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Transformation and Upgrading and Countermeasures of Agricultural Industry in Xixia County, Henan Province

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Abstract [Objectives] Industrial prosperity is an important part of implementing rural revitalization strategy, and promoting the transformation and upgrading of the agricultural industry has strong practical significance for the development of high-quality agriculture and the construction of a modern agricultural industry system. [Methods] Based on the overview of agricultural production in Xixia County from 2012 to 2018, the status, advantages and main problems of the agricultural industry development in the county are sorted out. [Results] The fruit-medicine-fungus featured agriculture has begun to take shape, and the effect of industrial clusters and large-scale operations has begun to become prominent. The output of shiitake mushrooms, Chinese patent medicines and kiwifruit all shows a steady growth trend. Excellent varieties, brand building, and deep integration of the three industries are the key factors for the development of agricultural industrialization. [Conclusions] In the context of the implementation of the rural revitalization strategy, countermeasures and suggestions on the development of ecological green agriculture, high-quality agriculture, brand agriculture, and modern agricultural management system are put forward.

Key words Rural revitalization, Production system, Industrial transformation, Industrial integration, Agricultural industry

1 Introduction

The 19th National Congress of the People's Republic of China proposed the strategic deployment of rural revitalization^[1], which focuses on an overall strategic arrangement of agricultural and rural work^[2]. Industrial prosperity is the main point of development. To maintain high-quality development of the agricultural industry, guarantee the effective upgrading of the agricultural industry, change the existing methods of agricultural production, and build a modern agricultural industry system, the high-quality development of agriculture needs to be promoted around structural reforms on the agricultural supply side. Taking the fruit-medicine-fungus industry in Xixia County as an example, combined with the current agricultural production status of the county, based on the development characteristics of the fruit-medicine-fungus superior industry, the existing problems and reasons are analyzed, and feasible countermeasures are proposed, with a view to promoting the sustainable development of the industry in the region.

2 Overview of agricultural production development in Xixia County

2.1 Overview of shiitake mushroom production From 2012 to 2018, the annual production of shiitake mushrooms in Xixia County increased from 57 103 to 115 145 t, with an average annual growth rate of 16.94% (Fig. 1). The production of shiitake mushrooms has a relatively good momentum of development. Shiitake mushrooms are planted all over Xixia County, and towns with

larger planting areas include Xiping Town, Dinghe Town, Chongyang Town and Miping Town.

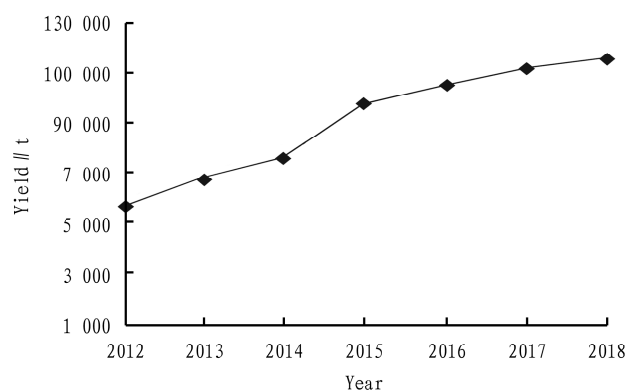


Fig. 1 The yield of shiitake mushroom in Xixia County from 2012 to 2018

2.2 Overview of kiwifruit production From 2012 to 2018, the planting area of kiwifruit in Xixia County increased from 9 687 to 10 562 ha, with an average annual growth rate of 1.81%. The annual output increased from 334 974 to 454 409 t, with an average annual growth rate of 7.13% (Fig. 2). The expansion of the planting area has led to a certain increase in production, and there is still a large space for development of kiwifruit in terms of intensive planting level and variety selection.

2.3 Overview of Chinese herbal medicine production The annual output of Chinese herbal medicines in Xixia County increased from 328 947 to 467 700 t from 2012 to 2018. The average annual growth rate was 7.03%. The planting area increased from 6 372 to 8 004 ha, with an average annual growth rate of 4.27% (Fig. 3). The production of Chinese medicinal materials is in a stable development state, especially since 2016, by optimizing planting varieties and layout, the standardized production of

Received: May 8, 2020 Accepted: December 7, 2020

Supported by Soft Science Project of Henan Province (192400410130).

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Editorial Office E-mail: asiaar@163.com

Chinese medicinal materials has achieved certain results.

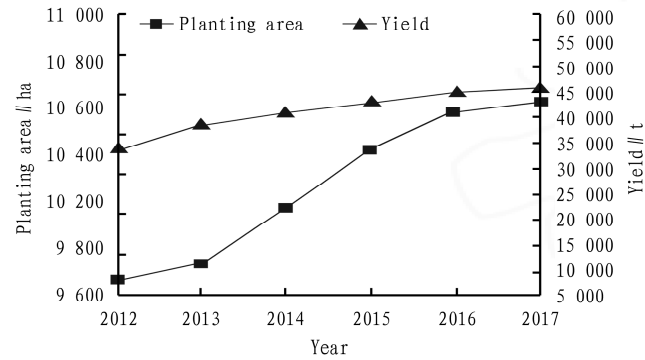


Fig. 2 The yield and planting area of kiwifruit in Xixia County from 2012 to 2017

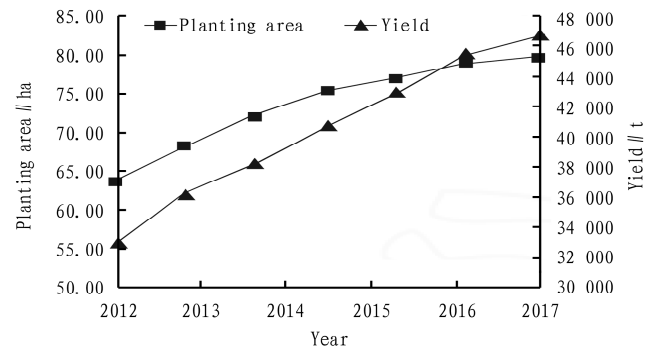


Fig. 3 The yield and planting area of Chinese herbal medicine in Xixia County from 2012 to 2018

2.4 Proportion of agricultural output value to GDP From 1990 to 2017, the ratio of agricultural output value of Xixia County to regional GDP showed a declining trend, from 42.2% in 1990 to 11.8% in 2017 (Fig. 4). In 2018, the output value of fruit-medicine-fungus featured industry accounted for 47.9% of the total agricultural output, and the output value of agricultural products above designated size only accounted for 1.28%, and the added value of agricultural products was low. Accelerating the construction of a modern system for the agricultural industry and further tapping the deep processing capacity to achieve the transformation and quality improvement of the fruit-medicine-fungus featured agriculture is the biggest problem facing the agricultural production.

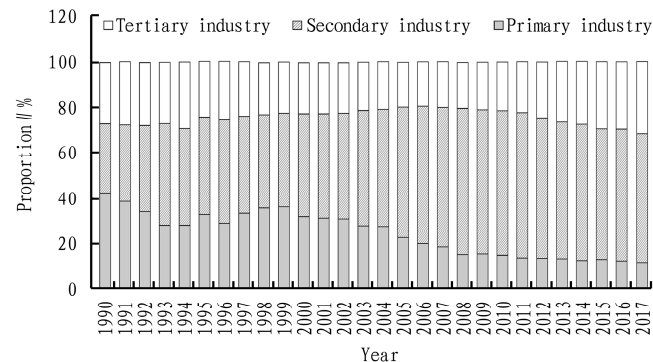


Fig. 4 The proportion of agricultural output value to GDP in Xixia County from 1990 to 2017

3 Development advantages of fruit-medicine-fungus industry in Xixia County

Fruit, medicine and fungus are the three featured industries in Xixia County. For kiwifruit industry, Xixia County has been rated as a national demonstration county; and for kiwifruit industry, the county has been rated as a national demonstration zone for edible fungi standardization. In the county, well-being resources are abundant, and the standardization and informatization of agricultural production have developed rapidly. It is a national demonstration county for comprehensive agricultural standardization. In recent years, by increasing agricultural product quality control and food production management, the county has been recognized as a national quality and safety demonstration zone for food exported.

3.1 Initial formation of industrial system After nearly 20 years of cultivation and development, a fruit-medicine-fungus featured agricultural industry system has been formed in Xixia County. Three industrial belt clusters have been developed, including the kiwifruit promenade along National Highway 312, the dogwood promenade along the Beishan Mountain, and the shiitake mushroom promenade along the Guanhe River. In the county, the development of the fruit-medicine-fungus featured industry has made significant progress in 2018, and 220 special planting villages covering forest fruits, edible fungi and Chinese medicinal materials have been formed, accounting for 74% of the total number of villages in the county.

3.2 The cluster effect of agricultural industry has initially appeared Agricultural industrial cluster can not only improve the level of agricultural intensive management and increase income to make the cluster produce a huge synergistic effect, and it can also effectively promote regional economic development^[3-6]. Centered on the abundant agricultural resources of fruit, medicines and fungi, through technological improvement and overall planning and layout, Xixia County has transformed from primary processing to finishing processing, from homogeneous production to differentiated production, and from a single product to a series of products, thereby further increasing the added value of agricultural products. Xixia County has cultivated leading enterprises for deep processing of products, created a batch of excellent agricultural product brands and established industrial park around the multiple links of the agricultural industry to promote the agglomeration of industries.

3.3 The degree of industrialization of agricultural management continues to strengthen At present, agricultural-related enterprises, farmers, and agricultural product distributors are closely integrated components in the industrial chain, and have become interdependent and symbiotic symbiosis^[7]. Xixia County attaches importance to the cultivation of agricultural production bases led by regional advantages and the creation of leading agricultural enterprises, encourages enterprises, farmers, and agriculture-related enterprises to transfer contracted land to build Chinese herbal medicine planting bases, and focuses on the implementation of the Chinese medicine production and operation methods of "company + base + farmer", "cooperative + base + farmer" and "farm + farmer" to implement professional, large-scale, standardized and enterprising cultivation^[8]. In 2017, there were

38 leading agricultural enterprises above designated size in the county. The sales revenue of the three major clusters of fruit, medicine and fungi reached 6.52 billion yuan, of which, the revenue of Zhongjing Kitchen edible fungus industrial cluster realized 1.81 billion yuan, the revenue of Wanxi Pharmaceutical industrial cluster achieved 3.78 billion yuan with core leading enterprises' sales revenue of 1.05 billion yuan, and the revenue of Guoran Fengqing kiwifruit industrial cluster realized 930 million yuan with core leading enterprises' sales revenue of 190 million yuan.

4 Problems in the development of fruit-medicine-fungus industry

4.1 Varieties are lacked and market competitiveness is weak

Taking the kiwifruit industry as an example, the kiwifruit varieties in Xixia County are single^[9]. Compared with imported kiwifruit, the kiwifruit in Xixia County has small size and low sweetness, leading to weak market competitiveness. In actual production, the phenomena of excessive spraying of swelling agent, early picking and early selling of fresh fruits are common^[10]. The planting area is wide and scattered. The production is relatively extensive. It is difficult to achieve unified management of production and promote advanced technology. The level of standardized production is not high. Lack of organic fertilizer and abuse of chemical fertilizers and quick-acting fertilizers has an adverse impact on industrial development^[10-11].

4.2 The level of industrial integrative development is not high and the added value of products is low The degree of integration between the agricultural industry and the secondary and tertiary industries in Xixia County is low. The specific performance is in the following three aspects.

4.2.1 The integration of the three industries is not deep enough. The added value brought by the use of advanced food processing technology for deep processing of agricultural products is relatively small. The added value of agricultural products is mainly generated in the processing link, lacking in-depth mining of industrial functions, so their added value is low.

4.2.2 The agricultural industry chain has difficulties, and the interest game has led to the slow development of the integration of the three industries. At present, most of the townships are still dominated by order agriculture. Farmers and enterprises need to build a mutual trust mechanism to protect shared interests, really take risks together, and form a mutually beneficial and win-win collaboration.

4.2.3 Fragmented agricultural production is widespread, lacking coordinated development. The agricultural structure is converging. There is no plan for development. It is difficult to coordinate the development of industrial integration projects. Differentiated and overall industrial development layout is lacked.

4.3 The level of industrialization is low, and there is a factor bottleneck restricting the development of the integration of the three industries Xixia County has achieved certain results in promoting the integration of the three industries with the help of the fruit-medicine-fungus industry. However, due to the lack of technology, talents and funds, in the process of industrial integrative development, these factors become the bottleneck re-

stricting the integration of the three industries, and it is also the main obstacle to the deep integration and development of the agricultural industry. To achieve high-quality development, agricultural industry must integrate development. These are inseparable from the support of agricultural production technology and the cultivation of professional agricultural technical personnel. How to fill these shortcomings is also an urgent problem to be solved.

5 Countermeasures and suggestions

5.1 Promoting industrial transformation and upgrading and improving development quality and competitiveness

Structural reform on the agricultural supply side is the basis for industrial transformation and upgrading. Around this main line, to ensure the effective supply of agricultural products and sustainable development of the agricultural industry and promote the sustained and rapid growth of farmers' income, it must improve the quality and efficiency of agricultural development, enhance the competitiveness of agricultural products^[12], promote the transformation from quantitative expansion to quality improvement, from individual experience-based extensive production to overall standardized production and from fragmented agricultural production to large-scale agricultural production to promote industrial transformation and upgrading, enhance the level of scientific research support, promote substantive cooperation with scientific research institutions to create a joint R&D innovation platform, strengthen the research and development of varieties, speed up the construction of technology service platforms, provide production, testing, and technical training and promotion services, comprehensively promote the standardization of production management, adopt advanced agricultural technology, improve the output and quality of finished products, with the core of improving quality and efficiency, adhere to stabilizing the scale and increasing varieties, optimize planting methods and production layout, promote the construction of standardized planting bases, and accelerate the high-quality development of the fruit-medicine-fungus featured industry, thereby completing the transformation and upgrading.

5.2 Implementing agricultural brand promotion and promoting agricultural technological innovation

Agricultural modernization and industrialization development must strengthen the brand building of agricultural products to form regional agricultural brands^[13-14]. Taking technological innovation as a technical means, with the goal of improving the quality of agricultural products and the support of agricultural informatization, an agricultural science and technology service platform is built to support the "Action of Promoting Agricultural Development by Improving Quality" and promote the in-depth development of agricultural science and technology. It should also strengthen the leading effect of agricultural brands and enhance the all-round, multi-level and continuous centralized promotion of agricultural products in Xixia, around the leading industry of fruit-medicine-fungus, with the strategic direction of creating famous, refined, excellent and new agricultural product brands, thus improving the awareness of agricultural products.

5.3 Building a modern agricultural production system and a modern agricultural management system It is recommended

to speed up the development of smart agriculture, promote the application of "Internet +" new technology, focus on the application of big data, Internet of Things, etc. to provide farmers with consulting services for agricultural production, promote the development of "Internet +" new farmers^[15-16], actively guide the development of new and advanced agricultural business entities on the premise of maintaining the individual operation of farmers, build an agricultural industry chain using multiple modes to promote scale management, establish a mutual trust mechanism to guarantee the benefit sharing of all links in the agricultural industry system through the realization of common development, strengthen foreign cooperation in agricultural products, implement a variety of production and sales links, complete the business model of propaganda promoting sales and sales promoting propaganda.

5.4 Accelerating the development of industrial integration and developing ecological green agriculture Green agriculture has played an active role in protecting eco-environment, expanding employment, and increasing farmers' income^[17]. The prerequisite for optimizing the adjustment of the agricultural industry structure is to improve the agricultural and rural environment and adhere to rural green sustainable development^[18]. In this context, it should focus on green safety, give play to the leading role of leading enterprises, promote the integrative development of the agricultural industry to achieve high-end, green and intelligent agricultural products, introduce advanced industrial development concepts, expand the scope of the agricultural industry, enhance the added value of agricultural products, create a modern supply system, innovate the integrative development model of rural industry, give full play to the advantages of the fruit-medicine-fungus featured agriculture, and actively develop high-end agricultural industry processing and production taking the county's industrial agglomeration area as the carrier and green and organic as the core.

6 Conclusions

At present, the advantages of the fruit-medicine-fungus industry in Xixia County have not yet been fully tapped, so it needs to improve agricultural production by relying on technological innovation. A modern agricultural industry system needs to be established, and the industrial chain needs to be built and extended to complete the transformation and upgrading of the agricultural industry through scientific planning and coordinated development, focusing on industrial integrative development, with equal emphasis on quality, efficiency and ecology^[12, 19]. With the implementation of the rural revitalization strategy and other related policies, the factors restricting the development of the agricultural industry, such as technology, talent and capital, are constantly tilting towards the countryside. Under the combined effect of policy support and resource tilt, relying on local superior resources, the prospects for the transformation and upgrading of the agricultural industry in Xixia County are broad.

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