The Tourism Rural Landscape Planning Based on Multi-scale Factors under Computer Modeling

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Abstract. With the development of economy and computer technology, the development of rural tourism has entered a new stage. Make full use of the abundant natural resources and tourism location advantages, make full use of the abundant landscape tourism resources, profound historical deposits and rich cultural connotations, and make use of the computer modeling technology to plan the development and improve the tourism industry chain. The planning and design of lingquan valley ecological leisure park is based on the protection of ecological environment, rooted in agriculture, avoiding homogenization, and enriching the diversified development of rural tourism market with supporting projects.

Keywords: Rural tourism, Leisure Agriculture, Ecological Landscape, Computer Modeling

1. Introduction

The “13th Five-Year plan for the development of tourism industry in a province” [1] required the development of leisure and holiday tourism, promotion of rural tourism, proactive development of health care and elderly tourism, the development of tourism complex and other new tourism formats are encouraged [2-3], and the vigorous optimization of tourism product structure. As an essential part of the development of rural tourism in a county of the city, the project actively responds to the policy call [4-6], explores the new mode of integration development of leisure agriculture and rural tourism, enriches the tourism system of a county of the city, and injects new vitality into the tourism industry in Wuning.

2. Project overview

2.1. Project location

Located in the Taiping mountains, the project covers an area of about 200hm², from Jianfu road in the East, Meilin Village Road in the west, hankeng public welfare forest in the South and Mubu mountain in the north.

2.2. Resources and current situation

The forest coverage rate of a county in this city is 72.1%, which is rich in natural resources. Located in
the Taiping mountains, the project is endowed with an excellent ecological environment. There are wild trees such as fir, Moso bamboo, willow, etc. The terrain within the scope of the project fluctuates greatly, and the overall terrain is high in the west and low in the east. The existing internal road network is mainly distributed according to the trend of the Taiping mountains. On the south side, there is a valley which is high in the West and low in the East. During this period, there are three original irrigation ponds arranged in a word, with rich semi landscape resources. The main terrain of the valley on the north side is farmland, with the existing greenhouse of 2 mm2, and the main planting area of Pitaya in the greenhouse. Besides, the project site is rich in existing flowers and plants, and the original flowers include Hemerocallis, orchids, sage, and so on, as shown in Figure 1.

![Figure 1. Status quo of the project site](image)

3. Market analysis

3.1. Leisure agriculture

Compared with the current industrial model of agricultural “R&D, production, processing and sales”, the characteristics and advantages of creative agriculture lie in the ability to build a multi-level panoramic industrial chain, through which cultural and artistic activities, agricultural technology, agricultural products, and farming culture, and market demand, are linked to the establishment of a benign interactive industrial value system for the development of agriculture and rural areas Open up new space. In 2013, the concept of “family farm” appeared in the No. 1 document of the central government for the first time. It proposed that the transfer of contracted land to large professional households, family farms, and farmer cooperatives should be encouraged and supported. With the support of government policy, family farms will have great potential in the future in the process of agricultural transformation from traditional extensive development mode to modern efficient ecological agriculture development mode.

3.2. Leisure resort

There are multiple supply types of agricultural tourism market in this city. However, for the leisure agricultural tourism supply market in a county of this city, both agritainment and agricultural leisure parks are mainly based on pure agricultural tourism or orchard picking mode. The development of agricultural tourism projects still remains in the primary stage of catering and picking. However, there is almost no high-quality, comprehensive holiday project built based on agriculture, lack of high-quality diversified comprehensive agricultural leisure and vacation projects.

3.3. Pension industry

Currently, the city's pension service institutions stay in the stage of a public pension, which can only meet the lower-level life needs of some elderly people, and the middle and high-end pension community market is almost blank. By the end of 2015, there were 680000 elderly people over 60 years old in the city, accounting for more than 10% of the city's population. To explore a multi-level pension model, the municipal government issued a series of policy documents to provide policy
support for the elderly to enjoy their old age and further clarified the new multi-dimensional pension model led to the government, with social involvement, private management of public facilities, and those run by local people and subsidized by the state, etc.

4. Development strategy of “3-in-1 area and one agricultural complex”
Hence, the scenic spot, park, and resort community should be integrated into the overall planning, combining tourism, agriculture, and health preservation. The traditional concept of agriculture should be broken through, and the extensive agriculture should be changed into an innovative and high value-added organic agricultural industry to build a health and leisure tourism project highlighting family vacation and parent-child tour. Meanwhile, the source of Yuqing palace culture should be traced based on projects, and the local folk customs should be combined to carry forward and promote Taoism health culture. It is necessary to build a beautiful landscape environment and leisure and vacation projects, and at the same time, create a complete agricultural industry chain, enhance the added value of agricultural products, increase the profit point of the project, and form an area with excellent ecological environment, high popularity among tourists and a thick life atmosphere.

Under the background of the significant development of Wuning leisure tourism and the overall planning of urban and rural tourism, relying on the resources and popularity of the West Sea Scenic Spot of Lushan Mountain, the project breaks through the traditional rustic development ideas, finds its characteristic development route through comparative analysis, that is, a comprehensive, high-quality leisure and vacation project combining health preservation vacation and agricultural light experience. For the individual market, it is necessary to create the corresponding leisure products, make the products activate the project. Hence, the products can be improved through the project, embarking on the path of sound development in the end.

5. Multi-scale factors
The spatial scale of a picture, through $L(x, y, \sigma)$ the coordinate of is defined as a function of spatial change $G(x, y, \sigma)$ And original picture $I(x, y)$ Convolution:

$$L(x, y, \delta) = G(x, y, \delta) * I(x, y)$$

(1)

To identify the particular points of spatial scale, we need to compare each acquisition point with all the points around it, and whether each point can be larger or smaller than all the points around it. According to the comparison of the particular points of the center and its 8 points on the same coordinate and 18 points on the upper and lower vector coordinates, 26 points in total can be determined to find out the particular points.

Based on the fitting function, the size and the coordinate position of special points can be accurately calculated, and the uncertainty of salt and edge corresponding points with relatively low contrast of special points can be eliminated at the same time. Therefore, the stability and noise resistance of pairing can be improved.

The fitting function at key points is obtained as follows

$$D(X) = D + \frac{\partial D^{T}}{\partial X} X + \frac{1}{2} X^{T} \frac{\partial^{2} D}{\partial X^{2}} X$$

(2)

Let the equation be equal to zero and derivative, and the following extreme points can be obtained:

$$X = -\frac{\partial^{2} D^{-1} \partial D}{\partial X^{T} \partial X}$$

(3)

For the extreme point, the equation value can be obtained accordingly:

$$D(X) = D + \frac{1}{2} \frac{\partial D^{T}}{\partial X} X$$

(4)
$D(\mathcal{X})$ represents the value, which is conducive to eliminating the special point of imbalance with low contrast $\|D(\mathcal{X})\| < 0.03$ The extremum point of represents the special unbalanced value point of low contrast, which is excluded.

6. Project planning
The overall project is an ecological leisure park with ecological leisure and health preservation experience as the leading tone, supplemented by Taoist health preservation culture as the main body. Combined with different customer markets, the project is divided into three regions as follows: health preservation resort, agricultural culture experience area, and leisure sports area, forming a comprehensive leisure and vacation project of “3-in-1 area”, as shown in Figure 2.

![Figure 2. Functional areas](image)

6.1 Leisure and sports area planning
The sports and leisure areas are extended from the entrance gate to the west, running through the east-west direction of the project site. As the central landscape axis of the project, it includes landmark gate, sunflower sea, camping base, water leisure, parent-child sports, and the leading catering and accommodation sites in the park. Make full use of the existing vegetation resources and beautify the planting of local plants to form a natural and beautiful landscape belt.

Lingquan Valley Ecological Leisure Park entrance. The gate of the park is the landmark of the whole project and the symbolic embodiment of the cultural connotation of the park. The gate of the park is composed of a landmark structure, gate management room, pedestrian and vehicle access control, and a low wall. The primary materials are local stone and wood. The overall style reflects the Chinese Taoist theme style with profound historical and cultural connotations. The plant collocation adopts large evergreen tree species, shrubs, flowers, and other collocations to create a broad vision and abundant levels of access Welcome landscape area.

Huludao camping base. Located on the bank of Xiushui River, Huludao is surrounded by water, with gorgeous scenery, which is linked to the land on both sides of the east and the west by a suspension bridge. Tourists walk here to enjoy the natural camping time. There are various plants such as peach blossom, plum blossom, camellia, purple leaf plum, weeping willow, blue flower sage and reed on the island, to present tourists with rich sceneries in different seasons.

6.2 Agricultural experience area
Creative agriculture is a highlight in the park. Combined with creativity and experience, innovative agricultural products are used to attract tourists and drive the development of the park. Meanwhile, an agricultural experience area focusing on sightseeing and leisure, characteristic handwork, and agricultural experience should be built, with various orchards and vegetable gardens planted in the
park. Landscape plants are matched with large arbors and interspersed with herbaceous flowers, such as Persian chrysanthemum and lavender, thereby forming a land landscape with rich visual experience.

6.3 Taoist culture health preservation area
This area is located at the foot of Mubu mountain, close to Yuqing palace, the holy land of Taoism, with abundant vegetation and a beautiful environment. The health preservation area inherits the Taoist health preservation culture from Yuqing palace to create a natural and ecological livable elderly care resort community, providing services for tourists who are into in-depth tour and long-term stay.

7. Conclusions
Natural ecology, agricultural landscape. Based on the existing ecological environment and vegetation foundation, overall and creative planning is used in this project to create a dynamic yet quiet, touristry yet livable perfect environment for Lingquan Valley Ecological Leisure Park, continuously optimizing and improving the construction of the ecological leisure resort complex, shaping a new shining business card for Wuning Leisure Resort.

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