

## Strategies on Accelerating Agricultural Modernization-Taking Qijiang District as an Example

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**Abstract:** In order to study the causes of weak agricultural base in China, the income gap between urban and rural residents, agriculture and the obvious insufficiency in agriculture, rural areas and farmers, we analyze focal and difficult points in the simultaneous development between Chinese industrialization, informatization, urbanization and agricultural modernization and seek for ways and strategies to promote the modernization of agriculture process. This study takes Qijiang district of Chongqing as an example, from five aspects to discuss the ways and strategies of advancing the process of agricultural modernization; they are the development of the profitable agriculture, the reform of rural property rights, management rights and land ticket, rural circulation and financing, government investment and support and the improvement of the production and living conditions in rural areas. We hope these can accelerate the construction of agricultural modernization, promote sustained and rapid growth in farmers' income, constantly improve the production and living conditions in rural areas and promote the simultaneous development of industrialization, informatization, urbanization and agricultural modernization.

**Keywords:** Land ticket, modern agriculture, rural circulation, urban and rural developmen, urbanization

### INTRODUCTION

Agriculture is the basis of ensuring people's livelihood as well as public interest, economic development and social stability (Costanza *et al.*, 1997). Based on modern technologies as well as modern equipment, management methods, farmers and other factors, agricultural modernization is the final result of transforming the traditional agriculture into a modern one, the foundation of building a well-being society in an all-around way, the cornerstone of achieving industrialization and urbanization and the key of coordinating urban and rural development (Xie *et al.*, 2008).

Located in the southern part of Chongqing where Chongqing Basin and southeast Yunnan-Guizhou Plateau converge, Qijiang district is adjacent to Wansheng in its east, Guizhou in its south, Jiangjin in its west and Ba'nan in its north. As it is majorly covered with mountains and hills which present that the south section is at a higher elevation than the north section, it is one of the typical karst landforms. Lying in humid subtropical climate zone, this district is characterized by four distinct seasons, average annual precipitation of 1071 mm and average annual temperature of 18.8°C. Mineral resources like coal, iron ore, limestone, natural gas and quartz sand can be found here. In this region, there are six railway stations as well as six expressway entrances and six expressway exits due to the complex

traffic network composed of Yuqian railway, Hainan-Yunan-Hunan railway, 210 national road, 210 provincial road, 303 provincial road, Yuzhan expressway and Qiwan expressway passing through this region. Covering an area of 2182 square kilometers, Qijiang consists of 20 towns and 314 villages and it has a total population of 950,000 people, of which 200,000 are urban population. Qijiang district has been noted as the backbone of Chongqing to develop agricultural modernization based on its unique geographical position and agricultural location. Under the context of the increasing completeness of rural infrastructure and rural development mechanism and the improvement of agricultural quality and efficiency in Qijiang district, this study is developed from five aspects, which are developing profitable agriculture, the reform of property rights, the management rights and land ticket, rural distribution and financing, government investment and support and improving the production and living conditions in rural areas. In order to accelerate the agricultural modernization, promote sustained and rapid income of the farmers' income and seek for ways and strategies to promote the modernization of agriculture process.

### MATERIALS AND METHODS

Agricultural modernization is organically integrated with the development of industrialization and

urbanization. The development of urbanization can not only reduce the rural population, boost the moderate-scale development and intensive standardized production, but also improve the agricultural efficiency. With powerful technologies, production ability and information advantages, industrialization not only provides strong support for realizing agricultural modernization, but also fundamentally improves the efficiency in agricultural productivity, resource utilization and farmland output, which in turn provides rich raw materials and workforces for the industrialization. To maintain development in both agriculture and agricultural modernization can be maintained. Emphasis on quantity, quality and efficiency of agriculture is indispensable.

Strategies on how to launch the modernization of agriculture should be made from the basic conditions for agricultural production in Qijiang district. At present, the real agricultural modernization is still not realized due to such a few outstanding problems as poor production facilities, lowly organized, scaled and standardized agriculture, lagging rural productivity, large development gap between rural areas and urban areas, lack of diversification and specialization and low benefits brought to farmers (Mingwei *et al.*, 2008). How to build the coordinative development between the rural areas and urban areas based on the strategy that uses the development of big cities to boost the development of the big countries? How to develop distinctive and highly efficient modern agriculture based on the strategy that suggests the living standard of Chongqing people should be improved through scientific development? In order to accelerate the agricultural modernization in Qijiang district, on the one hand, based on the ting policies and strategies, we should optimize the distribution of agriculture, emphasize scientific methods, accommodate circulation channels for greenstuffs, deepen the reform in agricultural technologies and consolidate agricultural hardware; on the other hand, we should regard the realizing high-quality and productive products as the premise, developing highly ecological, intensive, standardized, organized and industrialized products as the standard and completing infrastructure, mechanized equipment, service system, scientific technologies and farmers' education system as the backbone (Hongfei *et al.*, 2007). Therefore, we make a deep investigation into the status of modernization and its strategies by visiting around and issuing questionnaires.

## RESULTS AND DISCUSSION

**Advantages for the agricultural modernization in Qijiang district:** Qijiang district lies between 106.3 and 107.3 degrees east longitude and 28.27 and 29.11 degrees north latitude and it is adjacent to Chongqing's Nanchuan, Banan and Jiangjin in its east, north and west and Guizhou's Xishui and Tongzi in its south. With a

total area of 2748 km<sup>2</sup>, it spreads 65 km from east to west and 82 km from south to north. Qijiang district has advantages geographical position and fairly convenient road traffic, making it a hub linking the economic activities between Chongqing and Guizhou, a material distribution center between southern Chongqing and northern Guizhou and a road passage through which Chongqing's goods are shipped south into the sea. Qijiang district is 59 km away from Chongqing city and it is crisscrossed with two national highway roads, two expressway roads and two railway lines. Qijiang district has an area of 4.13 million mu, of which 1.336 million mu is forest land, 77,000 mu is water area and 281,000 mu is garden plot, residential area and land for mining and industry. The city has many rivers and lakes including Qijiang river, Xiaozi River, Zaodu River and Mutong river and it has 0.14 billion cubic meters of exploitable groundwater and 4.4 billion cubic meters of total water resources that enable it to have the potential to supply enough water to Chongqing and produce about 100,000 kilowatts of power. As one of the typical hilly areas, Qijiang district abounds in living beings and water resources and it is distinctive in four seasons which is suitable for a wide variety of agricultural products. Meat, vegetable, fruit and vegetable oil are the four major industries of local agriculture. Planting industry is the core of modernized agriculture, accompanied with the operation of orange, tea, herb and red plum, creating a new way towards the modernization of agriculture (Chongqing, 2011).

Qijiang district region is much rich in natural resources, especially in energy reserves-the proven coal reserves in this county is 1.686 billion tons-that it rated as one of the coal-base counties in China; its coal-bed gas reserve is 38.3 billion cubic meters which account for 54% of the total reserve in Chongqing; in addition, there are also abundant water power and electronic power resources as well as mineral deposits in this area. Qijiang district has been the industrial center of Chongqing, with an industry capital of up to 2 billion yuan. Large-sized and middle-sized enterprises like Songzao Coal and Power Co., Ltd., Qijiang Gear Transmission Co.,Ltd. and Qijiang Iron Ore are properly distributed across Qijiang and pillar industries related to energy, metallurgy and machinery manufacturing form a reasonable industry distribution. During the critical period of Qijiang's development, the introduction of 100,000 tons of electrolytic copper project and the production line of hot-dip zinc coated strips of the Fourth Chongqing Steelmaking Company will strongly boost the development in both the society and economy of Qijiang district and help to form a more reasonable industry distribution. Because of its rich cultural deposits, Qijiang district is awarded as "the home to famers' engravings" by Culture Department of Sichuan Province, Sichuan Art Association and People's Government of Chongqing and named as "the home to

modern folk paintings" by the State Ministry of Culture. Besides, there are also other cultural resources in Qijiang district, such as the famous historic and cultural town in China-ancient Dongxi town and Liu family music troupe, historic site of Korean Provisional Government, Reproductive totem of Dai nationality, tomb group of Han dynasty at Qigongju cliff and wood fossil from the Jurassic age, which are protected by Chongqing's intangible cultural heritage project.

Based on Qijiang's current situation in traffic, industry, agriculture and resource reserve, what measures should be taken into account to achieve agricultural modernization? This study suggests that Qijiang district should afford its efforts into building it to be a place with well-developed traffic network, industrial base clusters, agricultural industry clusters and energy source industry clusters:

- Based on its current transportation, Qijiang district should make immediate adjustment on administrative division by expending the city eastward and southward and launching new construction in Zaoyuanpian area and Tonghui new area, so as to expend its city scale to accommodate more industries and people; furthermore, it should develop towns dotted along expressways according to the layout of "one center, five points", so as to form a new city with echelon structure
- It should accelerate its construction in arterial road network so that a traffic hub composed by six horizontal roads, five longitudinal roads and five links is formed
- Qijiang district should take advantage of its natural resources and industry capacity to vigorously develop energy sources like coal, electronic power and coal chemical, metallurgical products like electrolytic copper and electrolytic aluminium and machinery manufacturing like gear processing, so as to become the base of supplying energy, metallurgical products and gears to Chongqing
- Qijiang district should take the advantage of its four clearly-cut seasons and being close to Chongqing to construct Tonghui Food industrial park, develop vegetable industry, papaya industry, animal husbandry and establish the producing and processing base of raw materials for Chongqing's hotpot condiment, so as to make itself the vegetable supply center in southern regions, home to papaya products, meat and egg supply base for Chongqing and the base of raw materials for Chongqing's hotpot condiment; meanwhile, it should cultivate the five leading agriculture-industrialized enterprises (Meiledi, Shuangyang, Zhengpangzi, etc.), each with capital of 0.5 billion yuan, into the agricultural industry clusters of Qijiang; Qijiang district should accelerate the formation of nonferrous metal manufacturing base based on

existing metallurgical enterprises and develop the manufacturing of nonferrous metals (electrolytic copper, electrolytic aluminium, copper pipe, copper wire, metallurgical powders, precision casting and sheet steel, etc.) and highly-processed steel products, so as to form a relatively complete industrial chain. The joint development and interaction of traffic network, industrial base clusters, agricultural industry clusters and energy source industry clusters, combined with the improvement of internal and external environment, lays a solid foundation for the modernization of agriculture (Guang-Shi, 2007).

**Strategies on agricultural modernization in Qijiang area:** Emphasis should be put on the overall urban-rural development: depending on the interaction, resource sharing and the bidirectional flow of production factors between rural areas and urban areas, Qijiang district is able to realize the integration of urban-rural development planning, infrastructure, public services and social management:

- **Ensuring effective supply:** Qijiang district should achieve self-sufficiency in grain and the basic supply of major agricultural products while maintaining the existing area of cultivated land, so as to stabilize and improve locals' livelihood
- **Valuing the development of high-quality and efficient agriculture:** Qijiang district should use scientific technologies to establish organized, large-scaled and standardized agricultural mode and achieve the joint development in agriculture, industry and commerce as well as in producing, processing and marketing
- **Making reform and innovation:** Qijiang district should abolish the structural obstacle between rural areas and urban areas and through systematic reform, establish a mechanism that is capable of protecting farmers' rights, supporting agricultural development and flourishing rural economy, so as to greatly liberate and develop productive forces in rural areas;
- **Acknowledging the vital role farmers play in agricultural modernization:** Qijiang district should provide vocational training to farmers and accelerate agricultural modernization by virtue of their dominant role and creative spirit (Yu and Zhao, 2009).

The strategy of developing the profitable agriculture. Develop the profitable agriculture by means of science and technology, brand, quality, processing and features together. Agricultural modernization follows the progress in agricultural science and technology. For example, through the promotion of hybrid rice, China solved the food problem for nearly

20% of the world's population with less than 9% of the world's arable land. The best agricultural countries are all strong in agricultural science and technology and the contribution rate of scientific and technological progress in agriculture is generally above 70%. Such as Jiangsu province of China is a strong agricultural province and its contribution rate of scientific and technological progress in agriculture reaches 60%. The per capita arable land in Qijiang district is only 1.17 acres, mountain hills account 90%, the quality of arable land is poor, more than 70% of the area are medium and low-yielding fields, the effective irrigation plane is less than 30% of the arable land, the operation is decentralized, the characteristics of agricultural products are hard to manifest, the industrial chain is difficult to lengthen, so the effect is not ideal (Bang-Cheng *et al.*, 2006). The agricultural modernization in Qijiang district is ought to be guided by science and technology and form a collaborative innovative propulsion system by the combination of production, study, research and boost. In this way can promote the innovation in agricultural science and technology and play the leading role of modern agriculture demonstration zones and integrated demonstration projects. Reasonably adjust the arrangement of lands for grain and oil and other planting industries in Qijiang district, pay attention to market, adjust the plantation structure of economic crops, focus on the development of 11 specialty industries, such as citrus, vegetables, livestock, fisheries and so on. Based on different agricultural foundation and characteristics, different towns and villages can select competitive agriculture, facility agriculture and leisure agriculture; vegetables, livestock and poultry, ecological fisheries and high quality grain and oil; pollution-free, green and organic agricultural cultivations. Promote specialty products, develop unique industries with market, efficiency and competitiveness and around the dominant characteristic industries, launch the dominant species and the leading technology form cultivating new varieties, using new technologies, adopting new means and training and establish distinctive diversified development situation. Besides high quality agricultural products, we still need to improve the processing level of agricultural products, expand sales channels, increase efforts in agricultural brands, increase profits through deep processing and boost farmers' income. At present, the competition of agricultural market has gradually evolved from price competition to brand competition and price rigidity has improved, agricultural modernization calls for complete agriculture standard system, acceleration of the construction of agricultural products quality and safety traceability system, full supervision from farm to fork and improvement of the overall level of quality and safety of agricultural products. Through standardized production, enhance the proportion of pollution-free agricultural products, green food, organic food and geographical indications of

agricultural products and take the processing of agricultural products as a breakthrough, rely on raw material production base and develop agro-processing and deep processing. The multiplier effect can make aquatic products up to three times, the silkworm cocoon up to five times and tobacco up to ten times. Build the leading processing enterprises of agriculture, drive the harvest agricultural products into the processing market and promote agricultural modernization from the development of profitable agriculture strategies.

The reform of rural property rights, management rights and land ticket. The agricultural modernization reform in Qijiang district needs to take the special geographical situation of the major cities, large rural areas and mountainous into consideration. In the special stage of the coordinated development of urban and rural areas, explore the promotion of rural reform and boost the overall and comprehensive development in urban and rural areas on the basis of the emancipation of rural productivity. The primary task in the process of reform is to deepen the rural property rights. After the reform and opening up, farmers hope to get the long-term ownership of land contract and management rights, but in several cases of rural property confirmation the actual arable land has large difference from the total area in farmers' contractor warrant, just as Qijiang district. The reason for this difference is mainly due to the actual measurement of original land is different from the projection, land quality and agricultural taxes. Take land quality as an example, farmers intentionally countless area and pay less taxes when implement the policy of paying agricultural tax according to area. However, when the agricultural tax is abolished, if the area is counted less, it not only will affect the farmers' compensation for land acquisition, land transfer income and benefits of agricultural subsidies, the mortgage amount will be greatly reduced. Thus, in order to protect the interests of farmers, promote the reform of property rights of rural collective economic organizations and establish management and operation mechanism of collective assets with clear and complete property rights, asset quantized to individuals and scientific and standardized management, we must clarify the ownership of rural property rights and management rights and unify the operate area in the warranty with the actual area. By encouraging farmers to make use of contract for the management rights, land attachments and other elements, develop agricultural joint-stock enterprises in rural areas and mixed-ownership economy and improve the interest-linked mechanism, in Qijiang papaya industrialization demonstration base promote the leading + base + farmers industrialized operation model. Through sowing, management, collection, storage, transportation, marketing or agricultural machinery, plant protection, animal epidemic prevention and other processes, develop farmer cooperatives and improve the professional assignments and services. Accelerate the transfer of rural contracted land and woodland

management rights, optimize the allocation of land resources and realize the geographical distribution of agriculture, large-scale cultivation, professional management and standardized production. Actively encourage farmers to subcontract, lease, exchange, transfer of shares and other reasonable circulation. Insist farmers wills, respect and protect farmers' leading position in the circulation; cultivate professional farmers, family farms and other new agricultural production and operation bodies, avoid the outflow of non-farm rural land; adhere to service the development of modern agriculture, increase agricultural labor productivity and benefit, promote the movements of rural management rights (Zong-Ming *et al.*, 2004). Under the premise of unchanged collective ownership of rural land, make use of the differential rent and urban and rural construction land to create land ticket system, get rid of the trading restrictions, maintain the total arable land and make the income of rural construction land same as state-owned construction land. 85% of the net income generated from land ticket transactions owned by farmers, while 15% and reclaimed farmland owned by the collective organizations. During the expansion of land ticket transactions, reform the agricultural production. Due to the low degree of organization in agricultural production and management, the old production mode cannot adapt to the objective needs of large-scale socialized production. Thus, it is necessary to establish new cooperative mode under the principles of clear property rights, equal and democratic, risk and profit sharing, promote agricultural modernization from the development of profitable agriculture.

The strategy of developing rural circulation and financing. In the process of agricultural modernization, the difficulties in rural circulation and financing become a bottleneck to the development of agriculture, which requires effective connection of agricultural production with modern markets and modern finance, acceleration of the development of agricultural insurance policy and establishment of risk derogation mechanism. Circulation is the key link of connection between production and consumption and each operation mode requires building a modern circulation system for agricultural products in order to solve the problem of the movement between the production and the market. There is no modern agriculture without the modern circulation. Poor circulation is root cause for the difficulties of the seller and high prices for the buyers. In order to develop modern agricultural circulation, it requires building wholesale market around the specialty industrial bases, forming a four-level agricultural market system of perfect main city, regional center city, county and township and agricultural products cold chain logistics system and promote urban and rural interaction. Strengthen agro-business information services, develop the e-commerce in agricultural field and establish a global Information network of agriculture business that

covers the whole city, connects the whole country and extends to the whole universe. Through the cultivation of diversified, multi-level market circulation bodies, play the role of leading enterprises of agricultural circulation, farmers brokers, the professional large circulation bodies, rural cooperative organizations and the industry associations, adopt the market monitoring, market analysis and agricultural scheduling, enhance the perceptiveness and efficiency of productive organizations, so that make the rate of large-scale order of agricultural productions above 60%. Financing strategy mainly involves finance and finance is the core of modern economy. With the continuous improvement of the agricultural market, rural financial demands are increasing day by day. At present, the biggest problem of peasantry accommodation of funds is the lack of property and collateral which can be approved by financial institutions. There is no financial credit without collateral, so farmers lose the ability to finance. In Chongqing, farmers own 3400 mu of contracted land, 5600 mu of collective forest land and 700 million m<sup>2</sup> of housing and worth at least one trillion yuan. If farmers mortgage to the bank at 10%, then can loan of 100 billion yuan, the funds rolling investment will become a strong impetus to the development of agricultural modernization. Since 2010, through the reform of rural property rights system, we endowed the pledge function to the rural land contract of management rights, houses and forests of rural residents, which effectively activated rural assets and farmers' loans increased from 30 billion to over 250 billion within two years. In order to develop the rural circulation and financing, it is necessary to carry out the mortgage finance of Houses and forest tenure mortgage financing development the required to carry out the rural land contract of management rights, houses and forests of rural residents, speed up the assessment, transfer, disposal of collateral and other financing supporting institutional construction, build the agricultural credit guarantee system of one hundred billion yuan, promote farmers' production management financing to one hundred billion yuan and promote agricultural modernization from the rural circulation and financing.

The strategy of government investment and support. The high-risk nature and weakness of agriculture requires government to provide special support and protection to agriculture. Agricultural modernization not only requires systems and productivity conditions, but also needs adapted socio-economic conditions. Government carries out the principles of giving more, taking less and loosening control, invests in many ways, promotes the development of agriculture and rural areas, increases industry nurturing agriculture and cities support rural areas and improves the guide and effectiveness of agriculture and rural areas. Under the premise of ensuring the priority financial expenditure to support the agricultural and rural development, the budget fixed assets investment priority to invest in

agricultural infrastructure and rural livelihood projects and land transfer revenue priority for agricultural land development and rural infrastructure construction. The growth rate of financial investment in agriculture in Qijiang district is higher than regular financial revenue growth and provides strong support to the development of agricultural modernization in tax and finance aspects. Take the way of special funds for specialty profitable agriculture, focus on the development of specialty profitable agriculture, ensure the funds used in specialty profitable agriculture more than 100 million yuan every year, pay more attention to the poverty-stricken areas and strive to grow at an annual rate of 20%. Government investment and support strategies need to be in accordance with the principle of concentrate financial resources to do big things and invest agricultural development funds and projects in key areas and competitive industries and maintain the capital budget unchanged, the funding channels clear and capital purposes centralized. Take Qijiang district as an example, we pay more attention to support the development of specialty leading industries, transfer the funds to livestock, vegetables, fruits and agricultural products processing industry and other leading industries which are mainly supported by the district government. At the same time, build the core area of food production and invest the grain core area for two years. Increase the government guidance, attract credit funds and social investments to the overall development of agriculture, actively guide social capitals into agricultural constructions, complete the mechanism of funding and project management, ensure a safe, standardize, efficient operation of financial funds, guarantee the project for a long-term operation and promote agricultural modernization from government investment and support.

The strategy of improving rural production and living conditions. Agricultural production is restricted and influenced by natural conditions greatly, so building a strong and perfect infrastructure is the basis of grasping the initiative in agricultural production, against a variety of natural disasters effectively and ensuring a comprehensive agricultural production capacity. Improve farmers' living conditions and build productive, well-off, civilized, clean and tidy and democratic socialist new countries is the basic requirement of overall well-off country. In rural transportation, vigorously develop the rural transportation; accelerate the development of networking between the counties and townships in Qijiang district and smooth engineering construction of the administrative villages and promote rural passenger transportation and urban and rural transport integration. As for rural drinking water, implement the water conservancy ten billion investment plans; resolve the engineering shortage of water and drinking water safety issues. In farming, strengthen the construction of basic farmland, promote agricultural mechanization of sowing and harvest, develop agricultural facilities according to local

conditions and make sure patency rate in Qijiang administrative villages reaches 90% by 2017. In rural life, promote the information construction in rural areas, improve rural communication conditions; strengthen rural planning, guide farmers to construct residence reasonably and intensively; complete the upgrading of rural power grids and realize the same network, same quality and same price between urban and rural areas. In rural environment, strengthen the comprehensive improvement of rural environment; promote lean energy and implement the greening in barren hills and courtyards. At the same time, carry out dynamic poverty alleviation, do a good job of helping the poor and needy, poverty alleviation projects and funds focus on investing in specialized industries, improve the social security system in rural areas and gradually increase the security level of the rural health care and pension. Advocate positive and healthy lifestyle, cultivate civilized and upwards social habits and promote agricultural modernization from improving rural production and living conditions.

## CONCLUSION

In the process of comprehensively pushing forward the agricultural modernization, agriculture, rural areas and farmers are the major issues related to the reform and opening up and the overall situation of modernization construction. Agricultural modernization is the basis of a comprehensive modernization, the power of the sustained and healthy development in China and the source of long-term social stability, so we must unite the farmers' enthusiasm and creativity to promote agricultural modernization, take efforts to expand the fields of agriculture, implement industrial management, stick to sustainable development, promote scientific and technological revolution in agriculture, advance the process of agricultural modernization from developing the profitable agriculture, the reform of rural property rights, management rights and land ticket, rural circulation and financing, government investment and support and the improvement of the production and living conditions in rural areas and promote the simultaneous development of industrialization, informatization, urbanization and agricultural modernization.

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