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# Modernized Development of Urban Farming Industry: A Case Study of Kunming City

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**Abstract** Modern urban farm is an essential part of urban agriculture and is inevitable trend of social economic development of modern cities. Based on empirical study of Kunming City, this paper analyzed current situations and difficulties of urban farming industry, explored development idea of urban farming industry, and came up with recommendations from institutional innovation, overall planning, property right reform, infrastructure construction, and talent team cultivation.

**Key words** Urban farming industry, Modernization, Institutional innovation, Property right reform

## 1 Introduction

With rapid development of urban economy and rapid expansion of city size, urban farm appears accordingly. Urban farm is closely related with urban economic, social and cultural development. Modern urban farm is an essential part of urban agriculture and is inevitable trend of social economic development of modern cities. Modern urban farm is a new agricultural form, relying on natural landscape resources such as mountain forests, gardens, lakes, rivers, and reservoirs, based on characteristic agricultural production, processing and operation, taking local culture, farming production, and rural life as direction line, with the aid of urban material and technological conditions and human capital input, integrating production, processing, operation, sightseeing, recreation, sports, accommodation, catering, and shopping<sup>[1]</sup>. Kunming City proposed relying rural natural ecological, pastoral landscape, folk custom culture, and advantageous and characteristic industries, taking recreational consumption demands of urban and residents as guidance, taking reasonable development and use of resources as foundation, taking increasing agricultural efficiency, farmers' income, improving ecological environment and promoting urbanization process as objectives, making effort to build multi-functional, diversified investment, and industrialized development recreational farms, expanding the development connotation of tourism, and establishing recreational farming industry integrating modern agriculture and tourism.

## 2 Current development situations of urban farming industry

Urban farms originated from the 1860s. Some developed countries mainly undertook agricultural tourism with sightseeing as the major part. Since the 1990s, they started to develop recreational agricul-

tural tourism. After entry to the 21st century, they developed recreational farms with recreational and cultural experience as major part. Agricultural development of Kunming City experienced a long process of evolution. Now, it remains at the important development stage of transition from traditional to modern, from extensive to intensive, from single function to multiple functions, from resource type to ecological type, and from suburban to urban type<sup>[2]</sup>. Kunming City is endowed with excellent development foundation and strong regional development advantages. With low latitude plateau monsoon climate, Kunming City is not hot in summer and not cold in winter. It has outstanding biological, ecological and environmental resource diversity and characteristic. Plant and animal types are diversified. Agricultural production is mainly flower planting and vegetable planting. As the capital of Yunnan Province, Kunming City extends its market system to the whole province, even the southeast of China, and its resource elements are radiated to South Asia and Southeast Asia. All of these are favorable for developing export-oriented agriculture. In addition, Kunming City is a famous tourist city in China. The total revenue of tourism of Kunming City reached 72.346 billion yuan in 2015, growing by 17.68% over the same period last year. It received 69.114 million tourist, growing by 10.25%, showing enormous tourist economic development and potential.

At present, more than 150 urban farms have participated in selecting distribution in Kunming City, 128 of them have selected site, and 64 have made construction plan, and completed investment more than 1.5 billion yuan. In the process of construction, Kunming City established a special organization for leadership of construction of urban farms, prepared *Special Plan for Distribution of Urban Farms in Kunming (2012 – 2020)*, formulated *Standard for Construction of Urban Farms in Kunming*, attached great importance to to-down design, and issued related management methods and guidance opinions, manifesting characteristics of urban farms such as taking agriculture as foundation, recreational tourism as new major industry form, and taking urban residents as major service objects, strong comprehensive characteristics, and

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valuing ecological development. Recreational farms of Kunming City have established the cluster system with rapid industrial development, outstanding growth of economic benefits, and perfect industrial supporting construction.

### 3 Difficulties of urban farm development in Kunming City

Kunming City, situated in western plateau area, is characterized by "big countryside, big mountain area, and big poverty". The agricultural geographical space distribution is not reasonable; ecological high potential energy area overlaps with economic high potential energy area; ecological and environmental protection pressure is high; land resources and water resources are deficient; agricultural infrastructure already built is subject to influence of land space and natural resources, the construction scale is small; industrialized operation level of modern agriculture is low; mechanized supporting facilities are not perfect; industrial development level is low; autonomous innovation ability is weak; supporting service of policies is deficient<sup>[3]</sup>.

**3.1 Operation and management level is to be improved** Operators of many enterprises are not fully aware of modern urban farm economy and believe that modern urban farm is simple transformation and upgrade of traditional agri-entertainment. From the perspective of urban farm economic form already built, most are engaged in planting and breeding, while few are developing brand and characteristic industrial crops; many are engaged in development of natural tourism, while few are engaged in ecological environmental protection and large-scale operation; many are engaged in low-end tourist products, while few are engaged in deep processing and high technology content products. Low-end repeated construction, lack of innovation of management concept, and inconsistency between development model and social economic development lead to weak investment enthusiasm. All of these restrict sustainable development of urban farm economy.

**3.2 Infrastructure construction lags behind** Currently, the urban farm construction has problem of high investment cost, slow return, and long returns on investment. Some urban farms even use their own houses and family members to provide simple catering and restaurant services. Due to insufficient fund input, low management level, low personnel quality, and no long-term plan, infrastructure construction of most urban farms lags behind, public toilets, parking lots, rubbish disposal, sewage treatment, fire protection, sanitation and epidemic prevention, food safety, and lodging health, and communication network have different degree of problems.

**3.3 Policy system is not perfect** Since 2012, Kunming City has formulated various policies and regulations. However, there is still no perfect system oriented towards urban farming industry, and the support system is not established. There are problems of vacancy of fundamental guarantee policies, imperfect land circulation policies, and unreasonable development plan. In the aspect of infrastructure construction, it is necessary for government to invest

huge financial funds to build and improve road, water, electricity, and communication facilities. Besides, rural land use right circulation lacks standardized operation procedure and there is problem of imperfect land circulation system. For example, in the rural land contracting and auction activities, applicable laws and regulations are not implemented; in land circulation contract, the responsibilities and authorities of the parties are not clear, and legal certification and forest right registration are not made, and there are illegal actions of extending the contractual period without authorization<sup>[4]</sup>. Besides, as the leader, government fails to make unified planning, integrate the distribution, and coordinate development according to regions, functions, and characteristics.

**3.4 Fund input is deficient** The development of urban farms in Kunming City still remains at the starting stage and it needs high input of funds. However, banking and finance system provides no specific preferential policy for farm projects in credit. Merely relying on financial support of government, the fund gap is big. At the same time, because operating level of rural finance is not high, investment and financing mechanism is not well established, fund circulation is not smooth, and there is no excellent operating mechanism for effective management of risks and losses incurred in the operating process, these restrict development and expansion of urban farming economy. Urban farming industry is a systematic project and needs consolidation of various resources. Many operators have insufficient resources. Once they have operating difficulties or suffer losses, the cooperation of capital and intellect will be very low. As a result, it will be difficult to bring in to play maximum role of resources.

## 4 Recommendations for modernized development of urban farming industry in Kunming City

**4.1 Sticking to the urban and rural integrated development objective** Strategic objective of modern urban farms is rural modernized, rural scientific, industrialized, ecological, and farmer professional development. The city provides funds, technologies, talents and information necessary for development and construction of urban farms, and the city is the major consumption market of urban farms. Besides, urban farms provide places for urban residents returning to nature and enjoying recreational tourism, and improve the urban image. Therefore, urban and rural integrated development of urban farm is the trend of modern agricultural development. The urban and rural integrated development of urban farm has unique advantages in development concept, technological application, and management mode. In addition, urban farms play a demonstration role in using advanced management and operating concept and introducing scientific and technological achievements of modern agriculture to realize high yield and high efficiency of agricultural production. Furthermore, urban farms can promote the entire area to increase agricultural yield and production efficiency, increase farmers' income, and promote harmonious urban and rural development, relying on their powerful production strength, technological strength, and sales strength.

**4.2 Integrating cultural and creative concepts** Modern urban farms should not only have material objectives and but also have cultural connotation. It is recommended to build urban farms into essential carrier of urban cultural development, to raise cultural level of urban and rural areas, enrich cultural life of urban and rural residents, and promote development of urban and rural cultural industry. Therefore, it is recommended to transform the idea of urban farm construction, deeply explore historical culture, unique farming culture, genuine mountain and river culture, splendid ethnical culture, simple and unsophisticated folk culture. Also, every urban farm should give prominence to its own theme culture, and integrate unique cultural elements into farm construction, product design, and recreational experience, and take cultural and creative development as characteristic development objective.

**4.3 Applying modern science and technology** Modern urban farms should introduce new concept and modern science and technology, realize industrial upgrade, and apply new technologies such as low carbon, environmental protection, green, circulation, creative technologies, and intelligence technologies, greenhouse technologies, and drip irrigation technologies, transform traditional agriculture into ecological agriculture, scientific and technological agriculture, creative agriculture, and intelligent agriculture, and transform recreational tourism from sightseeing to experience and holiday recreation.

**4.4 Implementing ecological construction path** Ecological construction objectives of urban farms should include cleaning air, conserving water, regulating climate, and reducing urban heat island effect, so as to promote local ecological balance. To realize these ecological objectives, urban farms should take circulation, low carbon and ecological as development concept, take the ecological industrialization, because ecological industrialization is a new road for sustainable development following circular economy and low carbon economy. Implementation approaches for ecological development of urban farming industry include defining specific ecological objectives, making effective monitoring and assessment of ecological process and results, making ecological planning, and make ecological design, construction, consumption, operation and management, determining reasonable ecological industrialization evaluation system, and draw lessons from ecological methods and technologies suitable for development and construction of urban farms.

## 5 Strategies for modernized development of urban farming industry in Kunming City

**5.1 Making innovation of systems and mechanisms** It is recommended to explore operation mechanism and development mode suitable for urban farming industry in Kunming City, improve development policies, and reinforce the connection with related plans. Firstly, city and county government should examine and determine urban farm plans as soon as possible, reasonably determine land use scale, and connect with overall land use plan,

urban and rural construction plan, and forest land protection and use plan from distribution points. Secondly, it is required to guarantee construction land necessary for distribution of urban farms. Besides, urban farm plans should give prominence to characteristics under the premise of taking the primary industry as guidance. Thirdly, it is recommended to accelerate circulation of ownership, certification of property right confirmation, issue of farm construction standards and plan examination and approval policies, formulation of special plan for urban farm construction, allocation of construction land index, building and trade and investment promotion, market transaction of new urban farms and regulation and improvement of projects under construction.

**5.2 Sticking to overall plan guidance and phased construction** Urban farm construction should stick to the development idea of overall plan guidance, combine resource advantages and industrial characteristics, and incorporate agricultural farm economy into regional economic and social development plan, and optimize and lift urban farm distribution plan. It is required to guide urban farmers to make in-depth survey and analysis of local agricultural resources, natural landscape, geographical landform, cultural background, and folk characteristics, follow the principle of "laying equal stress on development and protection, combining ecological benefits and economic benefits, and giving prominence to characteristics", make proper plan with high standards and high starting points, and clearly define functional orientation, development direction and objectives of every urban farm. In addition, it is recommended to comply with requirement of urban and rural integrated plan, regularly arrange projects of research, examination and approval of urban farms, and strengthen implementation of plans, to ensure orderly progress of urban farm development and construction. The project construction should be implemented by phases. In the short term, it should focus on better infrastructure, convenient traffic, diversified agricultural resources, to make a preliminary building of city-wide farm development network system. In the long term, it is recommended to build national characteristic urban farm clusters, in combination with improvement of urban construction and social and economic development level.

**5.3 Reforming property right system and eliminating the bottleneck of funds** For building urban farms and developing modern urban farm economy, we should guide urban capital to flow to rural areas, invigorate rural assets, take advantage of financial funds, and make fundamental reform of rural property right system. For example, it is required to implement confirmation, registration and issue of certificate for forest land right, land contractual management right, homestead use right, three certificates for three rights of farm houses, collective land ownership, collective construction land use right (homestead use right), land contractual management right, collective forest land right, and house ownership. In construction of urban farms, it is required to separate land contractual right from management right through innovating upon rural property right certificate, issue Rural Land Management Right Certificate and Urban Farm Ownership Certificate,

rely on rural credit cooperatives, and innovate upon financial products, to realize breakthrough in financing.

**5.4 Strengthening rural infrastructure construction** It is recommended to make overall plan for urban and rural infrastructure construction according to plan and distribution of urban farms, take various modes, cooperate with project owners in building water conservancy, traffic, electrical power, and network infrastructure, and improve development environment of urban farms. Urban farm project owners should attach great importance to comprehensive control and development and use of ecological environment, and put an end to damage of traditional production mode and urban development to agricultural ecological system. Besides, it is commended to promote courtyard reconstruction, water conservation transformation, clean production and clean energy application, to energetically develop agricultural and rural economy. In addition, competent authorities should formulate urban farm service quality standards and star level rating criteria, to attract citizens and tourists with beautiful environment, high quality products, and excellent services.

**5.5 Strengthening construction of talent team** It is recom-

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**6.2 Recommendations** (i) Accelerating the construction of specialized cooperation organizations about under-forest economy. Most of farmers are based on single-family operation, never forming large-scale production. The ability to resist risks is weak in the fickle market, so it is necessary to accelerate the development of farmers' under-forest cooperatives, and unite the scattered farmers, so as to effectively enhance the ability to withstand risks and increase forest farmers' income. In the comprehensive evaluation model, forest farmers' income accounts for 52.9% of economic benefits, thereby enhancing the comprehensive benefits of the entire under-forest economy. (ii) Taking actions that suit local circumstances, highlighting features and avoiding blind following. Due to differences in natural conditions and resource endowments, it is necessary to build the under-forest economy model suitable for local areas. It is found in the survey that some villages blindly follow others to plant mushroom but finally fail to achieve the desired benefits. From the hierarchical model, it is the driving of under-forest economy, and the weight is 0.735, having a crucial impact on the social benefits and final comprehensive benefits about the entire under-forest economy. Therefore, it is necessary to highlight features and avoid blind following to develop under-forest economy. (iii) Promoting competitiveness with quality and improving multiplicity. The companies

mended to energetically develop rural adult education and vocational and technical education, strengthen talent training and introduction, and build a talent team with reasonable structure and excellent quality for urban farms. Besides, it is recommended to consolidate and cultivate a team of specialized talents good at planting and breeding technologies, market information analysis, agricultural product development, recreational service design, and special food research badly needed for urban farms.

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and farmers engaged in the production of under-forest products must continue to improve the quality of under-forest products, and enhance product differentiation under the premise of quality and safety, so as to enhance the competitiveness of products. During the development of under-forest economy, there is a need to change the single crop output, and increase the ornamental, science and service projects to enhance the multiplicity.

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