

Research on the Two-way Integrated Development Model of Agricultural Product Processing Industry: A Case Study of Zhangjiakou Hongji Agricultural Company in China

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ABSTRACT

Industrial integration is the development trend of agricultural product processing industry. In recent years, Zhangjiakou Hongji Agricultural Company in Hebei Province has explored a road of integrated development focusing on potato processing industry and extending to the primary industry in the upstream and the tertiary industry in the downstream, which has driven the development of local modern agriculture and promoted the value-added of local rural industries and the increase of farmers' income. Taking Zhangjiakou Hongji Agricultural Company as an example, the leading enterprise of agricultural industrialization strengthens the agricultural product processing industry, extends to the front-end agriculture and the back-end rural service industry, and realizes the practice of two-way integrated development, which is worthy of reference for other rural areas in China.

Keywords: agricultural products processing industry, two-way integrated development model, potato processing industry.

1. INTRODUCTION TO THE TWO-WAY INTEGRATION MODE OF AGRICULTURAL PRODUCT PROCESSING INDUSTRY

The two-way integration mode of agricultural products processing industry refers to the integration mode that takes the agricultural products processing industry as the driving force, the leading enterprises of agricultural industrialization and other business entities extend to the front-end agriculture and the back-end rural service industry, drive the development of modern agriculture and service industries such as logistics and tourism, promote the value-added of rural industries and increase the income of the integration subjects. In essence, the formation of such models depends on the leading development of rural agricultural product processing industry. The strong agricultural product processing capacity in rural areas can drive the development of modern agricultural production and rural related service industry, and promote the integration of Rural three industries [1]. From the perspective of the main body of leading integration, the leading enterprise group of

agricultural industrialization is the leading force to promote the development of this model. They give full play to their advantages in agricultural product processing capacity, capital, market and other aspects, expand their business scope to agriculture and rural tertiary industries, and promote the Integrated development of rural primary, secondary and tertiary industries. Geographically, such models are widely distributed and appear in the East and central and western regions of China.

2. THE MAIN PRACTICES OF THE INTEGRATED DEVELOPMENT OF POTATO PROCESSING INDUSTRY LED BY HONGJI AGRICULTURAL COMPANY

At present, Zhangjiakou Hongji Agricultural Science and Technology Development Co., Ltd. (hereinafter referred to as "Hongji Agricultural Company") has grown into a modern agricultural industrialization leading enterprise mainly engaged in potato seed planting, storage, processing, seed potato, commercial potato and whole powder sales. Hongji agricultural company has

formed a circular economy industrial chain covering seed potato R & D and cultivation, mechanized planting, fresh potato cold chain storage, large-scale processing, utilization of whole powder waste residue and animal husbandry [2]. Hongji Agricultural Company has embarked on a path of integrated development focusing on potato processing industry and extending to the primary industry in the upstream and the tertiary industry in the downstream, which has driven the development of local potato industry and increased the income of local farmers.

2.1. Innovate the mode of industrial management and organization and take the road of green development

First, create an industrialization model of "company + scientific research + base + farmers + farmers' cooperatives". In accordance with the principle of mutual benefit and unity of responsibility and rights, Hongji Agricultural Company implements the operation mechanism of contract connection when building potato planting base. Among them, the company signed production and purchase contracts with bases, farmers and cooperatives; the company signed technical service contracts with technology supporting units, bases, farmers and farmers' professional cooperatives. Hongji Agricultural Company signed contracts with township governments, technology supporting units (Hebei Institute of Alpine crops), base farmers and cooperatives where the bases are located. Through contracts, Hongji Agricultural Company clarifies the responsibilities, rights and obligations of all parties to the contract, and promotes the development of potato industrialization.

Second, create a green raw material supply mode of "three unification". In order to strictly control technology and ensure quality, Hongji Agricultural Company has taken the following measures: unified seed supply and solve the problem of excellent varieties; unified planting management to solve the green production; unified acquisition to solve the problem of mixed raw materials. Through a series of operations, the potato raw materials are guaranteed to be of high-quality and green. Starting from raw materials, the production of raw materials is managed as the "first workshop" of the potato industry.

Third, introduce foreign advanced equipment to realize the international level of potato production technology. In order to expand the potato industry chain, Hongji Agricultural Company has introduced advanced potato powder processing technology and production equipment from the Netherlands, Germany, Sweden and other countries with developed potato processing industry in the world, built high-standard storage and whole powder processing workshops, and carried out potato whole powder processing industry.

2.2. Pay attention to personnel training and technical training to provide basic support for integrated development

First, strengthen the training of technicians and improve the planting and processing capacity. In order to ensure that the product quality reaches the world-class level, Hongji Agricultural Company has repeatedly invited Dutch agronomic experts to provide professional training and guidance for a series of processes such as potato planting, field management, harvest and storage. This enables the company's potato planting personnel, processing personnel and personnel in storage, quality inspection and other relevant departments to continuously improve their professional skills. Experts from China Agricultural University and Hebei Agricultural University gave guidance and answers to the technical problems encountered by Hongji Agricultural Seed Breeding Center, planting base managers and technicians in potato tissue culture and breeding. Hongji Agricultural Company hired experts from Zhangjiakou Academy of Agricultural Sciences to hold special lectures and technical training on potato planting technology, so as to provide planting technical guidance for the development of potato industry. Hongji Agricultural Company has cultivated large planting households, promoted dry farming organic planting, formed standardized and large-scale planting, and built high-quality and stable raw material production bases for potatoes.

Second, carry out institutional cooperation and provide technical support. In 2010, Hongji Agricultural Company invested 220 million yuan to build a potato breeding center with the Zhangjiakou Academy of Agricultural Sciences [3], so as to improve potato dry matter content and improve the quality of whole powder processing materials. The cooperation project has achieved an average annual breeding of 100 million micro potatoes, which not only meets the potato planting needs of Hongji Agricultural Company, but also improves the popularity of local potato varieties. Hongji Agricultural Company and Beijing Nutrition Source Institute signed a strategic cooperation agreement to cooperate on the deep processing research and product development of potato, flaxseed, oat and other grains.

2.3. Broaden the business scope of products and promote the integrated development of potato processing industry and service industry

First, promote the intensive processing of potatoes and develop diversified products. In recent years, the potato snowflake powder launched by Hongji Agricultural Company has been in the forefront of national sales. At the same time, Hongji Agricultural Company is an important potato powder export enterprise in China. On the basis of consolidating the

advantages of processing potato flour, Hongji Agricultural Company has developed and produced diversified potato series foods, not only producing steamed buns and noodles, but also offering potato premix, functional potato nutritious powder, moon cake, hand crumb bread, and mask, etc., which satisfy the diversified consumption needs of different consumers.

Second, relying on potato planting and processing sites, develop agricultural tourism, ecological sightseeing and industrial tourism. Hongji Agricultural Company built an agricultural tourism park, developed a potato "story hall" and a "sightseeing factory". At the same time, it invited a professional team to guide the park to create tourist attractions, enhance the tourism brand image of the park, and assist Hongji Agricultural Tourism Park to build an agricultural (industrial) tourism attraction integrating "production, learning and research", so as to meet the needs of consumers for leisure, shopping, parent-child communication, etc. Taking potato IP as the innovation point, Hongji Agricultural Company has developed a series of peripheral products and held creative activities. For example, a "potato flower sea" has been created in the potato industry base to attract tourists to visit and experience how to grow potatoes, and learn about scientific planting and breeding knowledge and potato food culture.

Third, pay attention to brand building and improve e-commerce sales channels. "Hongji" brand potato snowflake powder was rated as a famous trademark in Hebei Province and won the gold award of the 15th China International Agricultural Products Fair [4]. Hongji Agricultural Company actively develops Internet e-commerce sales, participates in the webcast activities held by the Agricultural Chamber of Commerce, and promotes and sells potato series characteristic products.

2.4. Give play to the leading role of enterprises and enhance the comprehensive benefits of the potato industry

First, drive the development of local potato industry and increase farmers' income. In the process of development, Hongji Agricultural Company adheres to the combination of enterprise profits with industrial driving and increasing farmers' income, improve the potato industry chain and enhance the role of demonstration driving. Hongji Agricultural Company signed orders with planting farmers to guide the whole process in terms of seeds, technology and farming, and actively promoted the standardized potato planting to ensure the production quality of potatoes. In the processing link, the potato is deeply processed, and the by-products such as potato peel and potato residue are used as farmers' breeding feed, which promotes the formation of a circular industrial chain. Hongji Agricultural Company has driven dozens of farmers' professional cooperatives, large planting households and

20000 farmers in the surrounding counties and districts to carry out intensive planting, promoting the combination of farmers with the big market, and increasing the income of farmers in the project coverage area by more than 1000 yuan per mu.

Second, help poor households get rid of poverty and increase their income. Zhangjiakou is a key poverty-stricken area in Hebei Province. Since 2017, Hongji Agricultural Company has deeply participated in the targeted poverty alleviation action of "Thousands of Enterprises Helping Thousands of Villages" in Hebei Province. It has carried out poverty alleviation in potato industry in Guyuan County and Chicheng County, Zhangjiakou, and established a potato planting poverty alleviation base of more than 7000 mu [5]. It has created a "three unified" business model of unified planting, unified management and unified collection and storage, driven local poor households to achieve an average annual income increase of 6000 yuan and helped them get rid of poverty. Hongji Agricultural Company has made outstanding contributions to poverty alleviation and has been commended by government departments for many times.

Third, improve the ecological benefits of the development of potato industry. Hongji Agricultural Company adheres to the concept of green development, energy conservation and emission reduction. For example, when harvesting potatoes, the potato stems and leaves are mechanically crushed and returned to the field. This approach can not only increase soil fertility, but also utilize waste, reduce environmental pollution and achieve green production. It promotes the rotation planting of potato and wheat, reduces the incidence of diseases and pests, increases soil organic matter and improves soil health [6]. In potato processing, it makes full use of the original heat and cooling capacity of materials, and uses circulating water. The potato residue is used as raw material for feed processing, which is used for large-scale breeding of pigs, cattle and sheep matched with feed, so as to realize the recycling and value-added of resources.

3. THE EXPERIENCE PROMOTION OF THE INTEGRATED DEVELOPMENT OF POTATO PROCESSING INDUSTRY LED BY HONGJI AGRICULTURAL COMPANY

3.1. Strengthen the processing capacity of agricultural products

As the main business entity driving the two-way integrated development with rural secondary industry, the strength of the processing capacity of the leading enterprises of agricultural industrialization largely determines whether they can smoothly expand to the primary and tertiary industries and walk out of the road

of integrated development. Hongji Agricultural Company attaches great importance to continuously improving its processing capacity. By introducing foreign advanced agricultural product processing equipment, the company has a strong potato processing capacity in the early stage of establishment. In the follow-up development process, through joint scientific and technological research with scientific research institutes, the company has mastered the core technologies related to the potato industry. It grasps the diversified needs of consumers and develops a variety of deep-processed potato products, which helps to expand the market space and enhance the added value of products.

3.2. Continuously consolidate the supply basis of raw materials for agricultural product processing

The Zhangjiakou Bashang area, where Hongji Agricultural Company is located, is an advantageous area for potato planting. Hongji Agricultural Company recognizes that only by strengthening the potato production capacity can we ensure an adequate supply of raw materials for potato processing. In the process of improving the processing capacity, Hongji Agricultural Company extends to the potato planting link, promotes the "three unification" green raw material supply mode, and implements the standardized planting of potatoes, which promotes the integrated development of potato primary production (planting) and secondary production (processing), and ensures the supply quality of potatoes.

3.3. Closely connect all parties in the potato industry chain

Hongji Agricultural Company has improved the stability and durability of their cooperation in the integrated development of potato processing industry by creating an industrial organization mode of "company + scientific research + base + farmers + farmers' cooperatives". This industrialization model actually covers the complete industrial chain of potato production, processing, circulation and services (agricultural technology guidance, breeding research and development, etc.). In the process of industrial integration and development, Hongji Agricultural Company has driven the local poor people to increase their income and get rid of poverty by planting potatoes.

3.4. Actively develop a variety of integrated formats

Hongji Agricultural Company focuses on expanding the multiple functions and values of the potato industry. It promotes the integration of agriculture and tourism by building potato planting bases into agricultural tourism parks. It has developed industrial tourism and promoted

the integration of industry and tourism by developing the tourism function of the potato processing base.

4. CONCLUSION

The main practice of integrated development of potato processing industry led by Zhangjiakou Hongji Agricultural Company in China provides experience for China's other rural areas to promote the two-way integrated development driven by agricultural product processing industry.

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