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Development of Urban Agriculture: A Case Study of Qianjin Village, Jiangxia District, Wuhan City

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Abstract We take the case of Qianjin Village, Jiangxia District, Wuhan City, to research how to establish the system of urban agriculture with distinctive features relying on the advantage of urban resources. Under the guidance of guiding ideology, basic principles and overall objectives of urban agriculture development planning, we analyze the specific construction planning of urban agriculture in Qianjin Village, mainly including the construction of growing areas and construction of leisure areas. Then we put forth the security system of development of urban agriculture as follows: land transfer is the prerequisite of development of urban agriculture; policy support is the important foundation of development of urban agriculture; agricultural science and technology is strong support for development of urban agriculture; good leadership is the organizational guarantee for development of urban agriculture; the industrialization of agriculture is the main objective of development of urban agriculture.

Key words Urban agriculture, Development planning, Qianjin Village

Urban agriculture is the practice of cultivating, processing and distributing food in, or around, a village, town or city. Urban agriculture in addition can also involve animal husbandry, aquaculture, agroforestry and horticulture. These activities also occur in peri-urban areas. Relying on capital, technology, information and market advantages of the metropolis, urban agriculture, closely related to the metropolitan development, is a new type of modern agriculture integrating economic, social and ecological benefits^[1]. Qianjin Village, located in the south of Wuhan City, has a strong location advantage. Relying on Wuhan City, it is an inevitable choice for Qianjin Village to make full use of the driving effect of Wuhan's economic development for the development of urban agriculture with its own characteristics.

1 Overview of Qianjin Village

1.1 The natural conditions Qianjin Village is located in the alluvial plain, boasting excellent weather conditions, with flat and fertile land, four distinct seasons, abundant rainfall, and adequate sunshine. At the same time, Qianjin Village is in a convenient transportation network. 102 Provincial Highway runs through the entrance to Qianjin Village, by which we can connect Beijing – Zhuhai Expressway, Shanghai – Chengdu Expressway, or Jiangxia – Xianning Expressway, and it is very convenient to go to Hankou or Wuchang. It is about 20 km away from Junshan Yangtze River Bridge, 39.2 km away from Wuhan Baishazhou agricultural and sideline products market, only 34.7 km away from Jiangxia Zhifang District, having an excellent location advantage.

1.2 The status quo of economic development There are

5 villagers' groups and 127 peasant households in whole village in total, with 836 mu of arable land and 140 mu of homestead. The main source of income of the villagers is from working outside the home, supplemented by farming and breeding. The agricultural income is mainly from growing rice, supplemented by raising pigs, cultivating fishes, planting melons, growing vegetables, *etc.* Currently, the roads, electricity and communications are present in the village, with home access of tap water of 100%, home access of electricity of 100%, home access of computerized telephone and cable TV of 70%, and use rate of methane of 80%.

1.3 Strength analysis The advantages of Qianjin Village are mainly reflected in the following aspects.

In the first place, the natural conditions for agriculture are good. On one hand, the village is adjacent to the Yangtze River and Jinshui River, with rich water resources, where the irrigation facilities are sound, fully able to meet the demand for water resources in agricultural production; on the other hand, the soil conditions are good, and the land can achieve the goal of 1000 kg of yield per mu.

In the second place, the infrastructure is good. Wide paths for tractors, channels and irrigation and drainage facilities are available. 4000 m of path for tractors and 1800 m of U-shaped channel are constructed in whole village, and 5 submersible pumps are purchased, laying good foundation for the mechanization of agriculture. In the third place, the advantage of geographical location is strong. The village is located next to the national vegetable export base, close to the consumer market, Wuhan Baishazhou market of agricultural and sideline products, which can help greatly reduce the logistics time, curtail the cost of agricultural products, and improve the competitiveness of the agricultural products in the village.

2 Development planning of urban agriculture

2.1 The guiding ideology, basic principles and overall objectives Urban agriculture stresses the reliance on the city's capital, technology, human resources, information and market advantages, highlighting four links (characteristics, scale, brand and efficiency)^[2]. Therefore, during the planning, we must determine the development ideas, goals and basic strategies, based on the reality, according to "12th Five-Year Plan" of the Hubei provincial agricultural development, development planning of urban agriculture in Wuhan City (2006 – 2020)^[3], the "12th Five-Year" development planning of Jiangxia Bureau of Agriculture, and the requirements of the "12th Five-Year" development planning of Jinkou Street.

2.1.1 Guiding ideology. It should take improving living environment and conditions for agricultural production in Qianjin Village and promoting the comprehensive production capacity and farmers' income in Qianjin Village as goal. For the key issues restricting its sustainable economic development and continuous increase in farmers' income, it should follow the principles "take actions that suit local circumstances, coordinate planning, highlight industry, focus on all-round development, pay attention to efficiency, and advance steadily". It should combine standardized demonstration planting of high-quality agricultural products and industrialized operation of agriculture, combine the brand effect of agricultural products and comprehensive driving effect of business, establish a new mechanism for virtuous circle of the rural ecological environment protection and sustainable rural economic development, constantly optimize the industrial structure in rural areas, improve the industrial level, and rationally develop and use existing natural resources, in order to achieve unification of economic, ecological and social benefits, promote rural sustainable development.

2.1.2 Basic principles.

(i) Adhering to the principle of taking actions that suit local circumstances and conducting coordinated planning.

Qianjin Village, the plain area of Jiangxia District in Wuhan City, is situated along the side of the Yangtze River, has unique natural conditions, demographic conditions and infrastructure conditions. It has a set of governance and development models matching the status quo. Therefore, we must give full consideration to its own characteristics, to conduct unified planning; establish new operation and management mode in line with the future development requirements of Qianjin Village in accordance with planning.

(ii) Adhering to the principle of combining prominent development of agricultural products and all-round development.

It should combine standardized demonstration planting of high-quality agricultural products and industrialized operation of agriculture; enhance comprehensive governance of water, field, road, and forest; put emphasis on vegetable growing, livestock breeding and industrial development seed lotus. The industry's development is inseparable from business drive, and comprehensive development is inseparable from government support. For the sake of effectiveness, it is necessary to com-

municate with business and government; provide financial support for agriculture, and use enterprises to drive the development of village; introduce some small-scale agricultural projects with less investment and better effect.

(iii) Adhering to the principle of combining hardware and software, focusing on the role of agricultural science and technology, agricultural policy and agricultural laws and regulations.

It should strengthen the construction of basic farmland, irrigation facilities, agricultural mechanization, and other types of hardware. At the same time, it is necessary to learn, understand and master the relevant technologies; cultivate the relevant technical staff; rationally use the relevant national and local preferential agricultural policies, and actively apply for various projects suitable for the development of Qianjin Village.

2.1.3 Overall objectives. Based on the natural conditions, socio-economic development and human resources in Qianjin Village, the agricultural development of Qianjin Village will be combined with transformation in appearance of village and improvement in villagers' quality of life. Focusing on the new ideas of developing biogas utilization, three-dimensional greenhouses and name-brand vegetables, Qianjin Village will be created into a model village of new rural construction and circular agricultural development in Jiangxia District.

2.2 The specific construction planning The urban agriculture is developed to reflect four types of main content: the residents' labor, life, rest and transportation. According to the above requirements, we need to conduct unified planning and functional partition of the land in the village, as shown in Fig. 1.

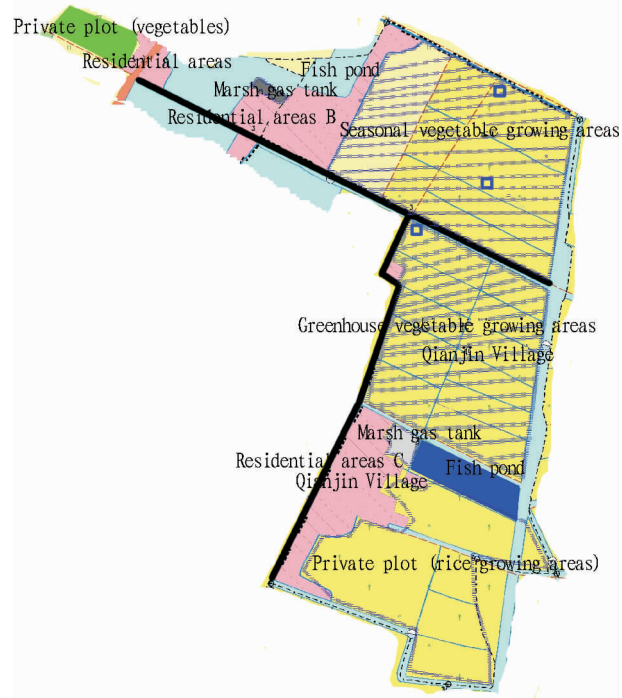


Fig. 1 Unified planning and functional partition of the land in Qianjin Village

As is shown in Fig. 1, the black thick line is the village's main traffic artery; A, B, and C are the living and rest areas

naturally divided; in addition, there are two private plot areas, one ordinary vegetable growing area, and one greenhouse vegetable growing area.

2.2.1 The construction of planting areas. The growing areas are divided into ordinary vegetable growing areas and greenhouse vegetable growing areas. The construction of growing areas takes standard vegetables garden as the construction standard. According to the agricultural development planning in Jiangxia District and Jinkou Street, one to two varieties are selected for growing from the ordinary growing areas and greenhouse growing areas; the standardized unified management should be implemented; the scientific and technological content of agricultural production should be improved; using the advantages of scale and variety, the vegetables brand in Qianjin Village is created, then connecting with the companies and supermarkets for order-based production. At the same time, it should actively apply for construction project of the standard vegetables garden and financial support, actively cooperate with the agricultural research institutes to jointly build vegetable experimental base.

2.2.2 The construction of leisure areas. The village is divided into three main living areas, in accordance with natural conditions. In the early period of the construction, three areas can be transformed and improved, respectively, according to the actual situation. The community property management group established by the village committee organizes special people to be responsible for the village's environment and health maintenance, collecting a certain amount of management fees. They clean roads and dredge channels regularly. At the same time, the scale of biogas application should be further expanded, in order to make biogas utilization rate in whole village reach one hundred percent. The existing household biogas project in the village is changed into the joint household biogas project, and the centralized biogas supply is achieved through pipeline, with the farmers as the core and a few adjacent households as a unit. In addition, in order to enrich the daily life of the villagers and improve the villagers' happiness index, the village committee is to be transformed, and the village committee after the transformation will integrate the functions of supermarkets, activity rooms and small auditoriums, to meet the leisure needs of the villagers.

3 Security system of development of urban agriculture

3.1 Land transfer is the prerequisite of development of urban agriculture Land transfer can promote land concentration, thereby resulting in scale operation and efficiency improvement. From the perspective of land management, land transfer will change land use pattern and land management scale, thus changing the production structure of land. At present, the fragmentation of land production is the biggest obstacle to developing the scale agriculture, improving the land yield efficiency and competitiveness of agricultural products. Through land transfer, we can expand the scale of operation, obtain the potential efficiency, and thus break the barrier of land produc-

tion fragmentation, so as to promote the advancement of agricultural technology and propel the urbanization process of rural labor.

3.2 Policy support is the important foundation of development of urban agriculture The construction of urban agriculture can not do without the support of government policy. Researching and using well the existing policies, can help to mobilize farmers' enthusiasm of participation in the construction of urban agriculture, avoid repeated investment of funds, and improve the efficiency of the construction. At the same time, in the process of project planning and application, taking full advantage of the favorable and preferential provincial, municipal and regional policies on the construction of urban agriculture, is an important channel for raising funds for construction. For example, preferential subsidy policy of biogas equipment, farm machinery purchase subsidy policy, subsidy policy of irrigation and water conservancy construction, etc. all can provide strong financial protection for the construction of urban agriculture.

3.3 Agricultural science and technology is strong support for development of urban agriculture Science and technology constitute the primary productive force. The development and growth of various industries are closely related to the advancement of science and technology, especially agricultural development. Promoting the conversion rate of the agricultural scientific and technological achievements, and enhancing the contribution rate of agricultural science and technology, has always been an important indicator for measuring agricultural development^[4]. At the same time, the development of agricultural productivity is also one of important goals of development of urban agriculture. We should improve the technology content of the agricultural production in rural areas, vigorously develop the facility agriculture, strengthen the use of machinery in the process of agricultural production, and attach importance to the contacts and exchanges with agricultural institutions and universities, which can provide better technical support for the development of urban agriculture.

3.4 Good leadership is the organizational guarantee for development of urban agriculture The development of urban agriculture is a long-term and arduous task. The leadership should pay close attention to the development of urban agriculture, unify thinking, make the focus of work clear, improve the working mechanism, establish the working objectives, formulate the working measures, continuously improve their quality, guide and supervise the construction work of urban agriculture, to ensure the smooth progress of the construction of urban agriculture.

3.5 The industrialization of agriculture is the main objective of development of urban agriculture The development of urban agriculture puts forward the following requirements: actively developing characteristic farming, advanced horticulture, intensive animal husbandry, efficient aquaculture, processing industry of agricultural products, and eco-tourism industry; vigorously promoting the agricultural industrial upgrading; integrating economic, ecological and social functions of

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(iii) "Three rights" mortgage loans in rural areas. Chongqing has more than 30 million mu of cultivated land and 60 million mu of forest land, 100 million mu of land in total. In addition to 3 million mu of homestead, the conservatively assessed value is 1 trillion yuan. Even if 10%–20% of the land is mortgaged, rural areas can also finance more than 100 billion yuan.

(iv) Shareholding system transformation of rural collective property rights. Now Chongqing City has 10 000 specialized co-operatives. We can promote the development of modern agriculture, by introducing the stock cooperative system into rural areas. In the improvement of farmers' cooperative economic governance performance, we should strengthen normative management, optimize the government guidance, improve the property rights structure, and innovate upon the governance mechanism.

Through above-mentioned reforms, we can help the people to get rich quickly, narrow the gap between urban and rural areas, and raise the level of urban-rural coordinated development.

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agriculture^[5]. It indicates that promoting the agricultural structure adjustment, achieving the transformation of agricultural management system, expanding the farmers' income sources, and building harmonious community in rural areas, are important aspects of the construction of urban agriculture. Through promoting agricultural organizing degree and relying on resources and geographical location advantages, industrial management of agriculture can enhance the development of the characteristic industry, and strengthen the vitality of the industrial chain, thereby achieving the optimal allocation and efficient use of agricultural production resources. It is an effective measure for agricultural industrial structure adjustment, a fundamental way to improve agricultural comprehensive competitiveness, and also an important channel for increasing added value of agricultural products and farmers' income, which is of important significance to the advance of modern

agriculture construction, innovation of agricultural management system, and acceleration of development of urban agriculture.

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