

Research on the Planning and Design of Agricultural Sightseeing Garden by Economic Big Data

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Abstract

Major agricultural production areas have already embarked on the construction of agricultural sightseeing garden everywhere and strived to take advantage of the regional advantages to develop tourism and service industries, so as to get further stimulation of local economy, even though China's social economy has already been developing so rapidly in recent years. Normally problems come along with the construction of agricultural sightseeing garden like blind expansion, unreasonable planning and layout of the garden, and closure of the garden area, which have adversely affected the attraction and vitality of the garden. But the irrationality of the original garden layout can be offset by the digital networked intelligent technology brought by the big data economy with the development of Internet technology. Therefore, the planning and construction of the agricultural sightseeing garden should make full use of this technology to create deep integration and coordinated development between production and ecological life of the garden.

Keywords

Economic Big Data; Agricultural Sightseeing Garden; Garden Planning and Design.

1. Introduction

With the continuous development and progress of the social economy, more and more agricultural production areas have been engaged in the development of tertiary industry vigorously, so was the characteristic tourism on the basis of the original planting industry. However, the sustainable development capacity of agricultural sightseeing garden has been reduced since the construction of agricultural sightseeing gardens tends to focus only on economic benefits, and ignored the rationality and scientificity of spatial layout. The application of big data for garden planning and design has become a new choice for the development of agricultural sightseeing garden and the promotion of industrial transformation on the basis of continuous development of science and technology and the advancement of Internet technology.

2. Future Development Characteristics of Agricultural Sightseeing Garden

2.1. Focus on Functional Composite

The human-centered functions of residential households, residential buildings, commercial buildings, and greening also deserve the designer's attention except for the industrial functions and economic benefits, which can provide a livable and suitable garden through the combination of multiple functions. Additionally, the protection of the original cultivated land from the damage and obstacles of agricultural activities ought to be emphasized during the development of agricultural sightseeing garden.

2.2. Focus on the Extension of the Industry Chain

Besides the introduction of commercial industries, agricultural sightseeing garden should also pay attention to the upstream and downstream industries of the industrial chain, and realize the extension of the industrial chain through the upstream research and development design, downstream sales and other services. The introduction and development of industries related to the industrial chain can be able to give full play to the synergistic effect and aggregation effect of agricultural sightseeing garden. On one hand, the local tertiary industry and consolidate the primary industry can be driven; on the other hand, promotion of the benign development of industrial clusters can be achieved.

2.3. Focus on Environmental Protection

On the basis of the rapid development of society and the improvement of people's living standards, more and more people prefer to activities with direct experience which results in a flush of people to enjoy their time in the garden. What comes next is that the local environment will be affected more or less as the number of tourist increases. Thus the leading industry of the agricultural sightseeing garden should be a clean industry that has no or little impact on the environment [1]. Furthermore, the overall planning and design of the industrial community should also avoid the impact on the cultivated land as much as possible, whilst the relevant greening measures should be put in place.

3. Development Trend of Agricultural Sightseeing Garden

3.1. Integration of Spatial distribution

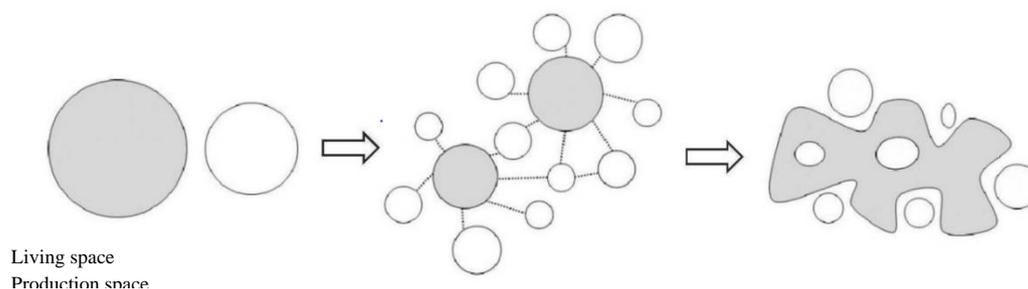


Figure 1. Evolution of production space

The relationship between production space and living space has gone through the development process from pure industry to current urban complex. The integration of the functions between industry and urban is reflected in the spatial relationship, running firstly from the master-slave relationship of the production and living space to the mixture of production and life, then secondly to the composite space of the organic integration of production and living ecology which has blurred the boundaries between production and living gradually[2]. (Figure 1)

3.2. Value Orientation Shifts from Benefit-Oriented to Human-Oriented

In the early stage of the rapid development of the agricultural sightseeing garden, the development speed and space expansion were unilaterally pursued, but ignoring the ecological environment and humanistic needs. This kind of top-down interest planning has caused the lack of human nature, which has made the overall garden lack of the atmosphere of life with the loss of vitality and sustainability, and also weakened the attraction of tourists. Therefore, the construction of agricultural sightseeing garden should pay more emphasis on the cultivation of human culture with more valuable sightseeing of the garden for tourists.

3.3. Industrial Structure Changed from Simplification to Clustering

The primary structure of the agricultural sightseeing garden was relatively simple with not rich enough business and low service level which hardly can meet the needs of people for recreation and relaxation. The current industrial community metropolis is based on a major type of industry, and gradually forms an agglomeration effect, developing diversified industries to enrich themselves and develop themselves. It requires the construction of agricultural sightseeing garden to carry out unified and reasonable planning to meet the development needs of such kind of gardens, and eventually make the business that they can provide more abundant and diverse for tourists to enjoy a better experience.

Table 1. Hierarchical classification of ecological tourism agriculture

Type	Business and Activity Contents	Environment and Facilities Project	Advantages	Disadvantages
Agricultural product harvesting	Tourists harvest cultivated crops directly, such as fruits and vegetables	Attached facilities, such as toilet washstand, pavilion, parking lots	Tourists can taste fresh fruits and agricultural products and experience the pleasure of harvest; the low cost of investment.	Poor harvesting skills of tourists can easily damage crops; activities are monotonous and lack of repeat visitors.
Production and Utilization	Provide crops cultivated by tourists, rent rural areas, orchards, and sell seedlings, fertilizers, tools and materials cheaply. In normal time, it also opens farm houses and scenic gardens on behalf of farm management and technical guidance.	Agricultural parks should be divided into several small areas. Attached facilities, such as toilets, wash tables, pavilions, parking lots.	Provide urban residents with personal experience of farming; The low incomes Farmers can add extra business.	It can only be established if conditions such as suburban areas or convenient transportation are available.
Place Provision	For tourists to enjoy, experience, learn and entertain.	The site should be spacious, the environment beautiful, and all kinds of supporting service facilities are needed.	Enjoy the beautiful and distinctive rural landscape.	Facilities and human maintenance costs are high.
Processing of Agricultural Products	Let visitors learn and experience the processing of agricultural products, such as tea making, bamboo basket weaving, logging and canning.	Need to provide beautified processing plants, explanation of the visited facilities, and specific service measures.	Understanding and experience the Agricultural Culture of Agricultural Products Processing and Increasing the Interest of Tourists in Agriculture.	It takes a long time, is not suitable for ordinary tourists, and needs special guidance.
Cultural Experience	Provide farmhouse residence, experience the depth of rural life, catering, enjoy the rural scenery, farmhouse buildings and excellent environmental quality	Farmhouse building and good environmental quality.	A variety of experiences and activities, more attractive.	The biggest investment in manpower and higher cost

4. Problems Existing in the Current Construction and Operation of the Garden

4.1. Single Function

The planning and design of many agricultural sightseeing gardens is not consistent with local development goals, and in essence, the functional positioning is vague. We have many reasons for it, including the low level of application of new technologies on big data and others; insufficient attention to the display of outstanding research results and educational work; weak appeal and influence among the majority of farmers and unable to promote farmers significantly increase income and so on. Therefore, most of the current agricultural sightseeing garden only have relatively simple functions, mainly focusing on production and display functions, and are weak or even lacking in multi-functional sectors such as management, research and development, recreation, and education promotion [3].

4.2. Small-Scale and Flat Industrial Structure

At present, the scale of China's agricultural sightseeing garden is generally small and scattered with low proportion of total area of facility agriculture and slow development. Meanwhile, the characteristics of the agricultural sightseeing garden are not that prominent, and the landscape planning is not strong which mainly adopts the industry of vegetables, flowers, edible fungi and so on. As a result of high similarity between the gardens and the lack of brands and characteristics, it has formed the vicious competition, poor performance of the advantages of the garden itself and weak attraction for tourists.

Table 2. Functional classification of ecological tourism agriculture

Primary type	Secondary type
Ornamental Sightseeing Agriculture	Vegetable Ornamental Garden, Melon and Fruit Ornamental Garden, Huahui Ornamental Garden, Ornamental Forest Area, Rare Aquatic Products Ornamental Tube, Ornamental Center of Fabrication Technology, Ecological Agriculture Ornamental Land
Taste-oriented sightseeing agriculture	Wild Vegetable Tasting Center, Fruit and Melon Tasting Garden, Mountain Treasure Tasting Center, Dairy Tasting Center, Aquatic Product Tasting Center
Shopping-oriented sightseeing agriculture	Fresh Agricultural Products Shopping Center, Shanzhen Wild Fruit Shopping Center, Animal Products Sales Center, Aquatic Products Shopping Station, Crafts Shopping Center
Agricultural Sightseeing Agriculture	Self-picked melon orchards, milking factories, fishing grounds, fishing grounds, fishing boat driving centers, self-compiled self-admiration centers, eco-agricultural research fields, forest summer camps, eco-agricultural resting areas
Entertainment-oriented sightseeing agriculture	
Convalescent tourism agriculture	Forest campsite, racetrack, bullfight, hunting ground, forest bath, Beach Bath
Holiday Tourism Agriculture	

4.3. Shortage of Funds

The demonstration garden of the modern agricultural has great potential in terms of income compared with traditional agriculture. At the same time, it has a greater demand for capital in the early stage. In order to solve this problem, we must not rely solely on an investment entity. The investment main body of China's modern agricultural demonstration garden is still mainly led by the government and the enterprise invests. However, the enthusiasm of the active investment of various departments is very low, and the scope of influence is too limited under this fund-raising mode. The lack of financial support for the development of modern

agricultural gardens leads to the lack of production power in the process of construction and operation of modern agricultural demonstration garden [4].

4.4. Poor Content of Science and Technology

To a certain extent, big data technology should be a solid foundation for the planning and construction of contemporary agricultural sightseeing garden, which can accurately determine the various construction elements of the garden and rationally allocate resources. However, in fact, most of China's agricultural sightseeing garden lacks scientific and technical support and guidance in the process of planning and construction. What they can rely on is only the introduction of agricultural projects for promotion work with no independent research and development capabilities, let alone the increase of the content of science and technology and improving ability for added value. So it is difficult for the agricultural sightseeing garden to achieve the expected economic and social benefits in the course of its operations.

4.5. The Scarcity of Modern Agricultural Talents

Although China is a country with a large population, professionals who are building and designing agricultural sightseeing garden are still scarce. In order to adapt to the transformation of the contemporary agricultural industry and the development of the tertiary industry in the agricultural production region, both solid theoretical knowledge related to high-tech agriculture and enrich practical experience are requested for professional talents. And a certain understanding and mastery of big data technology is also necessary. Due to the shortage of relevant talents, the agricultural sightseeing garden has experienced frequent problems in the actual planning, design and management. What's worse, the lack of talents is also caused by the mismatch between the talents cultivated by universities and the needs of social development.

5. Planning Strategy

5.1. Functional Strategy of Total Factor Vitality

5.1.1. Modular Industrial Element Layout

Industrial factors are the basis for the formation of agricultural sightseeing garden, while the functional vitality of all elements is fundamental to the use of big data for garden planning. Most of the industries developed by the agricultural sightseeing garden have high dynamics and agglomeration. Under the condition that the urban regional resources are relatively scarce, the spatial layout that meets the needs of industrial development can greatly improve the utilization efficiency of resources and reduce the cost of design planning and construction of agricultural sightseeing garden. In the meanwhile, it can also give the industrial space a standardized and informatized industrial space order in terms of spatial form. The spatial organization is conducive to giving better play to the role of big data in efficient product research and development, production and industrial connection, so as to provide a solid foundation for the follow-up development of agricultural sightseeing garden [5].

5.1.2. All-round Delicacy Service

Since visitors to the agricultural sightseeing garden come from different ages and social classes, the agricultural Sightseeing garden must provide comprehensive consideration and design to meet the differentiated needs of each group. When designing and planning agricultural sightseeing garden, different areas should also be investigated and analyzed, and facilities and equipment with different functions be built to ensure the comprehensive and delicacy services.

5.1.3. Dynamic Service Design

Table 3. The Typical District Planning of Eco-Agricultural Sightseeing Park

Partition	Land occupation (%)	Land Requirements	Content	Function
Production Zone	40~50	Good soil and climate conditions with irrigation and drainage facilities	Crop production: horticultural production of fruits and vegetables and flowers; animal husbandry, fishery, forest economic zone	Let visitors know the whole process of agricultural production, participate in agricultural activities, and experience the pleasure of agricultural production.
Demonstration Zone	15~25	Good soil and climate conditions with irrigation and drainage facilities	Demonstration of Production Agriculture; Demonstration of Agricultural Science and Technology; Demonstration of Popular Science Education	Teach traditional agricultural knowledge, guide tourists to participate in agricultural experience activities
Sightseeing Zone	30~40	The terrain is changeable and the landscape level is rich.	Ornamental farmland; flower nurseries; scenic gardens; display of cherished animals and plants	make tourists experience rural scenery and local characteristics
Management Service Area	5~10	Connecting with the main road outside the park	Rural fairs; Collection and direct marketing; Folk craft workshops	Return Rural Economy by Kind Transaction
Leisure supporting area	10~15	The terrain is changeable and the landscape level is rich.	Country dwellings; recreational Playground.	Make tourists experience rural life deeply and feel the natural and simple folk customs

In order to improve the scientific nature of the garden planning, big data technology should be used to build a full life cycle format of the agricultural sightseeing garden, including an all-weather fitness activity garden, a social gathering place for the whole crowd, a diversified green belt, a variety of living and leisure spaces, etc., and continuously stimulate the agricultural sightseeing garden which enables the visitors to provide thoughtful services at different times and in different places [6]. (Figure 3)

5.2. Collaborative Sharing Planning Structure

The planning structure of agricultural sightseeing areas based on big data should be built into a synergistic power industry axis for sharing vitality living. Along with developing local original agriculture, various related industries should also be introduced continuously to form diversified industrial areas, service areas and living areas. A new situation mixed with the production area will realize the scientific and technological innovation agricultural sightseeing garden that reinforces the ecological sharing vitality, minimizing waste of resources, improving resources, capital and utilization efficiency, and alleviating the pressure on the construction of the garden. The total income table for sightseeing from 2015 to 2017 is shown as below.

6. Conclusions

Nowadays, the planning and design of the agricultural sightseeing garden is still in the stage of exploration and start-up with immature application of big data and related high-tech content technology which is not deep enough compared with the ultimate goal ideal. Therefore, in the process of planning, it will face a series of problems such as unreasonable industrial structure and unreasonable spatial layout. Big data will be more widely and deeply applied, which can effectively avoid the difficulties and obstacles faced in field research and specific planning during the development process of China's future agricultural sightseeing garden. From now on, the planning and development of China's agricultural sightseeing garden will be more affected by market demand with higher level of development and the functions of leisure and sightseeing will be closely integrated with the modern agricultural planting industry, complementing each other and satisfying our consumers. With the higher recognition of the original agricultural products, it will effectively drive the sales of the garden and promote the expansion of the agricultural products market.

References

- [1] Lu Jie, Zhu Yanan. Research on Industrial Community Planning Based on Sharing Concept——Taking Binzhou Big Data Industrial Garden Planning and Design as an Example [C]// 2018 China Urban Planning Annual Meeting.0.
- [2] Wang Bin. Application of Big Data Technology in Agricultural Economic Development[J]. Shanxi Agricultural Economics, 2018, 234(18): 42.
- [3] This journal comprehensive. How to Play Big Data in Industrial Gardens [J]. Urban Development, 2014(7): 84-85.
- [4] Gu Rong, Dai Qi. Planning and Construction of Smart Garden Based on the Development Direction of Garden Big Data[J]. Studies on Modern State-owned Enterprises, 2017(2).
- [5] Zhou Xiaolei. Construction of Big Data Economy and Media Industry Garden[J]. Journalist, 2016(29):126-127.
- [6] Wang Yayun. Research on the Planning and Design of Modern Agricultural Demonstration Garden Based on the Integration of Industry and Tourism [D].