Research on Development Path of Eco-Agriculture Industrialization in Western China Based on Circular Economy

Yan Zhang, Lu Feng

College of Economics and Management, Yunnan Agricultural University, Kunming, Yunnan, China

Keywords: Circular Economy, Western Region, Ecological Agriculture, Industrialization

Abstract: Developing Circular Economy and Building a Circular Society Have Become the Trend and Trend of All Countries in the World. China is a Large Agricultural Country. the Development of Circular Agricultural Economic Construction is of Great Significance to the Development of Circular Economy, the Formation of Circular Society and the Development of Agricultural Economy. Therefore, It is Necessary to Promote the Sustainable and Healthy Development of Ecological Agriculture in the Western Region by Constructing Ecological Concepts, Ecological Systems, Ecological Science and Technology, Ecological Subjects and Ecological Production According to the Requirements of “Agricultural Circular Economy”. This Paper Expounds the Realization Mechanism of Ecological Agriculture Industrialization from the Production Process of Agricultural Ecology. This Paper Introduces the Advantages and Disadvantages of Developing the Industrialization of Ecological Agriculture in the Western Region, and Based on This, Probes into the Development Paths of the Industrialization of Ecological Agriculture in the Western Region.

1. Introduction

Eco-Agricultural Industrialization is an Eco-Economic Optimized Agricultural Industrialization System. It is an Efficient Management Mode of Eco-Agriculture Proposed under the Background That the Function of Eco-Agriculture is Gradually Weakened Due to the Problems of Small Scale of Eco-Agriculture, Hard Technical Support System and Weak Social Service System. Industrialization of Ecological Agriculture is an Inevitable Outcome of the Development of Ecological Agriculture to a Certain Stage. Ecological Agriculture is a New Type of Comprehensive Agricultural System with Ecological Rationality, Which Uses Ecological Principles and Uses Systematic Scientific Methods to Guide, Organize, Manage and Manage Agricultural Production and Construction, Organically Combines Modern Scientific Achievements with the Essence of Traditional Agricultural Technology, and Integrates Agricultural Production, Rural Economic Development, Cultivation and Efficient Utilization of Resources, Ecological Environment Management and Protection.

There is a Reverse Imbalance between the Distribution of Resources and Economic Development between the Western and Eastern Central Regions. the Differences in Regional Economic and Social Development, the Gap between People's Living Standards and the Extremely Uneven Public Services Pose a Serious Threat to Social Harmony and Stability. If the Large-Scale Ecological Construction and Economic Development in the Western Region Continue to Lack the Necessary Industrial Support, Not Only the Current Phased Achievements Cannot Be Guaranteed, But Also the Phenomena of Poverty and Returning to Poverty Are Difficult to Solve and Highlight. the Future Development Will Face Greater Pressure [2]. in View of This, from the Perspective of Circular Economy, the Western Ecological Agriculture Must Take a Unique Road of Industrialization of Ecological Agriculture, Which is the Inevitable Trend of the Sustainable Development of the Western Rural Areas in the Transition Period.

2. The Meaning of Circular Economy

Circular economy is a kind of closed-loop economic mode gradually formed in the late 20th century, which aims at protecting the environment and maintaining the ecological balance. It is a

new economic development mode that promotes the harmonious development between man and nature [3]. It is generally believed that circular economy has transformed the traditional single linear process of "resources-products-wastes" into a feedback process of "resources-products-re-resources" (see Figure 1).

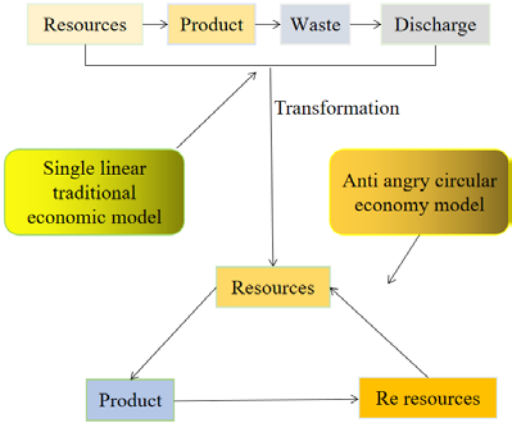

Fig.1 Schematic Diagram of Single Linear Traditional Economy and Feedback Circular Economy Process

Circular economy refers to the mode of economic development in which natural environmental resources are applied in a closed cycle. It requires the use of ecological laws instead of mechanical laws to guide human economic activities [4]. The definition of new circular economy requires people to protect the environment and resources to the greatest extent possible while pursuing the recycling of resources, so as to promote the sustainable development of the ecosystem. Man is neither the master of nature nor the slave of nature, but a friend of nature. He should participate in the activities of nature to nurture all things. Circular economy is a great change in the way of economic production and an ecological economy. It pursues not only economic interests but also environmental interests and the sustainable use of resources. It solves the conflict between economic development and environmental protection and embodies the principle of sustainable development. On the premise of the carrying capacity of the ecosystem, give full play to the local ecological advantages, and develop high-quality, safe, harmless agricultural products and modern agricultural industries with high economic and environmental benefits on the basis of a virtuous ecological cycle [5]. The waste generated in the production chain should be reasonably utilized and put into the production chain again to create higher value. In the whole process of economic development, we should not only consider the ways in which resources and the environment provide services to people, but also focus on the bearing capacity of resources and the environment itself. There should be no unlimited predatory development and the laws of economic and ecological development should be respected.

3. Necessity of Developing Agricultural Circular Economy in Western Region

3.1 The Characteristics of Western Agriculture and the Ecological Environment Problems It Faces

Most of the western region belongs to arid and semi-arid regions, accounting for 4,563% and 28.6% of the total land area in the western region respectively, accounting for 72.81% of the total land area in the western region. The agricultural land area in the western region accounts for 68.41% of the whole country and 65.44% of the total land area in the western region. If the service function of agricultural ecosystem, especially in ecologically fragile areas, is not restored and protected, it will directly affect the effect of ecological environment protection in China or the west [6]. Due to the long-term excessive use of chemical fertilizers, pesticides and other pollutants in some parts of the area, soil hardening, soil acidification and fertility decline have occurred. In some places, soil salinization is caused by improper irrigation methods. The western region is one of the

regions with the least precipitation in China. The severe shortage of water resources has become a key factor restricting the sustainable development of agriculture in the western region. With the development of industrial enterprises and the expansion of the scale of cities and towns, a large number of industrial wastes and urban construction and living garbage are produced. Affected by the limited treatment capacity of urban garbage, more and more of these untreated wastes are piled up in rural Yuan Ye around cities and towns, causing serious environmental pollution. How to realize the sustainable development of agriculture and rural areas requires a systematic study and analysis of the restrictive factors of agricultural and rural development. However, there is no doubt that the coordinated development of ecology and economy will definitely become the inevitable choice for the sustainable development strategy of agriculture in the new century.

3.2 The Significance of Developing Circular Economy in Western Agriculture

Agricultural circular economy is to apply the concept of circular economy to the agricultural system, reduce the input of resources and materials in the agricultural production process and the life cycle of agricultural products, reduce the emission of waste, and realize the win-win of agricultural economy and ecological environment benefits [7]. In the catalysis of modern science and technology, it moves towards integration, thus coordinating the relationship between biology and environment, people's life and environment, and biology, establishing a sustainable resource recycling system, and achieving an overall virtuous circle of rural resources, environment, and agricultural production. Because the economic cycle mode is a running process in a large-scale system composed of human, science and technology and natural resources, its economic mode requires people not to stay outside this large-scale system when considering actual production and consumption, but to regard themselves as part of this large-scale system to explore the economic principles of degree and objective development laws [8]. However, from the perspective of resource structure, although the western region has rich natural resources, the agricultural natural resources are relatively or even absolutely poor, and the waste phenomenon in resource utilization is serious. Eco-agricultural industrialization follows the principles of coordinating the development of rural economy with the protection of agricultural ecological environment, and coordinating the development of natural resources with the protection and appreciation of value. Based on the carrying capacity of the ecosystem, it gives full play to the local ecology, location advantages and comparative advantages of products. This undoubtedly provides rich and diverse reserve resources for the development of characteristic agriculture, thus not only making itself have greater development potential, but also realizing the potential of other agricultural development by selecting the appropriate ecological agricultural industrialization mode.

4. Analysis on the Mode of Developing Agricultural Circular Economy in Western China

4.1 Three-Dimensional Agricultural Circulation Mode

Using the mutual benefit and mutual restraint between species in the agricultural production system, the waste discharge is minimized, the pollution is reduced, and the ecological environment is improved. The basic modes include three-dimensional planting mode, three-dimensional breeding mode and three-dimensional planting and breeding combination mode. It can free more people from the land and reduce the pressure and destructive power on the ecological environment. This not only solved the poverty in this area, but also played a positive role in protecting the ecological environment. It combines farmers, high value-added processing enterprises and large markets closely and organically through regional distribution, specialized production, serial processing, networking, integrated management, socialized service and enterprise management. Taking a three-dimensional forest and animal husbandry area as an example, by establishing a forest area and stocking chickens, ducks and other poultry in the forest area, poultry can eliminate weeds and insect pests, and excrement is beneficial to forest growth. In the whole process of resource input, enterprise production, consumption of goods and waste discharge, the traditional single-line economic model relying on resource consumption is transformed into a new economic model

relying on ecological recycling of resources to promote development.

4.2 Waste and Resource Recycling Mode

Waste, agricultural and sideline products, etc. are turned into useful resources after being treated by certain technologies, and then new products are produced through production processes such as planting, breeding and processing, i.e. the economy is developed by utilizing the circulation between agricultural waste and agricultural resources. Taking the development of eco-agriculture as the top priority in rural work, strengthening leadership and cooperation, and striving to combine the popularization, development and development of eco-agriculture with the local economy and increasing farmers' income. This model links ecology, production and technological progress, and combines natural reproduction with economic reproduction. It is feasible in the development and construction of poor areas. Taking the utilization of crop straws as an example, the byproduct crop straws in the agricultural production process are converted into useful resources for utilization through processing, thus realizing the fertilization, feed, raw material or energy utilization of the straws, reducing the waste discharge and eliminating the pollution to the environment. To form an entity that shares interests, risks and common development, so that the rural economy can embark on a virtuous circle of self-development, self-accumulation, self-restraint and self-regulation.

4.3 Industry Chain Circulation Mode

This mode takes industry as a chain and integrates planting, breeding and agricultural product processing industries, so that the products or wastes from upstream industries can be converted into input resources from downstream industries, and through material and energy exchange among multi-level industries. In order to upgrade the industrial structure in the western region and promote structural adjustment through structural upgrading, we must change the mode of economic growth and take the road of circular economy development. Through the promotion and application of some conventional water-saving technologies and the change of the extensive water-using mode of flood irrigation, the production potential of water-saving will certainly be realized. In the same industrial system, the utilization rate of resources and energy and the reuse and recycling of agricultural organic matters are improved, so that the consumption of resources and energy is reduced, conversion is fast, waste utilization is high, and environmental pollution is reduced. From a practical point of view, circular economy aims to create a super-circular agricultural economy in terms of agricultural development, emphasizing that agricultural development should not be at the expense of destroying the ecological environment, but should become an environment-friendly agriculture [9]. Therefore, it is very important to increase vocational skills training and strengthen the guidance of government departments. In addition, for specialized farming and large-scale farming enterprises, medium-sized and large-scale biogas projects should also be established to establish a waste conversion system and an energy production system that are matched with them. Only in this way can a reasonable energy ecological agriculture model be established. See Figure 2 for the structure of energy-based ecological agriculture mode.

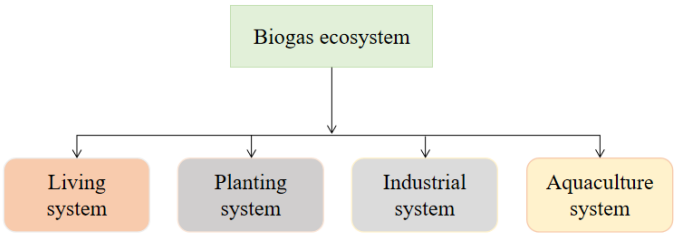

Fig.2 Energy-Based Ecological Agriculture Model

5. Suggestions and Countermeasures for Eco-Agricultural Industrialization under the Mode of Developing Circular Economy

5.1 Promote the Industrialization of Agriculture

The key to the development of agricultural industrialization is to raise funds in various forms and channels, and combine local advantageous resources to vigorously cultivate advantageous enterprises and leading enterprises. On the basis of eco-agriculture, we will change the previous production mode that only focused on agricultural production. Through the organic combination with agriculture and industrialization, we will further improve the system structure of eco-agriculture and take the road of high-efficiency eco-agriculture industrialization. Due to the low level of agricultural circulation in the western region, the input of many modern material production factors is limited. Although this seriously restricts the improvement of agricultural development level, it creates preconditions for the western region to take the road of eco-agricultural industrialization to a certain extent. This will make the coupling of related industries in the region more convenient, and the development of circular agriculture will further promote the upgrading of agricultural industrialization. The two will develop in a coordinated and orderly way. With the ecological chain as the link, the overall planning of industrial and agricultural, production and consumption, urban and rural development, vigorously develop the recycling industry of resources, implement sustainable production and consumption, and gradually build a circular society. The implementation of the western development and sustainable development strategy has injected vitality into the development of ecological agriculture in the western region and provided strong policy support. Perfect the standard system, promote the realization of the development plan of agricultural ecology as soon as possible, establish a support system for the provision of agricultural ecological technology, improve the public participation mechanism of agricultural ecology, and establish a green consumption incentive mechanism.

5.2 Establish a Scientific and Technological Support System for Agricultural Circular Economy

Agricultural circular economy is a fundamental reform of traditional agriculture, the key of which is supported by modern science and technology. Using the current advanced science and technology and management to apply to agriculture, agriculture should be built on the basis of modern science and technology, so that agricultural development will always be closely integrated with the latest science and technology. Through strengthening the scientific and technological awareness of ecological agriculture construction, increasing scientific and technological investment and perfecting the scientific and technological innovation system; According to the needs of western agricultural science and technology personnel for survival and self-realization, a long-term mechanism should be established to meet the needs of agricultural science and technology personnel, so as to urge the vast number of agricultural science and technology personnel to carry out research on a series of problems existing in the field of resources and environment in the west. Therefore, the development foundation of eco-agriculture under the mode of economic circulation is to research high-tech agriculture with high economic benefits, good environment and strong operability. The success of studying these technological achievements will greatly promote the development of ecological agriculture. These factors interact with each other to form the economic system of eco-agricultural industrialization and show certain system functions: At present, we should give full play to the demonstration and technology diffusion functions of agricultural science and technology demonstration bases, leading enterprises and farmers' professional cooperative organizations in the promotion of science and technology, and increase the research and promotion of key technologies, especially advanced and practical eco-agricultural technologies. In order to improve the efficiency of the use of resources and energy in the agricultural production system and realize the economic, social and ecological benefits of the ecological industry.

5.3 Adjust and Optimize the Agricultural Industrial Structure System

The agricultural circular economy follows the ecological law and constructs a circular flow channel of material and energy, so as to establish a complementary symbiotic relationship between each link of production and each industrial chain and form a reverse flow of waste to raw materials. Vigorously develop eco-friendly agriculture, promote pollution-free production and standardized production, and gradually realize the quality of agricultural products. An agricultural production system in which agricultural biological populations are arranged according to a certain proportion so as to conform to the characteristics of natural ecological environment, and all kinds of populations can produce the maximum biological yield and ensure environmental quality and social demand. We will adjust and optimize the structure of the agricultural industry to form a mutually beneficial industrial chain that integrates farming, farming, forestry, animal husbandry, fisheries and other industries so as to realize agricultural industrialization. The continuous progress of agricultural technology depends on the innovation, popularization and popularization of agricultural technology and the transformation of agricultural achievements. In many new technologies, appropriate technologies are selected and applied, and technological innovation is carried out in batches and stages. Targeting at the international and domestic markets, we will develop and introduce advanced agricultural scientific and technological achievements. Through the “incubation” of test bases and demonstration parks, they will be rapidly transformed into productive forces, eventually realizing industrialization and promoting the overall ecological and economic development in the western region.

5.4 Perfect the Guarantee System and Socialized Service of Circular Agriculture

The guarantee system of circular agriculture mainly includes policy guarantee system, legal guarantee system, organizational guarantee system and environmental management guarantee system. Judging from the successful experience of promoting circular economy abroad, the relevant guarantee system for agricultural development of circular economy is the key link in the development of circular agriculture. Using laws to effectively adjust the relationship between human beings and the natural environment is the fundamental guarantee to maintain or reshape the ecological balance. We will improve the policy and legal system conducive to the development of circular agriculture, increase financial investment in agriculture, promote the market-oriented reform of rural finance, establish a circular agriculture promotion organization, and strengthen the construction of agricultural infrastructure and the management of agricultural environment. The government should further strengthen financial support, integrate the financial support funds held by various departments, and give full play to the role of financial support funds in supporting the industrialization of ecological agriculture. The government should set the amount of pollutants to be discharged in the process of agricultural production through strict investigation of the ecological environment, so as to ensure that the ecological environment can make use of its own ecological cycle to make up for it and minimize the damage. In order to promote the sustainable and healthy development of ecological agriculture in the western region, funds for ecological environment construction should have a stable source in the input of the government, banks, enterprises, farmers and other diversified subjects and channels.

6. Conclusion

Developing circular economy and building a circular society have become the trend and trend of all countries in the world. China is a large agricultural country. The development of circular agricultural economic construction is of great significance to the development of circular economy, the formation of circular society and the development of agricultural economy. Therefore, it is necessary to promote the sustainable and healthy development of ecological agriculture in the western region by constructing ecological concepts, ecological systems, ecological science and technology, ecological subjects and ecological production according to the requirements of “agricultural circular economy”. This paper expounds the realization mechanism of ecological

agriculture industrialization from the production process of agricultural ecology. This paper introduces the advantages and disadvantages of developing the industrialization of ecological agriculture in the western region, and based on this, probes into the development paths of the industrialization of ecological agriculture in the western region.

Acknowledgement

"The 21st batch of reserve talents training for young and middle-aged academic and technical leaders in Yunnan Province" (Project No.: 2019HB032) issued by Yunnan Provincial Department of science and technology. Research on the impact of agricultural natural disaster insurance on the income of farmers in mountainous areas of Yunnan Province; (Project No.: 2018SK02).

References

[1] Guan Shengyuan. (2017). Understanding of Efficient Eco-agricultural Circular Economy. Livestock and Poultry Industry, vol. 28, no. 8, pp. 103-104.

[2] Hou Xiaofei. (2019). Study on the Recycling Transformation Strategy of Industrial Parks in Resource-based Cities in Western China. Theory and Modernization, no. 3, pp. 14-21.

[3] Mei Jia. (2018). Research on Financial Support for Circular Economy Development in Western Underdeveloped Areas. China's Collective Economy, no. 2, pp. 36-37.

[4] Yan Sun. (2017). Analysis of ecological characteristics of chicken to develop agricultural circular economy road. Veterinary Journal, no. 22, pp. 243-243.

[5] Sun Jing, Chen Wei, Li Wangui. (2017). Fuzzy Comprehensive Evaluation Model of Agricultural Circular Economy Based on Integrated Empowerment. Hebei Enterprises, no. 10, pp. 66-67.

[6] Ji Xiaohui. (2017). Strategic Analysis of Developing Circular Economy on Ecological Environment Protection. Times Finance, no. 35, pp. 25-25.

[7] Shen Hongxia, Qiao Jing. (2017). "Three Marshes" Comprehensive Utilization Industrialization Development Model--Analysis and Thinking on Comprehensive Utilization of "Three Marshes" in Muzhai Village of Xixia County. Henan Agriculture, no. 22, pp. 28-28.

[8] Yang Yuxin. (2017). Research on Development Countermeasures of Animal Husbandry Circular Economy. south china agriculture, vol. 11, no. 32, pp. 51-51.

[9] Zhu Hui, Sun Xiangyang, chenchen. (2017). Circular Economy Creates Optimal Ecological Circle. China Inspection and Quarantine, no. 11, pp. 32-33.