

Exploration on the Development of Circular Agriculture of China

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Abstract

Circular agriculture is a brand-new development concept. The development of circular agriculture is of great significance for protecting arable land, saving resources, and curbing the deterioration of the ecological environment. Circular agriculture is the only way to accelerate agricultural development under the new situation, and it is an inevitable requirement for achieving sustainable agricultural development. This article focuses on the status quo of China's circular agriculture development, and at the same time analyzes the problems it faces in the development process, and proposes technological innovation with the goal of improving efficiency and increasing profits, as well as accelerating the promotion and application of ecological circular agricultural technology to improve the development of circular agriculture. Quality and development efficiency.

Keywords

Circular agriculture; circular economy; sustainable development.

1. Introduction

Circular agriculture is the application of the concept of circular economy to the agricultural system, based on ecological laws, in the agricultural production process and the product life cycle to reduce the amount of input of resources and materials, and the amount of waste generated, in order to "reduce, reuse, recycle" is to realize the "three-win" agricultural development model of agricultural economic benefits, ecological environmental benefits and social benefits. Its main feature is the extension of the industrial chain and resource conservation. my country's agricultural production has made tremendous progress since the reform and opening up, which has played a major role in national economic development and ensuring food security to meet the needs of the people. However, the achievements of our country's agriculture still have not got rid of the traditional economic growth mode, mainly relying on external input from agriculture. With the large-scale use of chemical fertilizers, pesticides, and agricultural films, the problems of unsustainable development, such as soil erosion, desertification, and damage to the ecological environment of rural lands, have become more and more prominent. Therefore, domestic and foreign scholars use the concept of circular economy to guide agricultural production, innovate development models, change the growth mode, and realize the harmonious coexistence of man and nature has become an important development direction. At present, the concept of circular economy has been deeply rooted in the hearts of the people. Guiding industrial and agricultural production with circular economy thinking has become an important principle for guiding economic development in various countries. This is not only for the improvement of the agricultural science and technology

innovation system, the exploration of new technological innovation paths and improvements rely on resource consumption. The agricultural production model puts forward higher requirements; and for the single goal of technological innovation to improve efficiency, it has become an important criterion for evaluating technological innovation achievements to meet the diversified goals such as the harmonious coexistence of people and the environment on the premise of ensuring economic development.

2. Development Status of Circular Agriculture

The development of the concept of circular agriculture is closely related to the rapid development of the global economy. Mankind is enjoying a highly developed material civilization, and is also suffering from the resulting shortage of resources, ecological destruction, and even threatening human survival. Under this background, people begin to reflect on the way of social and economic development. In the 1990s, Chinese scholars proposed "sustainable agriculture" as a way to help farmers scientifically select high-quality varieties, soil and fertilizer measures, irrigation and drainage methods, comprehensive prevention and control measures for diseases, pests and weeds, cultivation techniques, crop rotation systems, agricultural income, and sustainable utilization. Agriculture for resources and ecological environment protection. In recent years, "the essential requirement of circular economy is to re-couple the structure and function of the ecological complex system, the principle of symbiosis, coexistence, and coordinated development, and the symbiotic relationship between the economic system and the ecosystem." They conducted research from different perspectives and believed that circular economy is not only an idea but also an economic activity and development model practiced through policies and new technologies. It pursues the maximization of resource input efficiency and the coordination of economy and ecosystem. "Circular agriculture" is one of the five new terms proposed in the No. 1 Central Document in 2006. In fact, long before this term was "officially clarified", comrades engaged in practical work in the domestic theoretical, academic and agricultural sectors had already started. Related research, not only has made certain progress in related theoretical research, but also provided a reference for deepening theoretical research in the future. In practice, some prototypes of circular agriculture have also been explored, and some have even become relatively mature development models. For example, southern "pig-methane-fruit" ecological model; "Four in One" Ecological Model in the North; ecological model of "grain feed-pig-methane-fertilizer" in plain agricultural area; "Five supporting" ecological model in Northwest China; suburban ecological cycle model and many more.

3. Current Problems and Challenges in the Development of Circular Agriculture

3.1. Restrictions on Arable Land Resources

Our country has many people and little land, showing the following characteristics: First, the distribution of cultivated land is extremely uneven. In the 12 provinces with per capita arable land greater than 0.13 hectares, nearly one-third of the counties in the country have per capita arable land less than 0.053 hectares, which is already below the 0.053 hectare warning line set by the UN Food and Agriculture Organization. Second, the quality of cultivated land is not high. Among the existing arable land, 6.07 million hectares belong to the sloping land above 25°, and the arable land with water source guarantee and irrigation facilities is only 52.37 million hectares, less than 40%. The third is the serious degradation of cultivated land. About 30% of the cultivated land in the country is affected by soil erosion to varying degrees.

3.2. Deterioration of the Ecological Environment

With the rapid economic and social development and the acceleration of urbanization, my country's agricultural ecological environment problems have become increasingly prominent: From the perspective of soil pollution, my country's current heavy metal-polluted arable land area is nearly 20 million hectares, accounting for about 1/5 of the total arable land area. From the perspective of soil erosion, the total area of soil erosion across the country has reached 3.6 million square kilometers, accounting for 38% of the country's total area. From the perspective of water pollution, the country's sewage-polluted farmland has reached more than 3.3 million hectares because polluted water sources are used for irrigation. The economic loss caused is even more difficult to estimate. In addition, air pollution and solid pollution are also quite serious. The annual consumption of pesticides nationwide exceeds 1.3 million tons, but the effective utilization rate is only 30%. The backward agricultural production methods and rural economic development methods not only lead to serious waste of limited agricultural resources, but also make the worsening agricultural ecological environment more prominent.

3.3. Shortage of Required Funds

Funds are the indispensable "blood" for the development of circular agriculture, especially in the early stage of circular agriculture development. Larger capital investment and infrastructure construction are necessary to meet the most basic requirements for the development of circular agriculture. However, the biggest difference between my country's circular agriculture and circular industry is that the implementers and beneficiaries of circular agriculture are individual farmers with insufficient funds, blocked information, and backward technology. Not only are the investment foundations weak, but it is also difficult to meet the medium and long-term circular agricultural development. The constant demand for large amounts of funds. Moreover, from the perspective of the national situation, even in regions that are "one step ahead", due to their insufficient accumulation and limited local fiscal revenue and investment, it is difficult to provide strong financial support for the development of circular agriculture, thus restricting the development of circular agriculture. Development process.

3.4. Lag in Technology Development and Promotion

The construction of circular agriculture is a complex systematic project, which requires the support of multiple disciplines including agriculture, forestry, animal husbandry, aquaculture, ecology, resources, environmental science, processing technology, and social science. It can be said that science and technology are the hard support for the development of circular agriculture. Moreover, the longer the circular chain, the more, broader, more complex, and more sophisticated technologies are required. However, judging from the current situation in my country, not only the urgently needed technologies in the development of circular agriculture cannot be fully met, but the popularization and application of existing technologies are also insufficient.

3.5. The Problem of Low-Quality Farmers

The quality of farmers is an important factor affecting the development of circular agriculture. Generally speaking, only a new type of farmer who has culture, knows technology, and knows how to operate can meet the needs of developing circular agriculture. Unfortunately, the quality of our peasants cannot meet this requirement. According to the survey statistics of the National Agricultural Census Office, the pure agricultural labor force in my country has the lowest level of education, and among the rural labor force in China, 20% have received short-term vocational training, 3.4% have received primary vocational technical education and training, and middle-level vocational training. Vocational and technical education accounted for 0.13%, while those without technical training were as high as 76.4%. This low quality of farmers is likely to "drag the development of circular agriculture."

4. Summary

If our country wants to promote the development of circular agriculture, we must take some effective measures to promote the outstanding problems in the development of circular agriculture. First, strengthen planning guidance. Research and formulate the evaluation index system of circular agriculture, and strengthen the analysis of the main indicators of circular agriculture. Second, speed up technological development. Increase investment in science and technology, conduct a comprehensive summary and systematic analysis of existing circular agricultural technologies and models according to the needs of circular agricultural development, increase research and development of new circular agricultural products, new technologies and new models, and focus on the development of agriculture Waste and related industrial waste recycling technology, clean production technology and rural waste property management technology, etc. Next, strengthen the comprehensive utilization of resources. Promote comprehensive waste utilization technologies, related industry link technologies, and renewable resource development and utilization technologies, and promote the recycling of crop straw and animal manure. Encourage and promote the recycling of agricultural film. Strengthen the protection and rational development and utilization of species resources. Finally, carry out pilot demonstrations. Promote circular agriculture pilot projects, start first in leading agricultural industrialization enterprises and agricultural science and technology demonstration parks, form a group of demonstration enterprises and demonstration parks, and explore effective models for the development of circular agriculture.

Circular agriculture is currently at the stage of theoretical exploration in the international arena. Countries with different development levels have different understandings of circular agriculture, and the problems they face are also very different. Both developed and developing countries are strengthening research and making efforts to explore A new model for maintaining sustainable agricultural development. In the development of circular agriculture in my country, it is important to use advanced technology and improve the scientific quality of producers to accelerate agricultural modernization. Exploring circular agriculture should not only pay attention to the many experiences and farming techniques that are conducive to maintaining the virtuous cycle of the ecological system in my country's traditional agriculture, and improve and improve it on the basis of modern science, but also strengthen technological development in the fields of agricultural biotechnology and agricultural information technology. Follow up and formulate corresponding laws, regulations and support policies to actively promote the further development of these fields.

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