

Cost-benefit Analysis of Dairy Cattle Breeding under Circular Agriculture Mode-- take the Sunshine Dairy Farm in DaWang Town, Guangrao County, Shandong Province as an Example

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Sunshine dairy

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Abstract: China's agricultural development is currently in the critical stage of transformation and upgrading. It is an inevitable requirement for China's agricultural development to build an ecological agricultural circular economy. It is an important challenge in the process of China's agricultural development to build a circular economic system of ecological agriculture and improve the income and living standards of farmers. It is an important embodiment of the concept of sustainable development in the practice of agricultural production, and it has become a hot issue at home and abroad. In recent years, Yangguang dairy farm in Dawang Town, Guangrao County, Shandong Province has made full use of the concept of ecological agricultural circular economy to breed cows and gained some experience in the construction of ecological agriculture. Based on the analysis of the basic connotation of circular economy, this paper takes Yangguang dairy farm in Dawang Town, Guangrao County, Shandong Province as an example to analyze the benefits of each cycle.

Circular agriculture is compared with the traditional agricultural development put forward a new kind of development model, applying the idea of sustainable development and circular economy theory and ecological engineering methods, combined with ecology, ecological economics, ecological technology principle and its basic rule, in the protection of agricultural ecological environment and make full use of high and new technology, on the basis of adjustment and optimization of agricultural ecological system internal structure and industrial structure, improve agricultural ecosystem multistage circulation of matter and energy use, strictly control the external input and agricultural waste of harmful substances, maximize reduce environmental pollution. Relying on cow breeding and high-quality forage grass planting, the sunshine dairy farm of dawang town, guangrao county, shandong province, has built a circular pattern of "forage grass plant-dairy cow culture-waste disposal - returning organic fertilizer to the field" as the main line. This model fully draws on the mature breeding management experience and technological innovation achievements of the dairy industry developed countries, and establishes a sustainable modern dairy industry model with higher production efficiency and better product quality.

In this mode, it is beneficial to realize the recycling of resources and establish the green ecological dairy industry. Guangrao county of shandong province town of king sun dairy actively the construction of modern agricultural industrial park, formed to dairy industry as the leading factor, the modern farming base, characteristics of dairy processing for a "be satisfactory cycle", the whole chain, the whole industry circular economy development pattern, and raising combination of advancing, resource conservation, energy conservation and emissions reduction, standardization certification, basic to achieve the goal of "zero emissions".

The realization of the goal of "zero emission" is to rely on dairy cattle breeding and high-quality forage grass planting to construct the cycle mode of "forage grass planting - dairy cattle breeding - waste disposal - returning organic fertilizer to the field" as the main line, so as to form the typical model of "cattle, marsh and forage grass" ecological cycle agriculture that can be copied and popularized. Sunshine dairy farms, for example, the existing 600 cows, the year of 07000 tons of waste, urine, and flushing water, 14000 tons of silage planting base 1000 mu, has built the biogas project 1, an annual output of 9777 tons, 20000 tons of biogas slurry renewal, park farming produce

waste, renewal biogas slurry to achieve full capacity utilization, waste of zero emission in the area of the implementation at the same time, provide quality fertilizer for forage grass planting, promote forage plant capacity and comprehensive benefits.

In the process of breeding also promote water and fertilizer and medicine. Around "one of two minus three basic" overall objectives, implement the planting of agricultural water price reform, breeding field acting on agricultural irrigation water use groundwater "super premium" encouragement "section" water price reform mode, set up 186 m after/mu water power, on the basis of the current water price increase after more than 0.1 yuan/m after, higher than that of water right amount (186 m³ / mu) under irrigation quota (232 m after/mu) for water saving rewards, in the super premium, on the basis of the grain per 1 m after water saving water user (irrigation water quota minus the actual water consumption), Reward at 0.2 yuan/m; Non-grain water users will be rewarded at 0.1 yuan/m for every 1 m of water saved (irrigation water quota minus actual water consumption). Through the market mechanism, drip irrigation, spray irrigation technology to achieve the total amount of water control objectives. Combination through the establishment of "grass planting - dairy - waste - returning organic fertilizer" mode of circulation, promote TongFang rule and prevention and control, green sharply reduced the applying chemical fertilizer and pesticide content, now more than 50% of the land to complete organic fertilizer instead of chemical fertilizer, other land by soil testing and fertilizer, cucumber in the chemical fertilizer, pesticide consumption was reduced by 70%.

On energy conservation and emission reduction. Farms have gradually established a sound sewage treatment system and clean energy supply system. The sewage treatment system, reclaimed water reuse system, reverse osmosis and other aspects of the effluent after treatment, as reclaimed water for flushing toilets, greening irrigation, boiler ash flushing and water system backwashing, can save about 13,000 tons of water annually, reduce the sewage discharge of 12,000 tons.

Above is the circular agriculture model run by sunshine dairy farm, in which many resources are fully utilized and some costs are saved. Take sunshine dairy farm as an example. In the recycling mode, the average annual cost per cow is as follows:

1. Feed cost: RMB 7,166, including RMB 3,230 for fine feed and RMB 936 for green coarse feed.
2. Hydropower, fuel and power cost: RMB 155.16 in total.
3. The medical and epidemic prevention fee is 160 yuan.
4. The total cost of tools and materials is RMB 415.96, including RMB 68.37 for tools and RMB 47.59 for repair and maintenance
5. The insurance premium is 500 yuan, the management fee is 102.08 yuan, and the sales fee is 68.8 yuan. Among them insurance premium 500 yuan government subsidy 400 yuan.
6. The land costs 7.5 yuan.
7. Labor costs: 2,418.6, which is equivalent to 21.03 days of employment, at 115 yuan per day.

The above is the cost, and the following is the annual average income per cow:

1. Output value of main products: RMB 24,152.4, mainly income from fresh milk sales.
2. Output value of by-product: RMB 3,382.99, including income from calves, fertilizer and cattle elimination.

Take the sunshine farm with 600 cattle as an example, according to the calculation of 365 days a year, the average daily production of fresh milk is about 7800 jin, the total annual output of fresh milk is about 1,424 tons. Each cow can produce milk for about 305 days under normal conditions, and the dry milk period is about 60 days. The average service life of a cow from birth to elimination is about 5 years. It can produce 2 to 3 calves, of which male calves and female calves account for about 45% and 55% respectively. Male calves sell for about 2000 yuan, while female calves sell for about 2500 yuan. A cow can only sell meat when eliminated, the net weight of meat is about 300 jin.

From the above data, the annual average revenue per cow = output value RMB 27,535.39 -- total production cost RMB 13,673.2 = RMB 13,862, calculated according to the main product per 50 kg, revenue = total cost RMB 2774.5 -- production cost RMB 152.55 = net profit RMB 124.90. The profit of dairy industry is closely related to the milk yield of dairy cow, so the profit of breeding industry depends on the milk yield. The following is the change analysis of milk yield:

1. Physiological Factors

1.1 Effects of Age and Birth Order on Milk Production.

The milk yield of cows changes regularly with the increase of age and birth order. Young cows, because they are still growing and developing, especially their mammary glands are not fully developed. Therefore, the milk yield of the first-born young cow is relatively low, which is only 70% ~ 80% of that of the adult cow. In addition, the age of the first calving is too early, in addition to affecting the development of breast tissue and milk yield, is not conducive to cow health, and will affect the lifetime milk yield.

1.2 Influence of Physique on Milk Production.

Dairy cows of the same breed and age, generally speaking, larger dairy cows have relatively large volume of digestive organs and feed intake, so the milk yield is relatively high. But too big weight, maintain metabolic need also is much, economy is not necessarily economical.

2.Environmental Factors.

The feeding method, feeding method, milking technique and milking times have direct influence on milk production. But the supply of nutrients has the most obvious effect on milk production. Milk production is also high when feeding conditions are good. In addition, the correct master milking technology, can give full play to the milk potential of cows, prevent the occurrence of mastitis, greatly improve the milk yield.

In view of the above influencing factors, put forward reasonable Suggestions:

2.1raising and Management Techniques Shall be Improved to Improve the Living Environment of Cattle.

The traditional feeding method has been far from meeting the needs of modern feeding technology, so the "four reform" measures should be actively implemented in the feeding management (that is, changing the whole grass feeding to the trough feeding, and the ground feeding to the trough frame feeding; Change single feeding to diversified forage and time - appropriate feed concentrate; Change the winter hovel feeding for plastic hothouse feeding; Change season drive insect for often drive insect).

2.2 Rational and Scientific Management and Feeding to Increase the Milk Yield of Cows.

Backward feeding tube technology, insufficient feed of high quality and low nutrient content of roughage all affect milk production of cows. Therefore, careful management, selection of good seeds, feeding concentrate, sufficient green feed, feeding additives, scientific drinking water, supplementary light, increased exercise, scientific milking, etc. are important guarantees to improve milk production.

To sum up: Firstly, The benefits of dairy farming change depends on the market price of fresh milk. On the other hand, it has a direct relationship with the large-scale and scientific breeding.

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