

Orientation Analysis and Layout Design of the National Modern Agricultural Industrial Park in Nanjiang County

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Abstract: Nanjiang County is located in the northeast of Sichuan Basin. In recent years, the momentum of agricultural development has been strong, and historic breakthroughs have been made in infrastructure, urban and rural building, etc. This paper analyzes the building background, resources, environment, industry, technology and other basics of Nanjiang County National Modern Agricultural Industrial Park by constructing PEST Model, Strategic Pyramid Model, Michael Porter Diamond Model and GSM Model, and comprehensively applying institutional economics and urban planning theory, etc. and Nanjiang Mongolian gazelle (*procapra gutturosa*, known as Yellow Goat in Chinese) and Nanjiang Honeysuckle are selected as the advantageous and dominant industries in Nanjiang County in a bid to establish the National Modern Agricultural Industrial Park. The County carries out layout of the Industrial Park in accordance with the spatial structure of “one axis, two cores, three bases and one center”, constructs the core area for the transformation and upgrading of characteristic agriculture, collaboratively innovates the modern agricultural experimental area, the integrated development demonstration area of the first, secondary and tertiary industries, the modern agricultural elements agglomeration, and the demonstration area of which industries drive farmers to increase income.

1. Introduction

Nanjiang County, located in the northeastern part of Sichuan Basin, is an important hub in the adjacent area of Sichuan, Chongqing and Shaanxi Province. It is one of the key counties listed on the nation’s poverty alleviation and development agenda, a pilot county particularly empowered and reinforced by Sichuan Provincial Government, a pilot demonstration county in the construction of national ecological main function and a demonstration county in the construction of national ecological civilization. In recent years, Nanjiang County witnesses robust agricultural development momentum, and historic breakthroughs have been made in infrastructure, urban and rural constructions, industrial development and improvement of people's livelihood. In order to

implement the relevant deployment of the Party Central Committee and the State Council on promoting the construction of modern agricultural parks and accelerate the development of modern agriculture, the background of the establishment of the Industrial Park is analyzed by establishing PEST Model [1, 2], and Michael Porter Diamond Model [3], The Nanjiang Mongolian gazelle and Honeysuckle industries are selected as important pillar industries in Nanjiang County. The Industrial Park is under construction in full force in an effort to promote the implementation of the strategy of rural revitalization.

2. Advantages of the Leading Industries of Agricultural Industrial Park in Nanjiang County

Nanjiang Mongolian Gazelle is the first breed breakthrough of meat-goat cultivated artificially in China. The National Committee of Animal and Poultry Genetic Resources has determined that "Nanjiang Gazelle is the new breed of goat with best meat quality in China at present", known as "the best quality meat-goat in Asia", is bred by several generations of animal husbandry scientists and technicians after nearly 70 years of scientific and technological research and breeding. "Nurturing New Variety of Nanjiang Mongolian Gazelle" won the second prize of National Science and Technology Progress.

Nanjiang has a long history of honeysuckle development [4]. It was planted artificially since 1960; In 1973, All-China Federation of Supply and Marketing Cooperatives (ACFSMC) held a conference on the development of Chinese traditional medicinal crops (honeysuckle) in Xingma Town, Nanjiang County; In 1981, it was designated as the national production base county of honeysuckle; In 2002, Nanjiang County was awarded "Sichuan High Quality honeysuckle Production Base County" by the provincial government; In 2009, Nanjiang County was awarded the title of "Dominant, Characteristic Benefit Agricultural Honeysuckle Base in Sichuan Province" by the provincial government; In 2011, Nanjiang County was appraised as "the top county (Chinese traditional medicinal crops) of modern agricultural industry base in Sichuan" by the provincial government; In 2014, Bazhong City (Nanjiang County) of Sichuan Province was listed as one of the dominant areas of characteristic agricultural products (honeysuckle) by the Ministry of Agriculture; In 2018, it won the title of high-quality brand agricultural products in Sichuan Province.

The Park is located in the central part of Nanjiang County, including 75 villages of 8 townships, including Renhe Town, Pinggang Township, Shitan Township, Beiji Township, Dahe Town, Guanmen Town, Dongyu Town and Nanjiang Town, with a total population of 187,000, accounting for 26.4% of the county's population. The agricultural population is 97,770, accounting for 16.6% of the county. The total output value of the Industrial Park is estimated to be 3.68 billion Yuan in 2018, of which 1.98 billion Yuan, or 53.8% of the total output value of the first, secondary and tertiary industries dominated by Nanjiang Gazelle and Honeysuckle. In 2018, it is estimated that 114,000 Nanjiang Gazelles will be put on the market. The growing area of honeysuckle is 53,567 mu, and the yield of flowers is 10.7 million kg.

There are many honeysuckle processing factories in the Industrial Park. And there is a sub industrial park in Dongyu Town, located in the northwestern part of the Park. There exist one processing factory which processes 200,000 Nanjiang Gazelles annually, one Nanjiang Gazelle trading center, two honeysuckle processing enterprises and six other agricultural products processing enterprises in the sub park.

Table 1: Basic figures of dominant industries in Nanjiang county.

Township	Population	Cultivate area (10,000 mu)	Nanjiang Gazelle Output volume (10,000 pcs)	Honeysuckle growing area (mu)	Flower yield (10,000 kg)
Renhe Town	16291	1.78	1.9	3498	70
Shitan Township	14619	1.27	0.9	5202	104
Pinggang Township	7455	0.98	1.5	3510	70
Beiji Township	5161	0.84	2.1	5712	114
Dahe Town	27507	2.55	1.6	18382	367
Guanmen Town	12934	1.43	1.2	6387	128
Nanjiang Town	77936	2.15	1.3	4403	88
Dongyu Town	24871	2.42	0.9	6473	129
Total	186774	13.42	11.4	53567	1070

3. Strategic Orientation Analysis of the Agricultural Industrial Park

3.1. Overall Orientation

Focusing on the strategic orientation at various levels of the Nation, Sichuan, Bazhong and Nanjiang in the new era, combining with the regional endowment characteristics, dominant industry foundation and development opportunities of Nanjiang County, the overall orientation of the National Modern Agricultural Park in Nanjiang County is "International Goat Capital" and the "Genuine Producing Area of National Honeysuckle".

International Goat Capital: International Meat-goat Science and Technology Capital, International Meat-goat Trading Capital and International Goat Cultural Capital, namely: Three-Goat Capital.

The Genuine Producing Area of National Honeysuckle: The genuine national producing area of honeysuckle and main production area will be built. The planting area and total output account for over 80% of the whole province and 25% of the whole nation.

3.2. Functional Orientation

3.2.1. The Core Area of the Transformation and Upgrading of Characteristic Agriculture

With Nanjiang Gazelle and Honeysuckle as the characteristic industries, a complete industrial chain of Nanjiang Gazelle and Honeysuckle will be built, and a well-known international and domestic high-end brand of safe and reassuring green organic meat and genuine brand of Chinese traditional medicinal crops will also be built; Taking Nanjiang Modern Processing Business Base as a platform, the County is gathering characteristic agricultural and sideline products and food processing industry clusters, building an international demonstration base for further processing of agricultural and sideline products in an effort to enlarge and strengthen the dominant industries; According to 3R principle, the County makes full use of Nanjiang Gazelle excrement resources, develops organic fertilizer, plants genuine Chinese traditional medicinal crops of honeysuckle, etc. so as to realize cleaner production, recycling and sustainable development.

3.2.2. Synergistic Innovation of Modern Agricultural Experimental Area

Focusing on the key technologies of Nanjiang Gazelle fine variety breeding, healthy breeding, pasture planting, deep processing, honeysuckle planting, variety breeding, and processing, etc., the County is actively adopting the methods of “combination, introduction, drive and construction”, and unites research institutes within and outside the Province to build open technological innovation platform; Focusing on the hatch of leading enterprises and industrial talents, the County should promote the transformation of scientific and technological achievements, attract all kinds of personnel to return home and start businesses, so as to promote regional economic development; The County also adheres to the initiative of “new farmer, new technology, starting-business and innovation”, vigorously promotes integrated innovation of science and technology, condenses innovative culture, makes the Industrial Park the birthplace, integration and experimental site of new technologies, and consolidates the foundation of international meat goat capital of science and technology.

3.2.3. The Exhibition Area of the First, Secondary and Tertiary Industries Integrated Development

Mutual integrations of agricultural production, processing, logistics, R&D, demonstration and service should be further promoted at a higher standard; the reconstruction and functional upgrading of Nanjiang Gazelle and honeysuckle industrial chain and value chain should be stimulated; the County should also build supply chain, develop rural tourism, promote industrial transformation, product innovation, quality improvement, create new supply and meet new demands, lead new consumptions, improve the quality and efficiency of agricultural supplies, and consolidate the foundation of the world goat culture capital.

3.2.4. Modern Agricultural Factor Gathering Area

Relying on the unique advantages of Nanjiang Gazelle and Honeysuckle, the County should gather modern elements such as land, capital, science and technology, talents and information, etc. accelerate the implementation of reform measures, innovate and develop institutional mechanisms, open up channels for advanced productive forces to enter agriculture, fully activate the market, activate elements, and activate the main bodies, promote industrial gathering, enterprise cluster development, increase land output rate, resource utilization rate, labor productivity, play a leading role of introduction, radiation and driving in a bid to form new momentum for agricultural and rural economic development; On-line and off-line trading of breeding gazelle and live gazelle should be promoted, and price exploration should also be promoted so as to become the price forming center, and consolidate the foundation of the World Meat-goat Trading Capital.

3.2.5. Demonstration Area of Industry Promoting Farmers' Income Increase

Starting with the construction of Nanjiang Gazelle healthy breeding and standardized planting base of honeysuckle, the County should promote the scale of Nanjiang Gazelle and Honeysuckle cultivation, standardization of production, industrialization of management and brand of products, and improve the benefit links between leading enterprises and base farmers, farmers' cooperatives, known as "three guarantees and one subsidy" and "125" gazelle borrowing and returning. The mechanism is to build the Industrial Park into a healthy breeding base and a standardized planting base of honeysuckle, so that farmers can share multiple industrial value-added benefits.

4. Functional Layout Design of the Agricultural Industrial Park

Nanjiang National Modern Agricultural Industrial Park is laid out in accordance with the spatial structure of "one axis, two cores, three bases and one center", namely "1231" pattern.

4.1. "One Axis" - Driving Axis of Industrial Development

The County is building the "industrial development driving axis" of Nanjiang National Modern Agricultural Industrial Park, which runs through the whole process of the Industrial Park from north to south. According to the requirements of the integrated development of "production, processing, marketing, culture and tourism", the key links such as variety selection, base construction, main body cultivation, deep processing, integration of three industries and market expansion, etc. are held to form the pattern of one body with two wings; driving, radiation and driving capacity should be strengthened, and the power source for the development of the Industrial Park then will be built. The driving axis of industrial development is not only the uplift zone of industrial development, but also the radiation zone of industrial development, the exhibition zone of leading industries, but also the driving force of modern agriculture, and the integration zone of the first, secondary and tertiary industries, as well as the cultural tourism and sightseeing zone.

4.2. "Two Cores"

The first is the breeding core of Nanjiang Gazelle. Located in Beiji Township, in the southeast part of the Industrial Park, with the original variety farm of Nanjiang Gazelle in Sichuan as the core, aiming at the forefront of the world breeding technology, facing the major needs of goat breeding, the County is creating the largest national goat standardized breeding base, forming Nanjiang Gazelle breeding center with international influence. The second is the breeding core of excellent varieties of honeysuckle. Located in Dahe Town, in the eastern part of the Industrial Park, the County further optimizes the variety building base by constructing industrial basic research support system, improved breed selection, improved variety breeding system, standardized production system, standardized processing and storage system, marketing management system and industrialized management system, then further builds the core of variety breeding and honeysuckle breeding and selection.

4.3. "Three Bases"

4.3.1. Standardized Ecological Breeding Cycle Base

It is located in Renhe Town, Pinggang Township, Beiji Township and Dahe Town, in the southeast part of the Industrial Park. Relying on the two characteristic industries of Nanjiang Gazelle and honeysuckle, the County promotes the breeding of improved varieties, healthy breeding and standardized planting technologies, and adopts the model of "leading enterprises + professional cooperative organizations + big-specialized households of breeding" to implement clean production, agricultural environmental management, green control, and agricultural machinery integration, waste resource utilization and other technologies, then according to healthy breeding model, it promotes the "gazelle-excrement-grass (medicinal crops)-gazelle" breeding cycle model; Facilities for livestock and poultry manure treatment, organic fertilizer processing, biogas liquid

transportation treatment, water and fertilizer integration, etc. will be built; “livestock-biogas-medicinal crops” breeding and recycling model will be promoted; the ability to absorb livestock and poultry manure in the Park will be boosted, and honeysuckle products quality will be improved, so that eco-environmental protection and industrial quality and benefit improvement, win-win interaction and planting cycle and standardized production can be realized; furthermore, Nanjiang Gazelle ecological breeding demonstration zone, honeysuckle green organic demonstration zone, and export record product base demonstration zone will be built.

4.3.2. Modern Processing and Trading Base

It is located in Dongyu Town, Nanjiang Town, in the northwest part of the Industrial Park. Taking the sub Park as the axis, the County should vigorously develop Nanjiang Gazelle processing industry and genuine Chinese traditional medicinal crops processing industry represented by honeysuckle, extend the industrial chain and promote the secondary industry. The County promotes the formation of Nanjiang Gazelle and Honeysuckle national trading and distribution center, promote the healthy development of circulation, trade, logistics and cold chain, accelerates online and offline synchronous and interactive development, cultivates Nanjiang Gazelle and Honeysuckle's price forming center, realizes the gathering effect of science and technology, talents, finance and services, etc. and improves industrial efficiency. Technological R&D innovation park, green high-end product processing park, cold chain logistics park reaching rivers and seas will be built.

4.3.3. Agricultural and Tourism Integration Development Base

It is located in Shitan Township, Beiji Township, Guanmen Town, Nanjiang Town, and in the northeast part of the Industrial Park. According to the idea of integrated development of primary, secondary and tertiary industries, focusing on Nanjiang Gazelle, honeysuckle and other leading characteristic industries, the County will focus on the demonstration construction of high-quality standardized breeding and planting, leisure and sightseeing, beautiful rural landscape construction and other projects, highlight the functions of integration of agriculture and industry, integration of agriculture and commerce, integration of agriculture and tourism, and strengthen product, cultural, tourist development dominated by Nanjiang Gazelle and honeysuckle. Then the Park will play a leading and exemplary role in science and technology, production demonstration, sightseeing science popularization, creative development, deep processing and rural building, etc.

4.4. "One Center"

Nanjiang Gazelle Trading Center will be built into an international goat trading center. At present, Nanjiang Gazelle Trading Center has been established with strong development momentum, and starts operation in 2018 approved by Sichuan Financial Work Bureau. And it is a state-owned holding enterprises co-funded by Sichuan Beimu Nanjiang Gazelle Group, Tianfu Commodity Exchange, Sichuan Dejian Agriculture and Animal Husbandry Technology Co., Ltd. and Sichuan Dingfeng State-owned Asset Investment and Management Co., Ltd. It has five functions such as physical transaction, capacity pre-sale, risk aversion, brand building and financial services, etc. It is the only modern electronic trading platform in China which takes Nanjiang Gazelle as the core and integrates Nanjiang Gazelle culture, industry development, product experience and commodity trading. Relying on the "five unified" management mode established by Tianfu Commodity Exchange, i.e. unified system, unified backstage, unified settlement, unified planning and unified management, the Center provides one-stop modern e-commerce services for traders, effectively solves the problems of information asymmetry in the development of gazelle/goat raising, farmers

hurt in case of gazelle cheap, gazelle selling difficulties, financing difficulties and so on. Nanjiang Gazelle's popularity and influence in domestic and international markets has been enhanced fully. Through the establishment of Nanjiang County national modern agricultural industrial Park program, the Nanjiang Gazelle Trading Center has been upgraded, improved and transformed to be International Meat-goat Trading Center.

5. Conclusions

Select Nanjiang Mongolian gazelle (*procapra gutturosa*, known as Yellow Goat in Chinese) and Nanjiang Honeysuckle as the advantageous and dominant industries in Nanjiang County in a bid to establish the National Modern Agricultural Industrial Park. The County carries out layout of the Industrial Park in accordance with the spatial structure of “one axis, two cores, three bases and one center”, constructs the core area for the transformation and upgrading of characteristic agriculture, collaboratively innovates the modern agricultural experimental area, the integrated development demonstration area of the first, secondary and tertiary industries, the modern agricultural elements agglomeration, and the demonstration area of which industries drive farmers to increase income. And the Industrial Park will be built into the “International Goat Capital” and the “Genuine Producing Area of National Honeysuckle”.

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