Research on the Practice of Organic Dryland Agriculture and Rural Revitalization Model in Lingqiu County

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Abstract. Lingqiu County is located in the northeast of Shanxi Province, at the southeast end of Datong City, in the golden growth zone of crops at latitude 38 ° -39 ° N. It is an important production area for high-quality small grain crops in North China and a demonstration county for organic dryland agriculture in Shanxi Province. Since 2013, based on its ecological endowment, Lingqiu County has identified organic agriculture as an important direction for its economic development. After more than a decade of continuous exploration, it has gradually embarked on a rural revitalization path that balances ecological protection and industrial development. This article systematically reviews the development process, practical path, and comprehensive effectiveness of organic dryland agriculture in Lingqiu County, and analyzes its model characteristics from four dimensions: planning guidance, technological support, industrial integration, and brand building. Research shows that Lingqiu County, led by Chehe Village, has achieved a transformation from single point testing to global promotion through mechanisms such as village enterprise cooperation, school land collaboration, and tertiary industry linkage. There are 133 certified organic varieties in the county, and the total output value of organic agriculture exceeds 570 million yuan. The per capita income of villagers in Chehe Organic Community has significantly increased. The practical experience of Lingqiu has certain reference value for developing ecological agriculture and promoting economic transformation in underdeveloped areas and ecological functional zones.

Keywords: Organic dryland agriculture, Rural revitalization, Lingqiu County, Industrial integration.

1. Introduction

Organic dryland agriculture is an important direction for the transformation of agriculture in northern arid regions. Shanxi Province belongs to a typical northern arid agricultural area, with insufficient water resources, overall low quality of arable land, and relatively low agricultural efficiency. These factors have long constrained the sustainable development of local agriculture. In the context of resource constraints and environmental pressures, how to improve agricultural output and efficiency without relying on a large amount of chemical inputs is a practical problem facing the development of agriculture in this region. Organic agriculture emphasizes ecological process management, reduces external inputs, and has a certain degree of compatibility with the resource conditions of dryland agriculture. Therefore, it has become a path choice for exploring agricultural transformation in some areas with better ecological conditions[1][2].

Lingqiu County is located in the northeast of Shanxi Province, adjacent to the Beijing Tianjin Hebei region, and is an important gateway for Shanxi to face the Beijing Tianjin Hebei region. The terrain of the county is mainly mountainous, with a low degree of industrial development and good ecological environment quality, providing natural conditions for the development of organic agriculture. In 2013, Lingqiu County launched a comprehensive organic agriculture plan, with Chehe Village as a pilot, to explore the practical transformation from traditional agriculture to organic agriculture. After more than ten years of development, Lingqiu County has built a large-scale contiguous organic agriculture park, and has successively won the titles of National Rural Comprehensive Reform Pilot County, Shanxi Province Organic Dryland Agriculture Demonstration County, etc. Its experience is known as the "Che He Model" in the industry[3][4].

There have been discussions on the relationship between organic agriculture and rural revitalization from multiple perspectives. In terms of the economic benefits of organic agriculture, organic certification can enhance the premium ability of agricultural products, thereby increasing

farmers' income; There are also studies that focus on the driving effect of organic agriculture on rural employment, believing that the labor-intensive characteristics of organic agriculture help to absorb surplus rural labor. Organic agriculture helps reduce the use of fertilizers and pesticides, improve soil quality, and protect biodiversity.

This article takes organic dryland agriculture in Lingqiu County as the research object, and systematically sorts out the development process, practical path, and comprehensive effectiveness of organic agriculture in the county. This article provides case support for the correlation mechanism between organic agriculture and rural revitalization, enriching the county-level experience accumulation of ecological agriculture transformation. At the practical level, Lingqiu is located in an area with good ecological conditions but relatively weak economic foundation. Its experience has certain reference significance for exploring the path of realizing the value of ecological products in similar regions.

2. The Foundation for the Development of Organic Agriculture in Lingqiu County

2.1. Advantages of Natural Conditions

Lingqiu County is located between 38 ° and 39 ° north latitude, which has abundant solar and thermal resources and a large temperature difference between day and night, which is conducive to crop nutrient accumulation and quality formation. The whole county belongs to the temperate continental monsoon climate, with suitable annual temperature, sufficient sunshine, and concentrated precipitation during the peak season of crop growth, providing favorable conditions for the cultivation of crops such as miscellaneous grains and vegetables. In addition, Lingqiu County has had a relatively low level of industrial development for a long time, and the quality of the atmosphere, water sources, and soil environment is good, providing a favorable natural environment for organic agriculture production.

However, there are also constraining factors behind this ecological advantage. The cultivated land resources in Lingqiu County are mainly dry sloping land, with small plots, steep slopes, and insufficient irrigation conditions. Agricultural production has been greatly affected by natural conditions for a long time. Before 2013, the agricultural development level of the entire county was relatively lagging behind, and it belonged to the national key counties for poverty alleviation and development and the key counties for concentrated and contiguous poverty alleviation and development in the Yanshan Taihang Mountains. In this context, Lingqiu County needs to find an agricultural development path that is suitable for its own resource conditions.

2.2. Organic Agriculture Direction

In 2013, Lingqiu County invited experts in the fields of agriculture and rural areas to conduct research and demonstrations. After an on-site investigation, experts believe that Lingqiu County has a good ecological environment and the conditions for developing organic agriculture. Subsequently, experts from China Agricultural University jointly planned a 1185 square kilometer area in Nanshan District, Lingqiu County, with Chehe Village as the first pilot, establishing a development direction of organic agriculture, organic communities, and ecotourism as the three in one [5].

The formulation of this plan means that Lingqiu County has shifted from scattered attempts to a systematic layout, laying the planning foundation for sustained practice in the following decade.

2.3. Exploration of Chehe Village

Chehe Village is the first pilot of organic agriculture in Lingqiu. In 2013, Chehe Village collaborated with a company to implement the "village enterprise co construction" model: the company invested funds, and the village committee organized villagers to establish a cooperative, concentrating resources such as mountains, forests, land, and water in the village to invest and jointly

establishing an organic agriculture company with the company. The core feature of this model is that "resources become assets, funds become shares, and farmers become shareholders", so that villagers can share value-added gains while participating in industrial development.

In the early stages of the pilot project, villagers had concerns about whether stable production and increased income could be achieved without using chemical fertilizers and pesticides. To this end, the county's agricultural and rural departments organized cadres to take the lead in planting, invited experts to provide field guidance, and gradually solved technical problems from soil improvement, variety breeding to pest control. At the same time, the county has established a production and sales docking platform and signed sales agreements with supermarkets and enterprises in the Beijing Tianjin Hebei region. These measures have gradually eliminated the doubts of farmers and opened up a situation for the promotion of organic agriculture.

3. Practical Path and Main Measures

3.1. Organizational Promotion and Policy Support

Lingqiu County has established a specialized organizational coordination mechanism in the development of organic agriculture, set up an organic agriculture leadership group, and established a dedicated agency to coordinate and promote the construction of organic agriculture parks, forming a three-level linkage work system of county, township, and village. Since 2014, Lingqiu County has held the Chehe International Organic Agriculture Forum every year, which has gradually become an important platform for industry exchanges. As of 2025, it has been held for twelve consecutive sessions, attracting more than 1800 experts and scholars from countries and international organizations such as the United States, Germany, Italy, and Japan to participate in exchanges.

In terms of industrial support, Lingqiu County provides subsidies for organic certification, base construction, product sales, and other aspects. In 2024, Lingqiu County was selected as a pilot county for national rural comprehensive reform, becoming the only pilot county selected in Shanxi Province that year. The pilot project focuses on implementing reforms in four areas: enriching the people's industry, digital countryside, talent revitalization, and rural governance, covering 10 administrative villages in 2 townships and benefiting over 30000 rural residents[6].

3.2. Technological Support and Promotion

Technological support is one of the key factors for the development of organic agriculture in Lingqiu. Since 2013, China Agricultural University has established a professor workstation in Lingqiu. In 2024, the "Global Organic Science and Technology Academy" was officially established, with 38 experts participating in local talent training. Over 2000 rural cadres, agricultural enterprise leaders, wealth leaders, and technical farmers have been trained.

The Science and Technology Academy has established an organic agriculture technology system, mainly including agricultural enzymes, enzyme composting, fertilizer water full cycle and other technologies. Among them, agricultural enzyme technology has achieved the production and application of organic fertilizers at a lower cost. Data shows that after adopting enzyme organic planting, the fertilizer cost of foxtail millet land decreased from 300 yuan per mu to 110 yuan, and the theoretical yield of the demonstration field reached 816 jin per mu. The product price increased from 2 yuan per jin to 3 yuan per mu, and the net profit per mu exceeded 1000 yuan, which is about 400 yuan higher than traditional planting. The fertilizer water full cycle project constructed in Qingnijian Village converts domestic sewage and agricultural waste into organic fertilizer, saving about 11400 tons of irrigation water and producing about 1714 tons of organic fertilizer annually.

Another characteristic of technology promotion is the emphasis on farmer participation. The Science and Technology Academy extends technical training to the fields through a model of "expert residency and local cultivation". Xie Yukai, a farmer from Qingnijian Village, initially had doubts about agricultural enzymes. After a small-scale trial, he found that the yield of green beans had tripled and gradually became an active participant in technology promotion [7].

3.3. Industrial Integration and Diversified Development

The prominent feature of organic agriculture in Lingqiu County lies in the extension of the industrial chain. In the planting process, the county has built 30000 acres of organic food production bases, certified 133 varieties, and a planting area of 100000 acres according to organic standards. In the processing stage, a mixed grain processing base has been established through a combination of enterprises, cooperatives, bases, and farmers. In the sales process, a marketing network combining online and offline has been established, and products are sold to Beijing, Tianjin, Shijiazhuang and other places.

Organic agriculture has also driven the development of rural tourism. Chehe Village has developed multiple distinctive tourism projects based on organic fields and ecological resources. Chehe Village will be rated as a national 4A level tourist attraction in 2025. In addition, Chehe Organic Community has extended the value from the fields to the dining table by directly supplying some agricultural products to the community restaurant through the "production base+central kitchen" model[8].

3.4. Brand Building and Market Expansion

Brand building is an important part of realizing the value of organic agriculture in Lingqiu. Lingqiu County has established an organic trademark cluster around characteristic organic products and created the "Lingxiu Lingqiu" regional public brand. Chehe Organic Community has established a product quality traceability system, certifying that agricultural products are sold to the Beijing Tianjin Hebei market at a price 30% higher than ordinary products.

International exchange is another important way for Lingqiu brand building. The Chehe International Organic Agriculture Forum, founded in 2014, has been held for twelve consecutive sessions and has gradually become an industry exchange platform with international influence. In 2025, the 3rd World Organic Demonstration Zone Conference will be held in Lingqiu, with over 150 organic agriculture experts from around the world attending the conference[9].

4. Comprehensive effectiveness analysis

4.1. Economic benefits

Organic agriculture has become an important industry in Lingqiu County. By 2025, the total output value of organic agriculture in the county will exceed 570 million yuan. Since the implementation of the pilot project for comprehensive rural reform, the collective income of villages in the pilot area has increased by more than 100000 yuan, and the per capita income of villagers has increased by more than 2000 yuan, radiating an increase in income to 18000 households.

The transformation of Chehe Village has certain representativeness. In 2013, the collective economic income of the village was zero, and the per capita income of the villagers was 2300 yuan; By 2024, the collective economic income of the village will reach over 1.2 million yuan, and the per capita income of villagers will increase to 25000 yuan. Organic eggs and other products have entered the high-end market in Beijing, with prices reaching 100 yuan per box.

4.2. Ecological benefits

The promotion of organic agriculture has had a positive impact on the ecological environment. The application of agricultural enzyme technology has reduced the use of fertilizers and lowered the risk of agricultural non-point source pollution. The application of new nitrogen preserving fermentation technology has reduced the nitrogen loss rate of organic fertilizers by more than 30% and increased nitrogen content by more than 20%. The fertilizer water full cycle project has achieved the resource utilization of rural domestic sewage and agricultural waste, reducing pollutant emissions. The soil quality has been improved, and the problem of soil erosion has been alleviated.

4.3. Social benefits

The development of organic agriculture has driven the return of talents and the cultivation of local talents. Lingqiu County has established talent association branches in Beijing, Tianjin, and Xi'an, bringing together 233 overseas talents. 180 talent apartments will be built throughout the county, attracting a total of 184 young talents from four batches to move in. Through school, local cooperation and technology institute platforms, we have trained over 1000 local technical talents.

In the cultural field, Lingqiu County promotes the combination of cultural talents and industrial projects through activities such as showcasing local cultural talents and showcasing intangible cultural heritage skills. These measures have, to some extent, activated rural popularity and improved the appearance of rural areas.

5. Outlook

The practice of organic agriculture in Lingqiu County has shown that underdeveloped areas with better ecological conditions can achieve the coordination of industrial development and ecological protection through organic agriculture. At the experiential level, Lingqiu County has developed a relatively stable policy expectation and implementation path based on the organic agriculture plan from 2013 to 2030, which has been continuously promoted by multiple governments. In terms of organizational mechanisms, through institutional explorations such as village enterprise cooperation and resource investment, a diversified cooperation pattern has been constructed, which includes government guidance, enterprise participation, farmer cooperation, and technological support, enabling different entities to form a joint force in the development of organic industries. At the level of technology promotion, with the help of platforms such as technology institutes, technology services are extended to the fields, enabling farmers to master and apply practical methods of organic planting, thereby reducing the difficulty of technology implementation. In terms of industrial cultivation, organic agriculture is gradually extending to fields such as processing, sales, and tourism, and the industrial chain is constantly expanding, gradually releasing the effect of industrial integration. These practices are interrelated and gradually promoted, collectively forming the practical system for the development of organic agriculture in Lingqiu. While organic agriculture in Lingqiu is developing rapidly, it also faces some issues that need attention. In terms of industry, the depth of agricultural product processing needs to be strengthened, and brand influence still needs to be enhanced. In terms of talent, the construction of local talent pool still needs further improvement, especially in the areas of market operation, brand promotion, etc., where there is a relative lack of compound talents. Looking towards the future, Lingqiu County needs to further improve its industrial chain, strengthen brand building, deepen school-local cooperation, and provide support for the sustainable development of organic agriculture on the basis of consolidating existing achievements.

6. Conclusion

The more than ten years of organic dryland agriculture practice in Lingqiu County is a development process from pilot exploration to global promotion. This study shows that Lingqiu County, based on its own ecological conditions, has explored a rural revitalization path that coordinates ecological and economic benefits through scientific planning, multi-party cooperation, technological support, and industrial integration. The core logic can be summarized as follows: natural conditions are the foundation, continuous promotion is the guarantee, technological support is the driving force, and industrial chain extension is the key to value realization. The practical experience of Lingqiu has certain reference significance for areas with good ecological conditions but relatively backward economic development.

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