

# Research on the Forward Integrated Development Model of Rice and Fish Industry in Qingtian County, Zhejiang Province, China

Zhe Cao<sup>1,\*</sup>

<sup>1</sup> School of Marxism, Tianjin Agricultural University, Tianjin, China

\*Corresponding author. Email: caozhe\_tjau@163.com

## ABSTRACT

Industrial integration is an important form and development trend of modern agriculture. At present, the integration of agriculture with agricultural product processing industry, rural tourism, catering and other industries has become a typical model for the integrated development of rural primary, secondary and tertiary industries in China. Relying on the agricultural heritage advantages of the rice-fish symbiosis system, Qingtian County of Zhejiang Province vigorously promotes the integrated development of rice-fish industry, and drives the development of secondary and tertiary industries. The practice of integration development of rice and fish industry in Qingtian County, Zhejiang Province provides experience for other rural areas in China to promote integration development based on primary industry.

**Keywords:** agriculture, forward integration development mode, rice and fish industry.

## 1. THE CONNOTATION OF THE AGRICULTURAL FORWARD INTEGRATED DEVELOPMENT MODEL

The forward integration mode of agriculture refers to taking agriculture as the basis, extending the industrial chain forward for agricultural business entities, developing various functions of agriculture and rural areas, developing agricultural product processing industry, organizing production and living services such as rural tourism and catering, and connecting agricultural machinery and agricultural materials services, agricultural production, agricultural product processing, circulation and sales, so as to promote the integration model of agricultural product value-added and agricultural business entities' income increase. In essence, in order to obtain more benefits, agricultural business entities, based on agriculture, promote the integration of agriculture and agricultural product processing industry, tourism, culture, health care and other industries, which has spawned many integrated formats and promote the integrated development of the three industries in rural areas. From the perspective of industry, this model includes agriculture + agricultural product processing industry, agriculture + tourism, and agriculture + agricultural product processing industry + service industry. From the perspective of the main body of

leading integration, it can be divided into leading enterprise-led type, government-driven cooperatives and other business subject-led types. From a regional perspective, this model mainly appears in the main agricultural producing areas and areas with obvious agricultural regional characteristics. These areas have a good foundation of agricultural production and have the potential to transform the agricultural characteristics of this region into the advantages of industrial integration.

## 2. THE MAIN PRACTICES OF FORWARD INTEGRATED DEVELOPMENT OF RICE AND FISH INDUSTRY IN QINGTIAN COUNTY, ZHEJIANG PROVINCE, CHINA

Qingtian County of Zhejiang Province has a good foundation for developing rice and fish industry. The paddy field fish culture in Qingtian County has a history of more than 1300 years. In 2005, the rice-fish symbiosis system in Qingtian, Zhejiang Province was selected as the "first batch of global important agricultural cultural heritage" protection project by the United Nations Food and Agriculture Organization, becoming China's first World Agricultural Cultural Heritage [1]. In 2013, the rice-fish symbiosis system in Qingtian County was listed as the "first batch of important agricultural and cultural heritage in China" [2]. In recent years, Qingtian County

has continued to explore the inheritance and protection of the world agricultural heritage of the "rice-fish symbiosis system", explore how to correctly deal with the relationship between the protection of agricultural cultural heritage and the development of modern agriculture, and promote the transformation from "rice-fish symbiosis" to "rice-fish win-win".

### ***2.1. Strengthen the protection of the rice-fish symbiosis system and develop efficient ecological agriculture***

First, scientifically formulate the protection plan of rice-fish symbiosis system, and implement the pilot protection of the project. From 2005 to 2015, Qingtian County completed the preparation, implementation and acceptance of the pilot project. Qingtian County has successively compiled the Protection Plan of Qingtian Rice-fish Symbiosis System (2006-2015) and the Master Plan of Rice-fish Symbiosis Museum of Global Important Agricultural Cultural Heritage (2010-2015)" [3]. In 2010, Qingtian County established the leading group office for the protection of the rice-fish symbiosis system. In 2015, Qingtian County completed all the goals set by the Global Environment Facility (GEF) project and successfully passed the acceptance evaluation. Since 2016, Qingtian County has begun to explore the transformation from focusing on Protection in the previous stage to paying equal attention to protection and development, that is, from focusing on field fish to paying equal attention to fish and rice. On the basis of paying attention to the protection of agricultural heritage, Qingtian County has expanded various functions of agriculture and accelerated the integrated development of agriculture, culture, tourism and other industries. Qingtian County focuses on strengthening agricultural ecological protection, protecting the symbiotic area of rice and fish, the resources of fish cultured in paddy field and traditional rice varieties, agricultural biodiversity and related biodiversity, protecting the ecosystem functions such as material production, water conservation and environmental purification, as well as the water environmental quality and soil fertility of rice fields. Strengthen the protection of agricultural culture, protect the material cultural relics such as traditional agricultural tools, traditional irrigation facilities and traditional village buildings related to the rice-fish symbiosis system, protect the intangible cultural relics such as diet, etiquette, festivals, systems, folk customs and legends.

Second, promote the "five unification" planting mode and promote the quality and efficiency improvement of rice and fish industry. Qingtian County focuses on the rice industry and strives to improve the quality of rice. In 2017, Qingtian County People's Government invested and established Qingtian County Qiaoxiang Agricultural Development Co., Ltd. relying on this company to create a public platform to drive the county's agricultural

development. The company promoted and implemented the standardized production of "rice and fish symbiosis" in the whole county, promoted the formation of a new mountain planting mode of "five unification" (unified planning, unified varieties, unified planting standards, unified processing and unified brand packaging and sales) [4]. It has created an agricultural development model in which farmers are dispersed planting and agricultural development companies operate and sell in a unified manner. The company promoted the establishment of rice demonstration bases in relevant towns (townships) and villages of the county. In 2017, it established a base of 1500 mu, expanded to 3000 mu in 2018, 5000 mu in 2019, and 6000 mu in 2020. The demonstration bases are distributed in 23 townships and 47 administrative villages, radiating and driving the development of more than 50,000 mu of rice and fish symbiotic industry in the county, realizing an average income increase of more than 1000 yuan per mu. In the process of establishing the demonstration base, the company carried out order cooperation and strictly controlled the planting and breeding links by signing contracts with other business entities. Qingtian County carried out systematic training for farmers participating in the "five unification" rice base, improved their planting and breeding technology and promoted them to carry out scientific planting and breeding. In order to strengthen the quality control of rice, Qingtian County has focused on building a food safety supervision and traceability system to accurately record the production time, origin, climate, processing, storage and other data of rice, so as to realize the whole process traceability of "from the field to the table".

Third, pay attention to the protection and breeding of Qingtian Tianyu varieties and improve the quality of Tianyu. Qingtian's local traditional planting and breeding technology and good ecological environment have jointly shaped the characteristic variety of "Qingtian Tianyu". In recent years, Qingtian County has focused on the leading industry of "one fish (Tianyu)" and focused on the protection and breeding of Qingtian Tianyu varieties. Establish a "multi-point and multi-household" source species protection mechanism for Qingtian Tianyu, and support Fangshan, Renzhuang, Zhangdan, Fushan, Xiaozhoushan, Jupu, Wanfu and other townships to establish traditional Qingtian fish species protection points. Carry out the construction of green organic rice and fish production demonstration base, cultivate typical farmers' cooperatives and farmers, and drive local farmers to engage in organic rice and fish production and breeding. Qingtian County has formulated the standardized production technical regulations for organic rice and fish, conducted training on organic rice and fish production technology for farmers, provided production technical services throughout all links of organic rice and fish production, promoting the standard production of rice-fish symbiotic field fish. Qingtian County has established a supervision mechanism in the heritage site

from fish fry incubation to fish fry sales, from fish fry delivery to rice-fish symbiosis, from fresh field fish sales to field fish dry processed products sales.

## ***2.2. Vigorously develop the processing industry of agricultural products and enhance the added value of agricultural products***

On the basis of making full use of the agricultural heritage and ecological advantages of the rice-fish symbiosis system to consolidate rice planting and fish culture in paddy field, Qingtian County takes the park standardization as the direction, vigorously develops the processing industry of agricultural products, extends the agricultural industrial chain and improves the added value of agricultural products.

First, promote the construction of agricultural products intensive processing park. Qingtian County implements the development action of agricultural products and food processing agglomeration, constructs the intensive processing and storage park of agricultural products in overseas Chinese township, creates the intensive processing and storage center of agricultural products in the county, attracts a number of leading enterprises in agricultural products production, processing and trade to settle in the park, gives play to the platform agglomeration effect, and leads Qingtian agricultural products to the whole country and the world. Qingtian County promoted the construction of a unified processing and packaging center for rice. Encourage rice processing enterprises to purchase processing equipment and adopt advanced processing, packaging and other technologies to improve the processing and development capacity of rice.

Second, strengthen the cultivation of the main body of agricultural product processing. Qingtian County has vigorously implemented the practical talent support project, systematically trained the principals and backbone personnel of agricultural leading enterprises, farmers' cooperatives and processing enterprises, and gave different rewards to the business entities who have obtained the demonstration titles at all levels, so as to guide these talents to play a leading role in the rice industry. Support the establishment of new agricultural products processing enterprises, and give subsidies to those who have newly built agricultural products processing plants and newly purchased agricultural products processing equipment that meet certain standards. Qingtian County attracts agricultural product processing enterprises from other places to build processing plants in Qingtian, and gives them incentives. Qingtian County has formulated the processing standards for processed products of dried fish, carried out processing technology skills for processing households, and cultivated a number of households with marked quality and safety of processed products of dried fish.

## ***2.3. Give full play to the advantages of agricultural heritage and promote the integrated development of agriculture, tourism, culture and other industries***

The agricultural heritage of rice-fish symbiosis system in Qingtian has the functions of production, ecology and social culture. Qingtian County adheres to the principle of "protection in excavation, inheritance in utilization and innovation in development". It fully excavates the historical culture, traditional customs, ecological functions and values of rice-fish symbiosis. In recent years, Qingtian County develops new business forms such as leisure agriculture, experience agriculture, research travel and sports health, expands farmhouse entertainment and home stay economy. These practices promote the integrated development of rural industries.

First, promote the integrated development of agriculture and tourism. Qingtian County fully excavates the traditional rice-fish culture inherent in the agricultural heritage of rice-fish symbiosis system, and inherits and protects the traditional knowledge, festival activities and folk customs of rice-fish production [5]. Qingtian County actively promotes the transformation of rice-fish symbiosis industry to leisure and sightseeing agriculture, strengthens the excavation, protection and inheritance of the important global agricultural cultural heritage of "rice-fish symbiosis", develops a number of rural tourism products such as leisure tourism and agricultural experience, and implements a number of agricultural and tourism integration banner projects such as overseas Chinese farms, European-style manors, small and micro pastoral complexes and health towns, cultivates a beautiful agricultural economy. Qingtian County gives full play to the ecological advantages, takes advantage of Qingtian farming culture and characteristic agricultural industries, promotes the integrated development of agriculture and tourism, and creates a number of agricultural demonstration areas, characteristic agricultural tourism towns, pastoral tourism complexes, theme leisure farms, leisure agricultural pastures, citizen farms, agricultural tourism professional villages, rural scenic camps and other products with harmonious coexistence between man and nature, so as to enrich the content of agricultural tourism.

Second, inherit and innovate diet, handicrafts and artistic activities. Qingtian County attaches importance to the inheritance and innovation of the traditional skills of local farmhouse delicacies and characteristic snacks, summarizes and draws lessons from the classic practices of Qingtian rice, and cultivates characteristic villages and well-known brands of farmhouse snacks. Qingtian food is promoted by holding Qingtian Food Festival, developing Qingtian food mobile app electronic map, making promotional videos and other ways. Qingtian farmers created the traditional folk dance of fish lantern dance in the labor production of co-cultivation of rice and

fish. Qingtian fish lantern dance has become a local characteristic folk art and a bright cultural card of Qingtian. Qingtian County takes Fangshan Township as the inheritance base of Qingtian fish lantern, a national intangible culture, and actively promotes the innovation of fish lantern dance. It has launched the "Qingtian fish Lantern - fish playing Lotus" series to carry out the art exhibition of agricultural heritage culture and show the characteristics of Qingtian and the culture of overseas Chinese hometown, which has been highly praised by local residents and foreign tourists. Qingtian County pays attention to the inheritance and revival of traditional handicrafts such as bamboo weaving technology, and encourages farmers, craftsmen and other subjects in the region to establish various forms of traditional handicrafts workshops. When visiting Qingtian, tourists can experience the local traditional handicrafts.

#### ***2.4. Strengthen the brand building of agricultural products and carry out comprehensive marketing***

First, build a well-known brand of rice and fish cultured in paddy field. As early as 2013, "Qingtian Tianyu" obtained the certification trademark of national geographical indication. In recent years, Qingtian County has deeply implemented the action to revitalize the agricultural brand, fully connected with the municipal public brand of "Lishui shangeng", promoted more agricultural subjects to use the brand of "Lishui shangeng", cultivated the county public brand of "Qingtian Qing" [6], supported agricultural enterprises to register their own brands, improved the brand value of Qingtian agricultural products, and gave farmers the opportunity to enjoy the product brand premium. Establish and improve the access and exit mechanism for the use of "Qingtian Qing" agricultural public brand, strengthen brand certification, protection and use, promote the development of industrial branding, and improve the popularity of Qingtian agricultural products. Qingtian rice won the title of "China's Good Rice" in 2019, the title of "Zhejiang Good Grain and Oil" and the National Geographical Indication Certification Mark in 2020, and won the gold award of "indica rice group" in the evaluation and appreciation activity of the third China Heilongjiang International Rice Festival. Qingtian fish obtained the National Ecological Origin Product Protection Certificate in 2014 and the National Agricultural Products Geographical Indication Registration Certificate in early 2021 [7].

Second, carry out comprehensive marketing of agricultural products. On the one hand, Qingtian County make full use of emerging means such as e-commerce, "Internet plus" to strengthen brand marketing, expand the market of brand products and enhance the brand radiative power. Online sales methods such as Hema fresh, WeChat, Sina Weibo, Tik Tok, Jingdong Qingtian

special products hall, easy to buy and other sales. On the other hand, Qingtian County promote Qingtian agricultural products and enhance brand influence by opening counters, exhibitions, tastings, promotions and other offline ways. Qingtian County has continuously improved the popularity of characteristic agricultural products by holding exhibitions such as Agricultural Expo, Tea Expo and overseas Chinese Expo, as well as activities such as farmers' harvest festival and fish Culture Festival. Taking Qingtian Qiaoxiang Agricultural Development Co., Ltd. as the main body, build Qingtian Qiaoxiang agricultural products city, introduce agricultural products import and export enterprises, and set up overseas counters for agricultural products. Through brand building and comprehensive marketing, Qingtian rice has become a real medium and high-end rice product. The purchase price has increased from 2-3 yuan / kg to more than 10 yuan / kg. The price of bulk grain sold by farmers has remained above 3.5 yuan / kg, with an increase of 1000 yuan per mu.

### **3. EXPERIENCE SUMMARY OF FORWARD INTEGRATION DEVELOPMENT OF RICE AND FISH INDUSTRY IN QINGTIAN COUNTY, ZHEJIANG PROVINCE**

#### ***3.1. Based on regional agricultural advantages***

The agricultural tradition of rice-fish symbiosis in Qingtian is not only a local feature, but also an advantage of developing forward integration based on primary production. Qingtian County has raised the awareness of local governments and people at all levels on the importance of rice-fish symbiosis system by applying for the approved historical and cultural heritage of the rice-fish symbiosis agriculture. Since 2005, Qingtian has been continuously exploring how to realize the symbiosis of rice and fish "development in protection and protection in development" for more than ten years. This enlightens other regions to comprehensively analyze the agricultural situation of the region and find out the advantages of agriculture when promoting the forward integrated development of rural primary, secondary and tertiary industries. Display equations should be flush left and numbered consecutively, with equation numbers in parentheses and flush right. First, use the equation editor to create the equation. Then, select the equation, and set the "Equation" Style. Press the tab key and type the equation number in parentheses.

#### ***3.2. Promote standardized agricultural production***

Qingtian County takes the county agricultural development company as the lead to promote and implement the standardized production of "rice and fish

symbiosis". In this process, it not only realizes scientific planting and breeding, improves the yield and quality of rice and fish cultured in paddy field, but also improves the degree of organization of local farmers and promotes their transformation to professional farmers. It can be said that taking the road of standardized agricultural production is an inevitable trend.

### ***3.3. Focus on improving the processing capacity of agricultural products***

While improving the production capacity of rice and fish, Qingtian County actively promotes the development of the agricultural product processing industry in the region, promotes the development of leading agricultural products processing enterprises, and actively improves the production capacity of other agricultural business entities. Qingtian agricultural products processing industry extends the local agricultural industrial chain and closely connects the primary and secondary industries. At the same time, the added value of products is enhanced. The development of Qingtian agricultural products processing industry has also promoted the connection of local agricultural production, processing, sales and other industrial chains, which not only helps to accurately match the demand at both ends of production and sales, but also keeps more profits from industrial development in the local area.

### ***3.4. Promote the integrated development of agriculture, culture and tourism***

Relying on the symbiotic agricultural cultural heritage resources of rice and fish, Qingtian County promotes the integrated development of agriculture, tourism, culture and other industries. The Agricultural Cultural Heritage of rice-fish symbiosis has many functions and values, such as production, culture, ecology and so on. Qingtian makes full use of the advantages of the symbiotic agricultural cultural heritage to explore new business forms integrating agriculture, culture and tourism, so as to drive the development of rural accommodation, catering and other service industries.

## **4. CONCLUSION**

The main practices of integrated development of rice and fish industries in Qingtian County, Zhejiang Province provide experience for China's other rural areas to promote the forward integrated development based on agriculture.

## **ACKNOWLEDGMENT**

This research is financially supported by the Scientific Research Plan Project of Tianjin Education Commission "Research on the historical process and

experience enlightenment of the Communist Party of China in exploring the integrated development of rural primary, secondary and tertiary industries" (Grant No. 2021SK088).

## **REFERENCES**

- [1] Mushang Chen. Qingtian rice-fish symbiosis system starts heritage protection [N]. People's Daily [2], 2005-06-10(12). (In Chinese)
- [2] Minfang Wu, Ailei Zou. Experience in the protection and development of the rice-fish symbiosis system in Qingtian, Zhejiang Province, a globally important agricultural cultural heritage [J]. World Agriculture, 2014(11):152-155. (In Chinese)
- [3] Wenwen Li, Shuran Guo, Min Fang. Qingtian polishes the golden card of "rice and fish symbiosis" [N]. People's Daily, 2021-01-22(13). (In Chinese)
- [4] Jiang Ye. Qingtian ecological agriculture plays the "trilogy" of rice [EB/OL]. (2017-07-24). [https://zjnews.zjol.com.cn/zjnews/lnews/201707/t20170724\\_4624877.shtml](https://zjnews.zjol.com.cn/zjnews/lnews/201707/t20170724_4624877.shtml).
- [5] Min Yang, Xiaojun Huang, Xiaoyong Guo. Qingtian creates a comprehensive place for the national "rice and fish culture" [N]. Lishui Daily, 2020-09-22(A08). (In Chinese)
- [6] Yuyang Chen. Qingtian strengthens the protection of the entire chain of intellectual property rights [N]. Zhejiang Daily, 2021-12-17(13). (In Chinese)
- [7] Xuying Shu. Qingtian Fish obtained China's National Agricultural Products Geographical Indication Registration Certificate [N]. Qingtian Overseas Chinese News, 2021-01-11(A02). (In Chinese)