Preliminary study on development of city animal husbandry industrialization

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Abstract. As an important part of agriculture, animal husbandry is not only the sun-rising industry, but also the advantage industry to increase farmers' income. Today, the industrialization of animal husbandry as a product of the socialist market economic development, has become key means for a sustained and stable development of animal husbandry. Dingxi City has a long history of the development of animal husbandry and livestock natural resources which provide a solid foundation, plus there are good transport conditions. Advantages of natural resources, location and other aspects of animal husbandry make Dingxi as dominant industries. Using of the existing advantages to achieve industrialization and intensification. In this paper, the development of the rural animal husbandry industrialization is preliminarily explored in the case of Dingxi City. Combined with the current situation of the animal husbandry industrialization in Dingxi City, the paper puts forward some problems. In view of the mentioned problems, this paper focuses on the industrialization of rural animal husbandry, and puts forward the following suggestions: cultivating and strengthening leading enterprises to play their leading role in animal husbandry industry chain; enhance the construction of animal husbandry professional cooperation organizations; continue to promote the training of talents and constantly strengthen the construction of socialized service system, and so on.

1. General situation of animal husbandry development in China
Animal husbandry is an indispensable industry in human society with a long history, since it was separated from agriculture, the relationship between animal husbandry and people's daily life has become more and more prominent. It offers a range of animal products that are highly nourished foods, because they contain higher proteins than vegetable foods. The living standard of people in a country or region can be measured according to the adequacy of animal food and animal protein in dietary structure. China's animal husbandry has made remarkable achievements since the steady development of reform and opening up. The national output of meat, eggs and milk increased from 65.15 million tons, 19.88 million tons and 13.37 million tons in 2015 to 87.067 million tons, 28.939 million tons and 38.412 million tons in 2017 respectively [1]. The increasing animal products, to a large extent, enrich the vegetable basket of residents, which basically meet the people's demand for animal products. However, with the reform of the market economy system, coupled with the change of people's diet concept and the improvement of living standards, the traditional animal husbandry can no longer meet the needs of people for the daily gain and growth of livestock products.

The transformation of livestock and animal husbandry industry into an important part of agricultural industrialization is an important means to promote the sustainable development of animal husbandry and to increase the income of farmers and herdsmen. The industrialization management of animal husbandry combines all links of production, processing and sales, and forms a mechanism of sharing
interests and sharing risks through the complete industrial chain. According to the market demand, the leading enterprises carry out the processing of animal products, and the market information is transmitted to farmers in time, so that farmers can adjust the production structure of planting and animal husbandry in time, which guide the farmers to reduce blind production and solve the problem of disconnection between production and market; Closely connecting a series of processes from production to sales, effectively linking the production and market of small and scattered farmers and herdsmen, enabling the vast number of farmers to enter the large market, arousing the enthusiasm of farmers and herdsmen in production, and improving production efficiency, then meet people's demand for animal products [2].

2. Concept of animal husbandry industrialization
Industrialization refers to the specialized service and quality management which form the serialization and brand management of a certain industry under the condition of market economy, guided by market demand and aimed at realizing economic benefits. Animal husbandry industrialization is an important part of agricultural industrialization [3]. It refers to the various links in the process of economic reproduction of animal husbandry, that is, prenatal, middle and post-natal production as a complete industrial system. Its basic connotation is to take the market as the guide, take the economic benefit as the center, take the backbone enterprise as the "leader", take the thousands of families as the foundation, take the cooperative system and other intermediary organizations as the link and to carry out one-stop production and management system in the leading industry of animal husbandry in a region. It is characterized by close combination of production, supply and marketing, pastoral industry and commerce, animal husbandry science and education. Its essence is to form a complete industrialization pattern of market-intermediary organization-farmer by connecting the enterprises with the market and taking the animal products as the leading role according to the demand of the market so as to strengthen the effective connection of the production, supply and marketing processes. In order to promote the development of high-yield, high-quality and high-efficiency animal husbandry, and to promote the modernization of animal husbandry, it is necessary to carry out the operation mechanism of sharing risks and sharing interests, and to make animal husbandry enter the benign track of self-development and self-regulation.

3. Present situation and advantages of animal husbandry industrialization in Dingxi City
In recent years, in the face of the new normal situation of domestic economy from high speed growth to medium speed growth, Dingxi City has constantly improved its development ideas, deepened reform and people's livelihood construction, and made great efforts to adjust and optimize the industrial structure, so as to realize the steady development of the city's economy.

According to the statistical bulletin data of Dingxi City in 2017, The city's gross domestic product (GDP) was 106 billion yuan, an increase of 16.1 percent over the previous year. Among them, the output value of the primary industry was 24.1106 billion yuan, an increase of 0.97 percent over the previous year, the output value of the secondary industry was 51.76095 billion yuan, an increase of 14.65 percent over the previous year, and the output value of the tertiary industry was 30.21513 billion yuan, an increase of 22.29 percent over the previous year. The added value of the three industries is 25.897 billion yuan, 52.576 billion yuan and 27.535 billion yuan respectively. The three industries boosted economic growth by 1.3, 12.3 and 2.4 percentage points respectively. The three industrial structures are 24.4, 49.6 and 26.0. The per capita gross domestic product (GDP) was 66031 yuan, an increase of 15.9 percent over the same period last year.

From Table 1 data show, the GDP of Dingxi City has increased year by year. Among the three industries, the output value of the primary industry and the third industry increased steadily, while the output value of the secondary industry increased at a higher rate and contributed the largest. Compared with various regions of Gansu, the added value of the secondary industry in Dingxi City was also in the forefront. The three industries show the industrial structure of "two, three, one", and the proportion of the second industry is the largest.
Table 1. GDP and output value of three industries in Dingxi City in 2017 (10,000 Yuan).

| Year | 2015     | 2016     | 2017     | 2017     |
|------|----------|----------|----------|----------|
| Total output value | 7029369  | 8185631  | 9373116  | 10608714 |
| Primary industry   | 1903414  | 2167200  | 2387831  | 2411106  |
| Proportion (%)      | 27.1     | 26.5     | 25.5     | 22.7     |
| Secondary industry  | 3311095  | 3887740  | 4514582  | 5176095  |
| Proportion (%)      | 47.1     | 47.5     | 48.2     | 48.8     |
| Tertiary industry   | 1814859  | 2130691  | 2470703  | 3021513  |
| Proportion (%)      | 25.8     | 26.0     | 26.3     | 28.5     |

Source: Dingxi Statistical Yearbook (2017)

3.1. General situation of animal husbandry development in Dingxi City

Since the founding of the people's Republic of China, the animal husbandry in Dingxi City has gone through several different stages of development [4]. The first stage was 1949-1957. The Party's policies related to animal husbandry liberated and developed the productive forces in rural areas. In the early 1960s, due to the adjustment of rural economic policies and systems, animal husbandry has been unprecedented development. The second stage is the period of the "Cultural Revolution" before the reform and opening up. In order to meet the grain demand, the farmers' grain self-sufficiency led to the destruction of grass and grain planting, and finally seriously hindered the development of animal husbandry production. The third stage is after the reform and opening up. Because the restriction of keeping livestock has been lifted, the purchase of live livestock according to the fixed base, the return of livestock prices and the joint production contract responsibility system have greatly stimulated the enthusiasm of farmers and herdsmen in production. At the same time, with the implementation of the separate household management system of grassland, the establishment and improvement of animal husbandry science and technology promotion service institutions [5]. The establishment of grassland supervision organization and veterinary health supervision organization and the strengthening of animal husbandry legal system have greatly promoted the vigorous development of animal husbandry in Dingxi City. By 2017, the livestock production in Dingxi City had reached 10.0967 million, the total number of livestock storage bars had reached 4.2275 million by the end of the year, and the total meat output in the city had reached 212900 tons, ranking first in the province. The output value of animal husbandry in the city was 3.721 billion yuan, accounting for 44.8% of the total output value of agriculture, forestry, animal husbandry and fishery.

In recent years, Dingxi City has taken the sustained income of farmers and herdsmen as the core, strengthened the construction of bases, market development, processing and transformation, scientific and technological support, and made great efforts to build bases such as grain, livestock products, seed production, vegetables, and so on. Through a variety of preferential policies, the local government effectively mobilizes the enthusiasm of farmers. According to the statistical yearbook data of Dingxi City, in 2017, animal husbandry accounted for 17.03% of the per capita GDP of farmers and herdsmen. The added value of agriculture, forestry, animal husbandry and fishery in Dingxi City was 18.79791 billion yuan, of which the added value of animal husbandry was 10.54158 billion yuan, accounting for 56.08% of the total added value.

While strengthening the construction of animal husbandry transformation project in Dingxi City, we should focus on farming in agricultural areas, work hard to increase the quantity and improve the quality, and take the further income of farmers and herdsmen as the ultimate goal to promote the development of beef and sheep industry. The production capacity of animal husbandry in the whole city has also been significantly improved. In 2017, the output value of animal husbandry in Dingxi City accounted for 27.4% of Gansu Province. At the end of the year, there were 436.61 head in livestock storage, an increase of 0.7% over the previous year, and 944.5 000 livestock were released at the end of the year, an increase of 6.8%. The total output of meat in the city was 525100 tons, up 4.5 percent, milk output was 858300 tons, down 1.2 percent, and egg production was 85200 tons, up 2.5 percent. The proportion of the number of columns, meat, milk and eggs were 9.7%, 22.87%, 35.31%, 58.18% and 27.92%,
respectively. Dingxi City has become an important animal production base in the province.

3.1. Animal husbandry in agricultural areas in Dingxi. The aquaculture industry in agricultural areas is mainly raised in captivity. It is characterized by:

- Food consumption is the main type of aquaculture. The main livestock species are pigs, poultry, livestock and goats, which consume more grain. The feed sources are agricultural products, feed grain, straw, wild grass, wild vegetables and so on.
- The dual-purpose aquaculture industry is more developed, such as cattle raising which is used for milk or labor, or for meat or labor, and so on.
- It is mainly raised in hostels. Except for short-term stubble grazing after harvest, artificial feeding was carried out in livestock houses for the rest of the time. Feed cost accounts for a relatively high proportion, generally accounting for more than 65% of livestock costs.
- If it can fully realize the combination of agriculture and animal husbandry, the management is meticulous, the production level is high, then the aquaculture industry in agricultural area is the key to realize the industrialization of animal husbandry.

As one of the development bases of animal husbandry in Gansu agricultural areas, Dingxi City has steadily improved the level of standardized animal husbandry breeding in recent years, and the scale of livestock cultivation is also expanding, and the number of livestock stocks is in the forefront of the province. The number of beef and sheep farms in the city has increased from 2 to 9, and 100 meat sheep breeding farms have been increased, and 5 standardized demonstration farms for beef and sheep breeding have been added. The income of meat cattle and meat sheep accounted for nearly 50% of the per capita income of animal husbandry.

From Table 2, it can be seen that in 2017, the number of cattle, sheep and pigs accounted for 11.8%, 13.1% and 62.3% of the total livestock, respectively. As shown in table 2, the number of cattle in Dingxi City at the end of 2017 was 517300, accounting for 11.84% of the total number of livestock in the county at the end of the year and 13.48% of the total number of cattle in the county at the end of the year. Among the counties and cities, Longxi County and Lintao County account for a large proportion of the total number of livestock. There were 130000 cattle in Longxi County, accounting for 25.1% of the total number of cattle in the county, and 103600 cattle in Lintao County, accounting for 20.0% of the total number of cattle in the county. 206200 pigs in Longxi County, accounting for 36.1% of the total number of pigs in the county, accounted for the largest proportion compared with other counties and cities. There were 732700 sheep in Lintao County, accounting for 26.7% of the total number of sheep in the county. Compared with other counties and cities, the proportion of sheep in Longxi County was the largest.

Table 2. The number of livestock in Dingxi City (include 6 counties) at the end of 2017 (10,000 heads).

|             | Total | cattle | horses | donkeys | pigs  | goats | sheep |
|-------------|-------|--------|--------|---------|-------|-------|-------|
| Dingxi city | 436.86| 51.73  | 5.03   | 0.66    | 57.14 | 45.52 | 274.71|
| Longxi      | 86.04 | 13.00  | 0.90   | 0.01    | 20.62 | 11.31 | 39.79 |
| Tongwei     | 29.32 | 4.70   | 0.41   | 0.04    | 3.85  | 6.87  | 13.31 |
| Weiyuan     | 55.13 | 9.55   | 1.21   | 0.03    | 4.22  | 7.87  | 31.96 |
| Zhangxian   | 56.64 | 4.89   | 0.38   | 0.06    | 9.36  | 1.47  | 40.22 |
| Lintao      | 100.19| 10.36  | 0.73   | 8.60    | 6.90  | 73.27 |
| Minxian     | 58.42 | 7.22   | 0.64   | 0.30    | 8.69  | 5.11  | 36.35 |

Source: Dingxi Statistical Yearbook (2017)

3.1.2. Animal product processing industry. (1) Meat industry. Dingxi City has great advantages in meat industry, and its meat production is the first compared with other cities of Gansu province. In recent years, due to the continuous introduction and variety improvement of new varieties in the city, the wide application of animal husbandry science and technology and the improvement of breeding level, the
quality of livestock and poultry meat has also been improved. A large number of leading enterprises of livestock products have made outstanding contributions to the introduction of improved breeds of livestock and poultry. In recent years, leading enterprises of animal husbandry have created local fine livestock and poultry brands. The total number of improved cattle in the city was 138500, the rate of improved breeds was 58%, the rate of improved sheep was 544000, the rate of improved breeds of sheep was 64%, and the rate of improved breeds of pigs and poultry was above 90%.

According to Table 3 data of Dingxi City Statistical Communiqué at the end of 2017, the number of new beef sheep, beef cattle, live pigs and poultry was 602000, 60300, 2.42 million and 6850 respectively. The output of meat, milk and egg is 541500 tons, 870000 tons and 85000 tons respectively. The total number of livestock at the end of the year was 4.3685 million. Among them, 517300 cattle, 50300 horses, 6600 donkeys, 571400 pigs, 455200 goats and 2.7471 million sheep.

|                | Beef | sheep | mutton | pork | poultry | horse meat |
|----------------|------|-------|--------|------|---------|------------|
| Dingxi city    | 79542| 92691 | 10111  | 17839| 124252  | 4585       |
| Longxi         | 20513| 14856 | 3359   | 43510| 20032   | 1118       |
| Tongwei        | 5220 | 9950  | 2250   | 16442| 21683   | 577        |
| Weiyuan        | 17176| 12820 | 895    | 21143| 30425   | 1270       |
| Zhangxian      | 7488 | 15699 | 245    | 13125| 19508   | 660        |
| Lintao         | 15533| 19690 | 1382   | 74080| 17758   | 180        |
| Minxian        | 10408| 11855 | 1042   | 7779 | 13694   | 307        |

Source: Dingxi Statistical Yearbook (2017)

Judging from the distribution of all kinds of meat products in various counties, the total meat production of Lintao County, Weiyuan County and Longxi County was 317254 tons, accounting for 64.49% of the total meat production of the county, of which the meat yield of Lintao County accounted for 26.17% of the total meat output of the county. Longxi County had the highest beef yield, accounting for 25.79% of the total county, Lintao County had the highest mutton yield, accounting for 21.24% of the total mutton output, and Lintao County had the highest pork yield, accounting for 41.53% of the total pork output. Weiyuan County has the highest poultry meat yield, accounting for 24.49% of the total poultry meat output in Weiyuan County. And goat meat and horse meat production at county level is relatively small.

(2) Dairy industry. Dairy products have become an ideal food for people because of their easy absorption and high nutrition. Not only developed countries but also developing countries strongly advocate milk consumption [6]. Since Dingxi City has taken animal husbandry as the leading factor to adjust the agricultural structure, Dingxi City has continuously increased the development of dairy industry, and a number of dairy farms and dairy enterprises have emerged in the city. Tianliyuan Science and Technology Co., Ltd. has become a breeding demonstration base with teaching and scientific research, and has been awarded the title of "Top 200 Dairy cattle breeding demonstration Farm" by the Ministry of Agriculture of China. Every year, more than 300 breeding experts are trained in Dingxi City, which gives full play to the radiation driving effect of demonstration cattle farm. With the rapid development of dairy industry in Dingxi City, dairy processing enterprises provide more and more products. Shengou Luoji Dairy Group Co., Ltd., Gansu Tianliyuan Dairy Co., Ltd., a series of dairy enterprises of pure fresh milk, chocolate milk, peanut walnut milk, original yoghurt, strawberry, corn, wheat flavor yoghurt, Cereal sour milk, full-fat milk powder and so on are favored in the whole province, occupying the Gansu market steadily. In 2017, Dingxi dairy production was 126390 tons, including 112093 tons of liquid milk and 6573 tons of milk powder. Dingxi City produced 876832 tons of milk, of which the output of milk was 872302 tons, accounting for 59.13 percent of the total milk output in Gansu Province. The total milk output of Weiyuan County, Lintao County and Longxi County was 597187 tons, accounting for 68.11% of the total milk output of the county. Among them, the milk output of Weiyuan County accounted for 28.80% of the whole county, which was the highest in the whole
county. The output value of milk products in 2017 was 3.40032 billion yuan, accounting for 18.50% of the total animal husbandry output value of the city. The total output value of milk products in Weiyuan County, Lintao County and Longxi County is 2.01394 billion yuan, accounting for 59.23% of the total output value of dairy products in Weiyuan County, among which the output value of milk products in Weiyuan County accounts for 22.51% of the total output value of dairy products in the whole city. It shows that Dingxi dairy industry is mainly concentrated in these three counties, while Weiyuan County has the highest milk commodity rate, which has obvious advantages in the whole city milk industry. By 2017, 108 dairy farms have been built in the city, including 30 cattle farms, 66 standardized dairy farms, 84 milking farms and 870000 tons milk production. There are 194500 cows in the barn and there are 85 milk stations, 243 breeding stations and 157 medicine baths; The government department do their best to implement the people's livelihood project, comprehensively promote the full coverage of the student milk drinking program, and all 126366 primary and secondary school students in the nine-year compulsory education stage in the city enjoy the student milk drinking program. Dingxi dairy processing industry is developing rapidly, and many brands are loved by the masses. However, due to the lack of processing enterprises to play a leading role, it can be said that the basis for the production and processing of other animal products in Dingxi City is still relatively weak. Under the increasing trend of people's demand for animal products, The existing production level cannot fully meet the needs of people. Therefore, it is necessary to cultivate the "leader", improve the quality, expand the scale, focus on improving the added value of the product, build the brand of animal products and enhance the competitiveness of the market.

4. Advantages of animal husbandry industrialization in Dingxi City

- Variety advantage. Dingxi City is rich in livestock breeding fine variety resources. The main breeds of cattle are Holstein, Simmental, brown cattle and so on [7]. Holstein cattle have the characteristics of strong climate domestication ability and cold tolerance. Simmental cattle are characterized by fast growth rate, weight gain of more than 1.0 kg per day, and cold tolerance in winter and heat resistance in summer. Simmental cattle are suitable for grazing all year round. Sheep owners have famous breeds such as Suffolk. After the Suffolk sheep and the local sheep are hybridized, the meat quality of the Suffolk sheep exceeded that of the local sheep. Pig breeds are mainly Kexia, Duroc, Landrace, Gansu black pigs and so on. The poultry farmed are mainly laying hens and broilers. By 2017, there were 138500 improved cattle in the city, the rate of improved cattle was 58%, the rate of improved sheep was 544000, the rate of improved breeds of sheep had reached 64%, and the rate of improved breeds of pigs and poultry was more than 90%.

- Location advantage. The geographical location of Dingxi is very important. It is not only an important town on the ancient "Silk Road", but also a necessary place for the New Eurasian Continental Bridge. It is also the east gate of Lanzhou. It is known as "Gansu throat, Lanzhou Portal," only 98 kilometers from Lanzhou, adjacent to Guanzhong-Tianshui Economic Zone and Lanbai Metropolitan Economic Circle. With the construction of the city and the acceleration of the construction of the transportation system, Dingxi will be fully integrated into the Lanbai urban economic circle. Longhai Railway, Baolan double Line, 312, 310, 212, 316 National Highway and Shiliu Expressway, Lanlin Expressway, Pingding Expressway, Tiantang Expressway all pass by Dingxi city. The construction of Lanyu Railway and Baolan passenger special Line have passed through Dingxi, which has become an important transportation hub in western China.Convenient transportation conditions broaden the sales channels for animal products in Dingxi City.

- Production advantages. By 2017, there are 16 livestock products processing enterprises, 10 meat sheep slaughtering and processing enterprises, 6 pig slaughtering and processing enterprises and 4 broiler processing enterprises in Dingxi City. The number of animal husbandry farmers and herdsmen breeding cooperatives established in the city has reached 196. The 512 large-scale farms are established, of which 12 are standardized demonstration farms at the national level.
These production infrastructures have laid a solid foundation for the realization of standardized breeding, specialized production and industrial management in Dingxi City.

- **Policy support advantages.** In order to increase the income of farmers and herdsmen and improve the lives of farmers and herdsmen, the government has issued a series of policies, such as animal husbandry subsidy, animal epidemic prevention subsidy, grassland ecological protection subsidy reward policy and so on. The implementation of these policies is helpful to improve the rate of improved livestock breeding, to provide a strong guarantee for the health and safety of livestock, to strengthen the ecological protection of grassland, and to improve the level of dairy production, quality and safety. Based on the existing animal husbandry resources and development advantages, animal husbandry in Dingxi City has developed to a certain extent, gradually forming large-scale cultivation, specialized production, and the income of farmers and herdsmen has also increased obviously. In 2017, more than 600 yuan of the average newly-added income of farmers and herdsmen was from animal husbandry. At the same time, the development of animal husbandry has created a large number of employment opportunities, absorbed unemployed people in agricultural areas, and played a positive role in promoting the whole social economy. However, from the overall situation of local animal husbandry, its overall industrialization level still has room for further improvement, and there is a big gap with the areas with good animal husbandry development in China. Therefore, the author believes that it is necessary to find out the problems that need to be further strengthened and improved in the process of animal husbandry industrialization. This is of great decisive significance to the realization of the ultimate goal of this paper.

5. **Problems of animal husbandry industrialization in Dingxi city**

5.1. *Leading enterprise's leading role needs to be strengthened*

In the process of animal husbandry industrialization in Dingxi city, there are some influential enterprises engaged in dairy products processing, forage processing and meat products processing, but at present the market demand is increasing constantly, and the quality requirements of animal products are also continuously improved, the leading role needs to be strengthened. If "Leading enterprises" can not play the role of driving farmers to increase income, it will become the primary factor restricting the development of animal husbandry industrialization.

5.2. *The function of specialty cooperative economic organization of animal husbandry is weak*

Since the implementation of the Cooperative Law in 2007 in China, a number of professional cooperatives have been set up one after another in Dingxi city, and the number of cooperatives has also been increasing. There have 278 city-wide farming professional cooperatives. Although new cooperatives are constantly springing up throughout the city and according to the overall situation of all kinds of cooperatives, there is a low degree of organization, less large-scale farming, low level of technology, a lack of talent, and a small scale of production and with the market connection is not close, the organization function is weak and so on.

5.3. *The socialized service system is not perfect*

Social service for animal husbandry requires the provision of a series of services before, during and after birth, specifically, financial services, skills training services, improved breed services, marketing services. Livestock farmers cannot find a real platform, path and so on. Production can only be arranged according to past experience and lagged market demand information, resulting in a long-term passive relationship between production and marketing. Thus, production, supply, sales are disjointed and did not form an integrated service. The construction of technicians cannot keep pace with the development of animal husbandry, but large-scale, standardized farming requires livestock technicians to have high-end diagnosis and treatment techniques. At present, high-level technicians are still very few, which cannot meet the needs of farmers, and the form of service is passive and single, which cannot adapt to
large-scale, standardized farming needs. The effect of animal disease prevention and control of technicians has not formed an interest relationship with the farmers, and the vast number of farmers have misgivings about livestock diseases. The quality of scientific and technological service personnel is on the low side, the circulation service system is not perfect, the traditional service institutions do not meet the needs of commodity economy. These not only seriously affect the overall benefits and large-scale benefits of service, but also restrict the continuous development of animal husbandry industrialization.

5.4. The capital investment is insufficient, and the scientific and technological content of animal husbandry is low

The fund is the "catalyst" to improve the development level of animal husbandry science and technology. In recent years, with the continuous development of animal husbandry in Dingxi city, the local government has also increased the support for further development of local animal husbandry, but from the overall situation of animal husbandry development, the existing capital investment is still insufficient. At present, the local animal husbandry lacks sufficient capital input, thus the infrastructure is weak; the farmers' investment ability is limited, but the loan is difficult; and it is difficult to attract social financing. However, the industrialization of animal husbandry must be guided by technological progress, requiring science and technology to run through every link from forage cultivation, production, processing, livestock farming, processing of livestock products to transportation, storage and marketing. Without scientific and technological support, animal husbandry industrialization cannot achieve the expected goal, and then cannot achieve the transformation of agricultural growth mode. With the continuous improvement of social and technical level, although Dingxi city has begun to use some science and technology in animal husbandry management methods and livestock farming, animal product processing and other aspects, the lack of capital investment leads to the low level of animal husbandry science and technology content, compared with the areas where animal husbandry industrialization has been better developed. These are mainly reflected in the following aspects: the large-scale, intensive farming of animal husbandry is not high, the cultivation level of the farmers is low; the degree of good breeding of livestock and poultry is not high; the meat industry system is not perfect; the situation of animal epidemic prevention and control is not optimistic; the construction of science and technology support system is still lagging behind, the level of technical equipment is low, and the coverage of the popularization and application of new technologies is low. It is necessary to introduce advanced technology and advanced equipment at home and abroad to improve the level of science and technology.

Whether it is the development of large-scale breeding of livestock or poultry, or the construction of infrastructure facilities, the construction of the production and supply capacity of forage, the construction of the improved breeding system, the construction of the system for the prevention and control of animal epidemics, the construction of animal product quality safety system and control capacity, the construction of animal product processing capacity, the construction of socialized service system, and so on, all need the support of funds very much. Only through the sufficient capital input can the above-mentioned construction be realized. These constructions are indispensable and important means to promote the industrialization of animal husbandry.

5.5. The environmental problems caused by animal husbandry industrialization

In the process of animal husbandry industrialization, animal husbandry has become the most active growth point and main pillar industry in rural economy. With the rapid development of large-scale livestock and poultry breeding industry, the scale of livestock farms is getting larger and larger, the degree of intensification and mechanization is getting higher and higher, due to the imperfect environmental laws and regulations and the shortage of funds. The vast majority of farms did not consider a series of problems, such as the treatment of livestock and poultry faeces, resulting in the accumulation of faeces in many farms and the arbitrary discharge of sewage, which seriously polluted the surrounding environment. It also directly affects the health and epidemic prevention of the farm
itself, and reduces the quality of animal products. Animal husbandry is also the source of air pollution gas emissions, which will produce Greenhouse Effect [8]. The continuous growth of animal husbandry production will aggravate the pressure on the environment and natural resources. The environmental problems caused by animal husbandry are becoming more and more serious harm to the living environment of human beings.

6. Countermeasures and suggestions on industrialization of animal husbandry in Dingxi city

6.1. Vigorously cultivate and support leading enterprises
Leading enterprises as the bearers of animal husbandry industrialization, their competitiveness level represents the competitiveness of the whole region. The strength of the leading enterprise also determines the level of the industrial operation of animal husbandry in a region. Therefore, it is necessary to cultivate and strengthen the leading enterprises, break the limitations of small-scale production, rely on the leading enterprises to effectively protect the interests of farmers, and achieve animal husbandry industrialization.

First, government should give full play to the support and guidance of the leading enterprises, vigorously develop the leading enterprises with great potential and competitive power, and give necessary investment. What’s more, government should also implement preferential policies, rectify market order by legal means, encourage leading enterprises to introduce and adopt advanced technology and equipment, and vigorously carry out quality certification in order to improve their market competitiveness; encourage small and medium-sized enterprises to carry out joint, merger, equity and other business methods for integration, in order to form leading groups; guide enterprises to develop new products, encourage large and small enterprises to cooperate in production and promote each other.

Second, government should actively coordinate the relationship of interests between farmers and leading enterprises, and improve the mechanism of interest connection; enhance the sense of compliance between the two sides, form a stable purchase-sale relationship, and achieve a win-win situation for farmers and enterprises; pay attention to the construction of production base and solve the problems of incoordination and synchronization between leading enterprises and raw materials base; in the construction of production base, government should make great efforts to promote the standardization of products, perfect the mechanism of benefit connection between enterprises and farmers, and expand the coverage of animal husbandry products by order; encourage leading enterprises to establish risk funds, minimum acquisition, protection prices, return of interests and other systems; allowed farmers to take shares in land contractual management rights and land use rights as well as products, technologies and resources in order to form an interest community with leading enterprises.

Third, government should rely on leading enterprises to create animal products brand. The competition of leading enterprises is the competition of brand in essence. Brand is an asset that can guarantee the long-term stable production and operation of enterprises and absorb new capital for a long time. The government should actively cultivate, develop and strengthen the brand, and take the brand as the starting point to occupy the market. Therefore, government should speed up the development of large-scale, standardize livestock and poultry breeding industry, focus on improving the quality of products, especially cultivate, support the production of beef and mutton, increase the supply of beef, mutton and poultry milk and eggs, create green brands and speed up the process of animal husbandry industrialization.

6.2. Strengthening the construction of specialized cooperatives
In order to promote the development of animal husbandry industrialization, it is very urgent to cultivate and strengthen their own professional cooperatives. By participating in professional cooperatives, farmers can not only properly deal with the relationship with enterprises, but also improve the negotiating status of farmers. Although the professional cooperative economic organizations run by farmers have achieved great performance, there is still a large deviation compared with the general requirements of farmers in Dingxi city. In addition, the establishment of cooperative economic
organizations is an important policy of the country, so Dingxi city government should attach great importance to the construction of cooperatives, which should be supported by the government and credit concessions. In order to achieve the further development of professional cooperatives, the government should do the following:

First, strengthen publicity efforts to deepen farmers' correct understanding of the function of professional cooperatives. It is necessary to make the farmers understand the cooperative law gradually and strengthen the propaganda to the cooperative. Government should organize cadres and relevant staff at all levels to enter the breeding areas to popularize knowledge on the management of cooperatives, promote technical work, adopt one-on-one exchanges to implement the laws and regulations relating to cooperatives, make farmers understand the organizational function of cooperatives and recognize the importance of cooperatives.

Second, expand cooperatives and increase the amount of funds invested. At present, one of the problems of cooperatives is that they are small in scale and weak in competitiveness. Most cooperatives have the phenomenon of small scale and decentralization, few personnel, single products and a lack of influential leading cooperatives that can play a leading role. Cooperatives can be driven by leading enterprises to expand their size. In order to avoid individual breeders from standing in a weak position, cooperatives should act as a link between enterprises and farmers, conduct production guidance for farmers and negotiate with enterprises on behalf of farmers so as to ensure the return of the profits for farmers, achieve equal benefits and share the risks. Enterprises promote cooperatives, cooperatives guide farmers, they have their own advantages, complement each other, promote each other, thus form a virtuous circle, gradually realize the scale of cooperatives, and enhance their competitiveness. In the area of funds, the government should give full support at the same time to clarify the preferential tax policies, and make timely adjustments in accordance with the development of cooperatives, focus on solving the problem of credit difficulties, and optimize the lending policy. Banking institutions and rural credit cooperatives are urged to give priority support to cooperatives with strong motivation and standard operation according to their operating conditions.

Third, pay close attention to the work of education and training. The relevant government departments should adopt appropriate methods for local farmers to impart new knowledge and technology of modern animal husbandry management among cooperative members. The government should select the leaders who have the ability to organize the cooperatives, carry out targeted training and education, and focus on enhancing their abilities in entrepreneurial management, organizational management, risk control, cultural construction, and so on; encourage the leaders of the breeding cooperatives go out to visit, regular exchanges and other ways to expand their experience, increase their knowledge, and then promote the upgrading of the technical level of other members by leaders, thus build a team of farmers who are diligent, know how to cooperate with each other, good at organizing and operating, care for cooperative interests and willing to contribute to the professional cooperative.

6.3. Establish and perfect the socialized service system

A sound socialized service system is the key to promote the coordinated development of the animal husbandry industrialization. The construction of socialized service system for the development of animal husbandry industrialization, starting from the level of development of regional productive forces. Government should establish diversified agricultural socialized service system with multiple communication channels, such as the establishment of a variety of economic components and forms of service adapted to the needs of the development of animal husbandry industrialization; the government and leading enterprises will vigorously foster and support professional cooperative economic organizations, farmers' associations, farmers' brokers and other intermediary organizations, vigorously develop market circulation, and strengthen the construction of market networks.

First, government should strengthen the construction of the market sales and service system, foster intermediary cooperation organizations for the circulation of livestock products, set up specialized cooperative organizations with various functions, such as production, processing, marketing, storage, transportation, technology, and so on, so that they can become bridges between the market and farmers.
In order to solve the contradiction between small-scale operation and large-scale market, government provide farmers with systematic services in all aspects of prenatal, labor and post-natal period.

Second, government and leading enterprises should strengthen the construction of science and technology extension service system, carry out technical services such as improved breed, feed, breeding, epidemic disease prevention and control and set up a system of animal husbandry technical services that integrates epidemic prevention, diagnosis and treatment, scientific and technological training. Through training technicians and farmers, establishing demonstration bases for scientific research, inviting experts and scholars to go deep into the first-line production guidance and impart professional knowledge and skills, farmers can master breeding skills with high level of quality; They should also make full use of all kinds of science, technology and educational resources, carry out post training to animal husbandry practitioners through further study, impart advanced science and technology in modern animal husbandry production, and through various forms of publicity and promotion of scientific research results, increase the construction of animal epidemic prevention personnel, animal disease diagnosis and treatment personnel and breeding technician.

Third, the government, the economic organization, the individual farmers and the multi-party joint effort to set up the investment and financing service system, increase the input to the animal husbandry through various channels, and gradually form the investment and financing service system with the government investment as the guide, combined with the financial loan, the farmers and the enterprise investment.

Fourth, government should strengthen the construction of information consulting service system to ensure the interests of farmers. By providing the market information in a timely manner, the production, processing and circulation of the livestock products are guided, so that the farmers are prevented from being blindly produced; encourage farmers and professional households to work together to establish professional associations for self-service. In fact, as long as the market information can be accurately grasped, farmers will soon be able to put into production; support leading enterprises to establish social services in breeding bases and perfect the information network service to solve the problem of small-scale production and market disconnection, and improve the information level of animal husbandry.

6.4. Increase the input of funds and support to improve the science and technology content of animal husbandry

Financial aspects: Governments at all levels and relevant units should actively support scientific and technological innovation, introduce and use advanced technologies in forage silage, scientific breeding, breeding of improved variety of livestock, prevention and treatment of epidemic diseases, and promote the overall technical level of animal husbandry; Actively strive for the development of industrialization, science and technology to promote agriculture, scientific research and promotion, poverty alleviation, agricultural comprehensive development, small town construction, scientific and technological training, grassland ecological compensation mechanism and other projects. Through relying on the scientific bundling of project funds, make the project construction funds play a role, gradually improve the scientific and technological content of animal husbandry, and inject vitality into the development of animal husbandry; Farmers are the main investors in animal husbandry. While actively guiding the vast number of farmers to invest in animal husbandry, local finance should also increase their financial support to farmers, and financing institutions should give active credit support and encourage them to master advanced technology in order to improve economic efficiency.

Policy aspects: First, government vigorously support large-scale farming farms and breeding bases, give full play to the role of farmers, bases and leading demonstration leading role, so that project funds become a booster to improve the content of science and technology and improve the use of policies and encourage enterprises and farmers to build large-scale farms and intensive feeding areas in wasteland. Second, by adjusting the structure of the planting industry, expanding the planting area of forage crops and forage, making financial subsidies to purchase forage processing machinery, encouraging growers to plant, harvesting, storing and processing mechanically, and raising the utilization rate of straws, to realize mechanization, science and technology; Encourage the establishment of cooperative economic
organization such as forage grass planting, processing, marketing to promote the production and specialization; Strengthen the supervision of feed safety in order to build a safe, high-quality and efficient feed production network. Third, government should further optimize the environment for attracting foreign investment, increase the intensity of attracting investment, and guide enterprises within and outside the region to implement a strong association through mergers and acquisitions, ownership, holding, and construction, so as to form large-scale animal husbandry enterprise groups. Government will increase the injection of funds into the process of animal husbandry cultivation, breeding, processing and circulation, use new technologies and mechanical equipment to upgrade the level of science and technology in leading enterprises, and promote the industrialization of new technologies in animal husbandry and the technological progress of the industry.

6.5. Thoughts on the countermeasures of controlling environmental pollution in the process of animal husbandry Industrialization

First, strengthening the leadership of ecological protection of animal husbandry. It is necessary to attach great importance to the pollution caused by the livestock and poultry industry to the environment, draw lessons from the pollution before prevention and control existing in the development of animal husbandry, and bring the ecological protection of animal husbandry into the main contents of environmental management. Raise the awareness of animal product safety, organize animal husbandry production in accordance with international practice, strengthen the safety management and quality certification of livestock and their products. It is also necessary to strictly examine and approve the environmental protection of farm construction and strengthen the environmental monitoring of livestock pollution.

Second, establishing artificial ecological animal farm. It is necessary to establish a moderately large-scale farm according to the local land area and make full use of the land reduction method to melt the fecal waste, which is the most feasible and economical method of fecal pollution treatment at present. Organize the production of original and new livestock farms according to the principles of ecology and ecological economics, make full use of local natural resources, make use of the interdependence between animals, plants and microorganisms, and modern technology, Carry out waste-free and pollution-free production. Through the promotion of various ecological breeding models, such as the combination of agriculture and animal husbandry, the combination of fruit and animal husbandry, and the combination of pastoral and vegetable husbandry, we should strengthen the harmless treatment and comprehensive utilization of livestock faeces, and improve the overall scientific and technological level, environmental protection level and sustainable development level of animal husbandry to realize the virtuous circle within animal husbandry. Reasonable planning of breeding areas should consider the convenience of transportation, but it should not be too close to the highway, and should be built as far away from the city, industrial and mining areas and dense population as possible in order to solve the problem of good water use. Restricted areas should be designated in water sources, scenic tourist areas, residential areas, schools, hospitals and other public places.

Third, carry out the research and popularization of pollution control technology. Poor treatment of emissions is pollutants, good treatment is resources, and the utilization of emissions from aquaculture is a new subject [9]. It is necessary to organize scientific research, teaching, production, promotion and other aspects of technical research, in-depth development of breeding layout, farm construction, feed production, feeding methods, manure treatment, machinery and equipment, agriculture and animal husbandry and other key links of technical research. We should speed up the popularization and utilization of pollution control technology, and apply advanced and practical technologies such as rain pollution separation, dry and dilute separation technology, low nitrogen feed production and use, low cost sewage treatment and resource utilization to production practice. We should provide strong technical support for livestock pollution control by extensive exchange and cooperation of pollution control technology, strengthening the introduction and innovation of advanced technology and equipment. Gradually realize the industrialization and standardization of animal husbandry pollution control in engineering design, construction, maintenance, Management and other links.
7. Conclusion

First, animal husbandry continues to grow in Dingxi City, but there is still a gap compared with other areas. Judging from the overall situation of animal husbandry industrialization, leading enterprises have promoted the pace of industrialization, the scientific and technological content has been continuously improved, the level of improved breeds of livestock and poultry varieties has been significantly improved, and the ability of animal epidemic situation monitoring and prevention and control has been continuously enhanced. The socialized service system has been established initially, the construction of technical staff has been strengthened, and the mechanism of linking the industrial interests between enterprises and farmers has been gradually formed. However, the overall scale and development level have a great gap compared with some areas of the rapid development and with similar natural conditions and economic structure of the domestic animal husbandry. This paper holds that this condition is mainly caused by the slow development of the forage industry, the weak traction of the leading enterprises, the shortage of funds and the imperfection of the socialized service system, the harm to the environment and etc.

Secondly, the integration of animal husbandry industry refers to the process of animal husbandry economic reproduction, namely, prenatal, productive and postnatal integration into a complete industrial system. Its basic characteristics are scientific structure, industrialization of production, socialization of service and commercialization of products. According to the requirement of animal husbandry industrialization, it is necessary to concentrate population, improve quality, increase investment, build base and strengthen service. Under the condition of the increasing demand of the market, and the quality requirements of the animal products, the development of the animal husbandry in Dingxi city is not strong, the organization of the farmer is not high, and the scientific and technological level of the animal husbandry is still to be improved. The organization of the cooperative economic organization of the animal husbandry is low and the large-scale cultivation is small due to the shortage of funds, the lack of the talents, the connection between the farmers and the market are not tight, and the social service system is not sound.

Finally, the development of forage industry should be regarded as the key in the process of animal husbandry industrialization, focusing on adjusting the planting structure, strengthening the construction of artificial forage base, expanding the planting area of forage, improving the supply capacity of forage to meet the forage demand of farmers. Government should cultivate and support the leading enterprises which are the main body of animal husbandry industrialization, promote its forage, livestock products processing capacity, improve its competitiveness, so that the leading enterprises fully play its role [7]; strengthen the construction of cooperatives and strengthen the work-sharing cooperation among the farmers and carry out specialized cultivation; increase the investment of funds, improve the whole level of science and technology of animal husbandry, strengthen the technical training, and continuously perfect the socialized service system. The above-mentioned are effective ways to promote the industrialization development of animal husbandry in Dingxi City.

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