

Analysis of the Current Situation of the Development of Ningdu Yellow Chicken Industry

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Abstract: Ningdu Yellow Chicken is a valuable high-quality local breed resource in Jiangxi Province with a breeding history of more than 1,500 years, and is the second geographical indication certification trademark in Ganzhou City after "Gannan Navel Orange" which is recognized as a famous Chinese trademark. At the beginning of this century, the breeding of Ningdu yellow chicken has gradually become large-scale, and after nearly two decades of development, an integrated industrial development system of "breeding, breeding, pushing", "production, supply and marketing" has been formed. It is a good industry for farmers to start business, employment and increase income, and has become a special agricultural industry, a pillar industry and a people-rich industry in Ningdu County, playing a major role in poverty alleviation.

1. Introduction of Ningdu Yellow Chicken

1.1 Basic introduction of Ningdu Yellow Chicken

Ningdu Yellow Chicken, also known as Ningdu Sanhuang Chicken and Gannan Sanhuang Chicken, is a breed of chicken with both meat and eggs, and is native to 19 townships in Ningdu County, Jiangxi Province, including Huangshi, Changsheng, Meijiang Township, Fang, Lai Village, Liukeng and Shishang. It is a special high-quality yellow-feathered broiler and a famous local meat chicken breed in Jiangxi Province. Ningdu yellow chicken all implement the pollution-free production of forest herding, "three yellow" (beak, feathers, shins), "five red" (crown, beard, face, eye ring, ear leaves) and other characteristics, the individual is short, tender meat. Its protein, total amino acids and the number of chicken fiber per unit area and other indicators are better than many domestic broiler breeds. Ningdu yellow chicken is thin skinned and tender, with good meat and egg laying performance. The whole body feathers are yellow, but the color of the beak, shins and skin are obviously different from those of yellow chickens in East China, Guangdong and Guangxi. Ningdu yellow chickens are mainly domesticated and locally raised in captivity, in the middle of woods or farmland, with translucent and shiny feathers. Since its muscles contain a variety of fresh and sweet substances and its muscle fibers are fine in diameter, its meat is tender and tasty, rich in protein, amino acids and unsaturated fatty acids, and has health benefits.

1.2 Breeding Environment of Ningdu Yellow Chicken

1.2.1 Suitable low hills

Ningdu County belongs to the low mountainous hilly area in south of Gan, the landscape is dominated by hills and mountains, the county has 1407 square kilometers of hills, accounting for 34.73% of the total area; 1788 square kilometers of mountains, accounting for 44.13% of the total area. The northern part of the territory is mountainous, and the central part is hilly and undulating. It is high in the west, north and east and low in the middle, and declines in order from north to south. The soil fertility is medium to high, there are 670,000 mu of arable land, 4.03 million mu of mountainous land and 300,000 mu of orchards, which provide rich site resources for grazing and raising Ningdu Yellow Chicken. Mountain breeding, construction costs are very low, the chicken activity place is spacious, fresh air, favorable to the growth and development of chickens; ground has a slope, rainwater is easy to wash the manure clean (washed to the water body can be raised fish), which not only reduces the amount of labor of the breeding staff to clean the manure, save water, but also greatly improve the quality and survival rate of chickens, reduce the cost of medicine; because there is sufficient living space, the chickens grow evenly It is favorable for chickens to enter and leave the whole flock; the equipment is simple, light and easy to move, which makes the group chicken raising with strong flexibility.

1.2.2 Mild and humid climate

The climate of Ningdu County belongs to the central subtropical monsoon humid climate zone, coupled with special topographic conditions, forming the climate characteristics of "mild climate, four distinct seasons, sufficient sunshine, abundant rainfall, no heat in summer, no severe cold in winter, long frost-free period", with an average annual temperature of 17-19.5°C, an average annual rainfall of 1500-1700mm, 50% of which is concentrated in April-June, and a frost-free period of more than 280 days. The average number of sunshine in the county for many years reaches 1938.6 hours, the percentage of sunshine is 44%, and the total annual average amount of solar radiation is 112189.9 cal/cm², which is especially suitable for the growth of Ningdu Yellow Chicken.

1.2.3 Numerous rivers and abundant water resources

There are many perennial rivers in the county, the upper reaches of Ganjiang River, 43 rivers with water catchment area above 20 square kilometers, rich in water, mainly two major rivers, Meijiang River and Qinjiang River, the basin area of Meijiang River reaches 2931 square kilometers, Qinjiang River basin area of 461 square kilometers, reservoirs are scattered, groundwater storage is abundant, excellent water quality, colorless, odorless, tasteless. The water facilities, natural water system and high quality groundwater resources provide favorable conditions for the production and characteristic quality of Ningdu Yellow Chicken.

1.3 The brand development history of Ningdu Yellow Chicken

According to the testimony, Ningdu Yellow Chicken has been reared for more than 1500 years since the Southern Song Dynasty of the North and South. Since 1997, Jiangxi Agricultural University and Ningdu County Animal Husbandry and Veterinary Technology Service Center built Ningdu Yellow Chicken Original Breeding Farm and selected and bred Ningdu Yellow Chicken. 2002 January, Ningdu Yellow Chicken was officially named and livestock breed certificate, named "Ningdu Yellow Chicken", in August 2005 "Ningdu Yellow Chicken" proof trademark was successfully registered. "In July 2009, the trademark of "Ningdu Yellow Chicken" was awarded as a

famous trademark of Jiangxi Province, and in 2010, it was certified as a geographical indication of agricultural products by the Ministry of Agriculture. [In December 2012, "Ningdu Yellow Chicken" was awarded the Chinese Famous Trademark, which is the first Chinese Famous Trademark in Ningdu County, and in 2017, it was awarded the National Certificate of Ecological Origin Product and named as one of the top 100 agricultural products regional public brands in China. In the list of "2020 China Top 100 Brand Value Evaluation", Ningdu Yellow Chicken was honored to be listed.

2. Analysis of the Current Industrial Situation of Ningdu Yellow Chicken

2.1 Good foundation for industrial development

2.1.1 The government supports the development of yellow chicken industry

As early as 1997, Ningdu County Government listed Ningdu Yellow Chicken as a major pillar industry of the county economy. In order to maximize the benefits of Ningdu yellow chicken industry, in 2012, the county focused on supporting the chain development of breeders. The county's annual financial arrangements of 300,000 yuan of funds to meet the standards of the yellow chicken expansion field to implement the policy of subsidies in lieu of awards, feeding, ventilation, cooling, manure removal, sewage system to achieve mechanization, the yellow chicken for deep processing and other practices, to give 800,000 yuan. At the same time, the county also encourages the combination of enterprise research, improve the scientific and technological content of Ningdu three yellow chicken, take the "green, ecological, special, high-quality" road. Ltd. and take it as the leader to radiate the county's three yellow chicken cooperatives to the development of deep processing enterprises, such as the development of cold chicken, cooked chicken, newborn eggs, dumb eggs and other products, to further extend the three yellow chicken industry chain and improve the added value of the three yellow chicken.

2.1.2 Perfect industrial production model

As early as 2012, Ningdu yellow chicken breeding uniformly adopts the model of "leading enterprise + farmers' professional cooperative + farmers", implements order production, and provides unified production materials and pre-production, production and post-production services to the community members. ^[1] The existing "company + farmers", "company + base + farmers" and other relatively mature production and management model, is exploring the development of "company + village collective (or cooperative)" Joint production and management mode.

2.1.3 Integrated industrial chain with broad market prospect

After years of development, Ningdu Yellow Chicken has basically formed an integrated industrial chain of "breeding, breeding, pushing", "production, supply and marketing" of original breed protection, breeder breeding, breeder expansion, egg hatching and commercial chicken breeding and sales. The county's commercial chickens are mainly sold to Guangzhou, Meizhou, Shaoguan in Guangdong and Longyan, Zhangzhou, Xiamen and other places in Fujian, and also to various prefectural markets and some counties (cities) in Jiangxi, and in recent years have expanded to Shanghai, Anhui, Hunan and Zhejiang. ^[1] In 2021, Ningdu yellow chicken slaughter reached 100 million feathers, the output value of more than 3 billion yuan, employing nearly 30,000 people, is a good industry for farmers to start a business, employment, income, has become a special industry of agricultural Ningdu County.

2.2 Problems of industrial development

2.2.1 Ningdu yellow chicken original breeding farm is old and backward, and the breeding preservation capacity is insufficient

Ningdu Yellow Chicken Original Breeding Farm is located at the intersection of Cuiwei Feng National Forest Park and the county, which is a prohibited area. Its existing facilities and equipment are relatively rudimentary, its production capacity is small, the scale of breeding chickens is only 10,500 sets, the standardization of various processes, intelligent production is not high, and the investment in selection and breed preservation is insufficient. At present, there are other chicken breeds mixed in the Ningdu Yellow Chicken Nature Reserve, which has seriously damaged the original germplasm and quality of Ningdu Yellow Chicken. The main reason is because the market sales of Ningdu yellow chicken, is the private enterprises according to market demand to develop, such as Xunwu, Anyuan and other places market like each 2.7-2.8 pounds, Meizhou, Xingning, Longchuan and other places market like each 3.2-3.3 pounds or so. Because of the adaptation to market demand and the pursuit of interests of enterprises, yellow chicken enterprises and cooperatives make every effort to privately carry out a large number of cross-breeding to improve production capacity.

2.2.2 Large hut mountain breeding, resulting in soil erosion

The "secret" of Ningdu yellow chicken breeding is to choose barren slopes, barren hills and barren land with good shade, weeds and good ventilation as the place for chicken breeding. ^[2] In the mountains and forests, the internalization of wormwood and minerals in nature brings it rich nutrition and delicious taste. With the high quality and price of yellow chicken, the breeding scale is expanding, and the farmers of Ningdu yellow chicken are facing a difficult problem while their economic income is increasing: the damage of yellow chicken to the ecological environment. Ningdu yellow chicken pecking strong, and like to flock, the chicken farm grass by the plants are pecked by the chickens, plus Ningdu is mostly sandy soil, a rain is easy to cause soil erosion. Raising yellow chickens, the mountain lost more than 100 square kilometers of soil and water. However, if yellow chickens are not raised, the employment livelihood of many farmers will be a problem, and farmers will few billion yuan of income.

2.2.3 Scattered farmers low degree of scale, high breeding costs, low market competitiveness

The vast majority of existing Ningdu yellow chicken free-range households, a chicken coop can only raise about 3,000 feathers, profit 4 yuan a feather, earnings can only reach 12,000 yuan. If a chicken coop can breed 10,000 feathers, even if the profit of 3 yuan a feather, the income can reach 30,000 yuan, so you can reduce the cost of breeding, improve market competitiveness, to obtain the scale of benefits, economic benefits and ecological benefits.

3. Feasible Suggestions for Industrial Development

3.1 Do a good job of pure breed protection, selection and management, and improve the breeding system of good breed

Ningdu yellow chicken has the situation of indiscriminate mating, and the purity of germplasm resources is not enough, which makes it difficult to distinguish Ningdu yellow chicken and Guangxi yellow chicken. The breed is purified to lay a solid foundation for the later development of Ningdu Yellow Chicken. Purebred Ningdu yellow chicken is resistant, has no leukemia and less white

dysentery, which is convenient for management and can significantly reduce the use of antibiotics and other drugs in the production management process and improve the quality of Ningdu yellow chicken. ^[3] First of all, the government should further improve the construction of Ningdu yellow chicken natural breeding area, natural breeding area only breeding Ningdu yellow chicken, with farmers free-range traditional breeding way to breed, so that its natural mating, natural reproduction, so that it becomes Ningdu yellow chicken breed valuable gene and germplasm resource base; secondly, we should grasp the construction of Ningdu yellow chicken original breeding field, in accordance with national standards to complete Ningdu yellow chicken original breeding field new site, strengthen Ningdu Yellow chicken original breeding field function and role, strengthen scientific and technological cooperation, carry out breed selection and disease purification, enhance the quality of selection and breed preservation, improve the production performance and excellent traits of Ningdu yellow chicken, create provincial and national demonstration field, declare national local breed chicken resources preservation field.

3.2 Extensive planting of *Sida rhombifolia*, and government incentives to discover and cultivate similar new vegetation

In order to reduce environmental damage, farmers have tried to have their chicken farms adopt rotational grazing in different places, but it did not work significantly. Once a technician found that all the other surface plants around the chicken coop were eaten up by the chickens, but only one plant called *Sida rhombifolia*, the soil around it could be preserved intact. And after the farm test, found that *Sida rhombifolia* grow quickly, planted less than two months to grow very luxuriant, in the case of other vegetation were eaten up by chickens, planted in the chicken coop door of *Sida rhombifolia* but still very luxuriant. Even though chickens peck at it every day, it grows fast and new leaves grow before the old ones are pecked out. *Sida rhombifolia* improves the living environment of chickens and enriches the diversity of food, which in turn improves the meat quality of yellow chickens. It also has the effect of repelling and killing mosquitoes, which not only improves the environment of chicken farms, but also reduces the chance of spreading yellow chicken diseases, and reduces the occurrence of yellow chicken diseases. ^[4]

Since the planting of *Sida rhombifolia* can have such a good effect, it should be advocated to plant *Sida rhombifolia* widely. In addition to this plant, there must be other vegetation with similar effects, which needs to be explored and discovered, and the government needs to introduce policies to reward people for discovering or cultivating new vegetation; in addition, the government can also cooperate with universities and research institutes or agricultural research institutes to research and cultivate new vegetation.

3.3 Promote free-range farmers to raise in captivity

Ningdu yellow chicken loses its characteristics if factory farming is adopted. The taste of factory farmed chicken is not as good as that of mountain farming, the range of activities of factory farmed chicken is very restricted, and it is easy to spread diseases such as avian flu, and farmers are used to mountain farming and are not very willing to change to factory farming.

But the free-range households captive breeding can be promoted, the government to develop and introduce support policies to solve the Ningdu yellow chicken free-range households captive breeding construction land, capital, loans and other issues. The government expropriates land and builds free-range farmers' pen houses, enterprises and cooperatives can pay to move in, and enterprises and cooperatives' farms and farming equipment can be mortgaged for loans.

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