater resources. Because of the close connection between water resources and land resources, the soil in the region

has also been polluted. The main source of pollution is the pollutants randomly discharged by industrial factories set up in villages and towns, followed by excessive use of chemical fertilizers and pesticides in agriculture, which has caused serious pollution to local water and soil resources, caused serious damage to the ecological environment of agricultural cultivated layer, and has affected the normal agricultural production activities in the local area.

2. Protection and improvement measures of ecological environment of agricultural cultivated layer

2.1 Strengthen greening and expand vegetation coverage

Since entering the new era, the social economy has developed rapidly, and the natural environment has been seriously damaged. Nowadays, governments at all levels have realized the importance of protecting the environment, started to vigorously develop forestry, and promoted the implementation of many policies such as returning farmland to forests. Developing forestry not only protects the existing forest resources, expands the living space of other vegetation, enhances the local ability of preventing wind and sand and preventing soil erosion, and makes the local environment more suitable for people to live in, but also contributes to the development of national economy. In addition, there are innovative measures to build environmentally friendly villages, incorporating the concept of green environmental protection into the concept of rural ecological civilization construction, and trying to bring the relationship between man and nature to the road of harmonious development. In this way, it can not only improve and perfect the local ecological environment construction system, but also effectively enhance the ability to prevent soil erosion and desertification, and increase the grain output of surplus cultivated land.

2.2 Establish and improve the agricultural ecological monitoring system

Establishing and perfecting an effective agro-ecological monitoring system and promoting its implementation in an all-round way can build an excellent agricultural production pattern that pays equal atten-

tion to both economic and environmental benefits and saves resources efficiently. The perfection of agro-ecological monitoring system can play an important role in protecting the ecological environment of cultivated layer and improving the local soil quality. This system can also improve the utilization efficiency of pesticides, fertilizers and agricultural films, improve and perfect the use standards of regional agricultural products, improve the local pastoral hygiene management regulations, scientifically and rationally plan the use of natural resources such as straw, feed and animal manure, and reduce the pollution of water and soil resources in agricultural production activities.

2.3 Soil fertility

The most fundamental measure to protect and improve the ecological environment of agricultural cultivated layer is to cultivate soil strength. Enhancing soil fertility can not only improve the quality of agricultural cultivated land, but also play a positive role in the construction of local ecological civilization, and it is also related to the sustainable development of agriculture. The following are specific protection and improvement measures:

2.3.1 Returning straw to field

In the past, burning wheat, corn and other straws enhanced soil fertility, which not only made use of agricultural and sideline products such as wheat and corn, but also increased the possibility of increasing grain output of cultivated land in the coming year. However, in recent years, the flue gas produced by burning straw seriously pollutes the environment, so the specific way of returning straw to the field is to thoroughly decompose the straw and then use it to enhance the fertility of cultivated soil. In this way, the physical and chemical properties of cultivated land soil are improved, the atmospheric environmental pollution caused by straw burning is avoided, the by-products such as wheat and corn are fully utilized, and the economic and social benefits are improved.

2.3.2 Rational use of high-quality organic fertilizer

Adding organic fertilizer is the simplest, most direct and most effective way to fertilize soil. In most rural areas, farmers will raise several kinds of livestock in addition to cultivated land. Livestock and natural gar-

bage produced by human production and life are the main sources of organic fertilizers, which are rich in various trace elements for the growth of agricultural and forestry crops. Applying them to cultivated land can improve soil quality and is the best fertilizer. Its main characteristics are as follows: various kinds and wide sources; Rich in nitrogen, phosphorus, potassium, calcium, magnesium, sulfur and other nutritional elements that can help the growth of agricultural products; Components exist in the form of complex organic compounds; It can effectively improve the physical and chemical properties of soil; Enhance the use effect of chemical fertilizer.

2.3.3 Mixed fertilization

Under normal circumstances, relevant workers generally mix organic fertilizers such as cake fertilizer, human manure and ring fertilizer with quick-acting fertilizers such as nitrogen, phosphorus and potassium, which can keep the fertilizer effect stable, activate the soil and fertilize the soil.

2.3.4 Layered fertilization

Layered fertilization is similar to mixed fertilization, but the specific operation is different. Layered fertilization is the deep application of organic coarse fertilizer as base fertilizer, and the quick-acting fertilizer is applied to the top layer of soil, so that the fertilizer should be evenly distributed to achieve the degree of mutual integration between soil and fertilizer, and prevent the occurrence of de-fertilization.

2.3.5 Promote the use of biological fertilizer

In the new era of agricultural production, bio-fertilizer is actively expanding its market share. The use of bio-fertilizer can promote the growth and reproduction of microorganisms in the soil and beneficial microorganisms in the soil can enhance the purification, detoxification and buffering capacity of the soil and the adverse

effects of high-intensity development and utilization of cultivated land soil can be effectively eliminated by utilizing the metabolic degradation of microorganisms. Bio-fertilizer can also increase the content of humus and organic matter in soil, adjust the fertility, moisture and heat in soil, and make agricultural products in the best growth state. Moreover, the use of biological fertilizer can appropriately reduce the use of chemical fertilizers and reduce the pollution of water and soil resources, which is also an inevitable choice for the production of pollution-free green food.

3. Conclusion

Human production and life are closely related to agricultural development. Starting from the essence, it is necessary to strengthen greening, improve vegetation coverage, increase the ability of preventing wind and fixing sand, establish and improve agricultural detection system, cultivate soil force, and protect and improve the ecological environment of agricultural cultivated layer.

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