

Research on the current situation and countermeasures for the development of rural agricultural industries in Quzhou City

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Abstract. This study is based on the "3+X" characteristic industry development practices in Quzhou City, and systematically analyzes the current situation and issues in rural agricultural industry development. Through measures such as constructing a full industrial chain development system, implementing a digital empowerment project, and innovating industry integration models, this study summarizes a characteristic development path led by the three major industries of pomelo, camellia, and tea. The research reveals existing bottlenecks such as insufficient industrial scale benefits, inadequate integration depth, and limited market expansion. Targeted countermeasures and suggestions are proposed, including strengthening factor guarantees, deepening industrial integration, and improving talent cultivation, which provide practical reference for rural characteristic industry development in similar regions.

Keywords: rural revitalization, local specialties, full industrial chain

1. Introduction

In recent years, Quzhou City has prioritized industrial revitalization as a key aspect of rural revitalization, striving to build rural industries that enrich the people. This study summarizes the current state of Quzhou's agricultural industry, its main practices, and its shortcomings. The aim is to explore effective methods and measures for strengthening leading industries, supplementing industrial chains, promoting business forms, and building brands, in order to explore effective paths for the full-chain upgrading and sustainable development of rural industries.

2. Basic current situation of agricultural industry development in Quzhou City

2.1. Overview of agricultural industry development in Quzhou City

Quzhou City is located in the western part of Zhejiang Province, at the source of the Qiantang River, and on the border of four provinces: Zhejiang, Anhui, Fujian, and Jiangxi. The city covers an area of 8,844 square kilometers and is a traditional agricultural hub in Zhejiang. Quzhou has a favorable ecological environment, with a forest coverage rate of nearly 70% and water quality at or above Class II for outbound waters. It serves as an important ecological barrier for Zhejiang, a national ecological demonstration zone, a national garden city, and a national forest city. The city has been recognized as a "UN International Garden City," a "World Longevity City," and a "National Ecological Civilization Construction Demonstration Zone." Quzhou is one of the first "Green Water and Green Mountains are as Valuable as Gold and Silver" innovation practice bases, a National Green Finance Reform and Innovation Pilot Area, and a National Forestry Carbon Sink Pilot City. The city's agricultural products are abundant, earning over 20 regional specialty titles, including "Hometown of Ponkan Oranges," "Hometown of Pomelo," "Hometown of Camellia Oil," and "Hometown of White Geese." Quzhou has dominant industries such as grains and oils, citrus, edible mushrooms, livestock and poultry, bee products, tea, fruits and vegetables, bamboo shoots, and fishery products. It is an agricultural production advantage zone for citrus designated by the Ministry of Agriculture and Rural Affairs, the first "China Tea Machinery Capital," and a major production area for grain, pigs, and edible mushrooms in the province. During the 2016 G20 Summit, Quzhou's agricultural products ranked second in the province in terms of variety and quantity, second only to the host city, Hangzhou. In 2023, during the Asian Games, "Sanqian Flavors" became the official supplier of mountain delicacies for the Hangzhou Asian Games.

2.2. Achievements in agricultural industry development in Quzhou City

As of 2024, Quzhou City is home to 4 national-level agricultural industry strong towns, 8 provincial-level modern agricultural parks, and 18 city-level future agricultural parks. The city currently has 1,395 rural homestays, of which 446 are star-rated. It also hosts 1 national key county for leisure agriculture (Kaihua County), 3 national demonstration counties for leisure agriculture and rural tourism (Kecheng District, Jiangshan City, Kaihua County), 7 beautiful leisure rural areas, and 12 provincial-level boutique tourism routes. The city has 11 geographical indication agricultural products, including Longyou Mahu Chicken, Kaihua Clear Water Fish, Qili Eggplant, Quzhou Yulu Tea, Changshan Monkey Head Mushroom, Changshan Pomelo, Changshan Camellia Oil, Jiangshan Green Peony Tea, Jiangshan Kiwi, Jiangshan Polygonatum, and Kaihua Longding. There are 277 green food products and 25 renowned agricultural industries in Zhejiang Province. To date, Quzhou has cultivated 403 agricultural leading enterprises above the county level (7 of which are national-level), with 10 listed agricultural leading enterprises (8 on the New Third Board and 2 on the main board). The city also has 3,160 professional farmers' cooperatives, 11,975 family farms, and 6,917 rural entrepreneurs, forming a new development pattern with a four-level gradient from national to county level.

3. Main approaches to agricultural industry development in Quzhou City

3.1. Strengthening top-level design and improving the policy system

Constructing the “3+X” Industry System: Quzhou City has developed the “3+X” specialty agricultural industry system, where “3” refers to the creation of three major industries worth tens of billions of yuan at the municipal level—pomelo, camellia oil, and tea—and “X” refers to the expansion and strengthening of county-level “one county, one product” industries, such as Kecheng citrus, Qujiang vegetables, Longyou stream fish, and Jiangshan honey [1]. In recent years, 54 “3+X” projects have been implemented, with a total investment exceeding 54 million yuan, resulting in the formation of industry clusters for specialty citrus, traditional Chinese medicinal materials, vegetables, and more. **Strengthening the Three Major Ten-Billion Industries:** According to the “Implementation Opinions on the Ten Special Actions for Agricultural and Rural Development in Quzhou,” the city has detailed the “Action Plan for the Three Major Ten-Billion Industries” and formulated supporting policies for special funds under the “Big Three Agriculture” initiative [2]. Since 2023, 14 key projects with investments of over 100 million yuan have been launched, with a total investment of 3.328 billion yuan. The full industrial chain output value of the three major industries—pomelo, camellia oil, and tea—has reached 11.8 billion yuan. **Enhancing Specialty Industry Brands:** Emphasis has been placed on agricultural technological research, upgrading agricultural varieties, and collaborating with research institutions. The city has promoted the “Quzhou Taste” regional public brand through a series of marketing campaigns, with an annual financial investment of 15 million yuan. Advertising, consumer promotions, and participation in various national agricultural expos have helped to expand the influence of Quzhou’s agricultural industry. By 2023, over 200 enterprises were licensed under the regional public brand, covering nearly 500 agricultural products, and the authorized brands achieved annual sales exceeding 9 billion yuan.

3.2. Focusing on project promotion and strengthening industry foundations

Leading Enterprises to Expand Industry Scale: The city has adhered to the principle that projects are key, leveraging leading enterprises as models to drive industry growth through large-scale, facility-based, and industrialized development. A number of anchor enterprises have been selected and supported by government funds to develop new business forms and establish brands, helping to scale up and increase the profitability of specialty industries. Leading enterprises such as Huinong Egg Chicken and Junyuan Edible Mushrooms, which rank first in the province and nationwide, have been built and put into production within the “One County, One Park” initiative. Currently, Quzhou has cultivated 210 agricultural leading enterprises at the city level and above. **Digital Transformation to Enhance Park Capabilities:** Based on local needs, the city has developed digital agricultural applications, including the “Carbon Account” for agriculture, Zhejiang Citrus, and Smart Eco Pastures. The development path of “digital base – digital agriculture factory – future farm” is being followed, gradually constructing a smart agriculture development system. For example, in Kecheng District, a digital platform for sturgeon farming has been developed, incorporating online environmental monitoring systems, production management systems, remote sturgeon disease diagnosis systems, and smart fishery management systems, setting up a national-level digital fishery demonstration project. **Industry Integration for Diversified Income Generation:** The city promotes cross-industry integration of agricultural parks with tourism, culture, and education, creating diversified income generation models centered on modern and ecological agriculture. Ten high-quality agricultural, cultural, and tourism leisure routes have been launched along the picturesque scenery belt [3]. For example, Longyou County has created the Longhe Fishery Culture Park, integrating fish farming, accommodation, dining, and educational training, which has led to the development of over 500 households in the fish farming industry. The park covers 35,000 acres, hosting over 30 national-level fishing competitions and attracting more than 200,000 tourists.

3.3. Exploring full-chain upgrading and building industry clusters

Improving the Cultivation System: Focused on integrated reforms of the agricultural industry's full industrial chain, the city has tailored its approach to local conditions, expanding its unique advantages. The city has worked to synchronize efforts at all five ends of the agricultural industry chain—production, processing, circulation, supply, and sales—while driving deep integration of the industry chain, innovation chain, talent chain, value chain, and service chain [4]. As of this year, the city has cultivated 10 industry chains with investments exceeding 1.5 billion yuan, such as those for pomelo, tea, pigs in Qujiang, livestock in Longyou, and honey in Jiangshan, which have become important local industries driving farmer income growth. **Deepening Industry Collaboration:** The city has developed an innovative development model for new agricultural entities, leveraging their advantages in production technology, facilities, and channel connections. Industry farmer cooperatives have been established to share sales channels and agricultural services. In Kecheng District, the “Shangpu Model” was introduced, using the “collective management + 50/50 profit-sharing” model to revitalize rural land management rights, effectively increasing farmland green cover, grain production, farmer income, and collective efficiency. **Innovative Income Growth Mechanisms:** The city has organized young talent and rural entrepreneurs to establish common prosperity partner plans. By expanding the application of digital agriculture, plant factories, and other technologies, the city is developing agricultural workshops and encouraging the investment of idle rural resources. Since 2023, the “Double Pomelo” industry has helped 100,000 workers increase their income by over 1.2-billion-yuan, camellia oil has benefited 20,000 households, increasing their income by over 700 million yuan, and tea has driven 120,000 households to raise their income by more than 1.8 billion yuan.

4. Issues in agricultural industry development in Quzhou City

4.1. The need to enhance industry scale and efficiency

The issue of Quzhou's agricultural industry being “large but not strong” is quite prominent. Taking the pomelo industry as an example, although the total output value of the entire industry chain has significantly increased in recent years, the primary segment, which is the “production” or “planting” phase, faces three major constraints. First, there is a limitation in planting space. Particularly under the broader context of the “Two Non” (non-agricultural and non-ecological) policy reform, the phenomenon of insufficient land for economic crops has emerged to some extent. Second, there is a limitation in the level of large-scale operations. Compared to the plains, Quzhou has many mountainous and hilly areas with fragmented land, which makes mechanization difficult, leading to challenges in expanding planting scale and improving efficiency. Third, there are limitations in agricultural infrastructure. The development of supporting infrastructure, such as water, electricity, and roads, is relatively lagging, and services such as cold chain logistics and warehousing distribution, which are essential for modern agricultural production, are particularly lacking.

4.2. Bottlenecks in industrial integration and development

In order to expand and strengthen primary industries, it is essential to connect secondary and tertiary industries, but this is a challenging task. Agricultural industries are often concentrated in primary production stages such as planting and breeding, with insufficient development of downstream stages such as deep processing, logistics distribution, and sales services. Additionally, the development and utilization of ecological, cultural, and tourism functions are not sufficiently explored, and there is a lack of in-depth integration of agricultural culture and rural characteristics. This has resulted in an absence of diversified, deeply integrated industrial models. For example, in the tea industry, the primary production sector has already become highly competitive, with traditional tea production far exceeding demand. The price of spring tea has significantly decreased for several consecutive years [5], by approximately 30%, and sales of premium tea, which serve as the face of the industry, are also unsatisfactory.

4.3. Market sales channels need to be expanded

Taking the camellia oil industry as an example, market sales have always been a bottleneck restricting the development of Quzhou's camellia oil industry. First, the influence of leading enterprises is weak. Among the 13 camellia oil companies with revenue exceeding 5 million yuan, only 4 are large-scale enterprises, lacking “anchor enterprises,” and the brands are scattered, leading to low market recognition. Second, there is insufficient innovation capability. The research and promotion of new camellia oil products are limited. Although companies such as Dongcha and Old Tree Root have developed some new products, market cultivation still requires time, and sales are insufficient. Third, the standard system is not perfect, and there are certain shortcomings in quality control. Companies are not strongly motivated to grade their camellia oil for sale. There is a gap in high-end products, and some small workshops are involved in substandard products, which has somewhat impacted the overall image and price positioning of Quzhou camellia oil.

4.4. The need to cultivate an industry talent pool

As the agricultural industry develops further, the demand for agricultural talent becomes more urgent. The agricultural industry often relies on specific regions and traditional farming and breeding methods but lacks specialized technicians to optimize the production process. Due to factors such as limited development space, difficult working conditions, and low pay, the agricultural talent pool faces many challenges, such as an aging rural labor force, difficulty attracting professional talent to agricultural enterprises, and even more difficulty retaining them. Some enterprises and entities are struggling with succession issues, especially small and medium-sized agricultural enterprises and family farms, where many “second-generation farmers” are not interested in inheriting the family business.

4.5. The need to optimize policy element supply

Agriculture is a slow-moving variable. Whether it is input-output or technological innovation, results are difficult to achieve in the short term and require time to accumulate. For instance, it takes at least five years for pomelo to go from seedlings to full production. The development of various processed products and agricultural machinery also requires extended periods. However, in recent years, the process of developing rural industry projects has often encountered policy red lines related to farmland protection and ecological conservation. Therefore, from the perspective of the main entities involved, a stable and predictable policy environment is crucial for the development of agricultural industries, such as the “three major ten-billion industries.”

5. Countermeasures and suggestions for agricultural industry development in Quzhou City

5.1. Enhancing industry scale and efficiency

1. Exploring Planting Space: On one hand, attempts should be made to reform the collective forest rights system and implement “multi-field integration” reforms. On the other hand, the “sweet potato economy” should be supported, and leading enterprises should be encouraged to “go global” and actively expand the industry layout beyond the region, thereby stabilizing the supply system. 2. Expanding Scale and Efficiency: Under the premise of respecting farmers' wishes, the city should follow development trends and continue to deepen the centralized transfer of fragmented land, addressing the issue of land fragmentation. Additionally, the role of agricultural investment state-owned enterprises and village collectives as “bridges” should be fully utilized to effectively connect supply and demand. 3. Improving Supporting Infrastructure: First, basic elements such as water, electricity, and roads should be guaranteed. Second, in line with the direction of facility-based agriculture, the city should promote mechanization and digital transformation, accelerate solving the challenges of applying small-scale agricultural machinery in mountainous and hilly areas, and further improve labor productivity [6]. In regions with favorable conditions, the development of cold chain logistics and warehousing systems should also be actively explored to support the sales radius for fresh products.

5.2. Breaking through bottlenecks in industrial integration development

1. Developing Deep Processing: Support agricultural enterprises in developing primary, deep, and comprehensive processing of agricultural products, enriching upstream and downstream products, and improving agricultural product processing services. Focus should be placed on processing areas such as fruit juices, tea beverages, and prepared meals, and the planning and construction of agricultural product processing zones should be initiated. At the same time, more efforts should be made to attract processing enterprises to fill gaps in the industrial chain. 2. Promoting Agricultural-Tourism Integration: Agricultural industries should develop local resources based on the land's characteristics and expand into areas such as ecological tourism, folk culture, and leisure sightseeing. Many agricultural industries have long histories and rich cultural heritage, with numerous stories to tell. These cultural genes and tourism resources embedded within industries should be deeply explored and innovatively planned, creating products for research, experience, and sightseeing that effectively integrate into rural cultural and tourism development.

5.3. Expanding market sales channels

1. Deepening Branding: Promote the construction of regional public brands for agricultural products, specialty agricultural product brands, and enterprise branding systems. Efforts should be made to foster “Quzhou-branded” agricultural products and comprehensively build a county-level public brand matrix. 2. Activating Innovation: Strengthen core technology research, focusing on technological and equipment updates, and accelerate breakthroughs in agricultural product deep processing technology. Innovation entities should be nurtured, and plans should be implemented to cultivate technology-driven and leading enterprises, carry out research on common key technologies in the agricultural industry, and promote the conversion and industrialization of scientific research achievements. 3. Strict Quality Control: Vigorously promote the development of green, organic, and geographically certified agricultural products, and advance systems for product origin certification, market access, and traceability.

Improve the standardized production system for agricultural industries, develop and issue industry standards for agricultural products, and guide entities toward standardized production.

5.4. Cultivating the agricultural talent pool

1. Building Platforms and Opening Access for Talent in Rural Areas: Through the “Common Prosperity Partner” program, encourage and guide leading enterprises to release partnership projects annually, bringing in large-scale farmers, university students, and rural entrepreneurs to the agricultural industry. Additionally, accelerate the implementation of the Rural Industry Revitalization Leaders program, enhance the training of agricultural entrepreneurs, and plan to establish agricultural industry incubators and youth farming farms as innovation platforms. 2. Strengthening Talent Attraction and Building High-Quality Teams: On one hand, strengthen the training of leading talent for the agricultural industry according to the needs of development, supporting research institutions and universities in the process and exploring incentive mechanisms such as knowledge property shares and dividend participation. On the other hand, increase the cultivation of high-quality farmers, returnees, and leaders of new agricultural business entities, relying on production bases and industrial parks to enhance practical talent training for the agricultural industry. 3. Improving Services to Enhance Recognition and Sense of Belonging: Improve incentives for rural talent and strengthen a comprehensive policy supply chain of “attract, train, use, and retain.” Offer preferential treatment in areas such as title evaluation, salary, recognition, as well as optimized services in education, medical security, and financial support, alleviating concerns for rural talent.

5.5. Ensuring policy element supply

1. Focusing on Key Areas and Optimizing Existing Policies: The “Big Three Agriculture” policy has long been a focus of fiscal support. However, given the financial constraints at all levels, policy funds must be internally optimized. Policy direction should focus on key areas such as breeding good seeds, promoting agricultural machinery, attracting processing enterprises, and developing product research and development. Additionally, policies should be more granular and policies should be integrated across different levels. Performance evaluations should be enhanced according to policy implementation. 2. Increasing Pilot Programs to Generate Reform Increment: The fundamental task is to strengthen land protection for enterprises. Within pilot frameworks, innovative exploration should be actively pursued, making full use of pilot policies to secure land for industrial use. For policies involving red lines, such as the “three zones, three lines,” pre-service and review processes should be strengthened to avoid unnecessary investment. 3. Empowering Financial Support and Expanding Financial Reserves: Promote collaboration between fiscal policies and financial instruments such as agricultural insurance, loan interest subsidies, and financing guarantees. Optimize financial inclusivity policies to enhance the resilience of industry development. In terms of loans, financial institutions should be encouraged to broaden the scope of rural assets as collateral, including agricultural machinery, greenhouses, livestock, and farming facilities. Regarding insurance, a supply system focused on policy-based insurance and supplemented by commercial insurance should be established, and efforts should be made to upgrade agricultural industry-specific insurance products.

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