



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

# Present Situation and Development Measures of Beef Cattle Industry in Xuanhan County

Wei WANG<sup>1Δ</sup>, Zhimin LIAO<sup>2Δ</sup>, Donghui FANG<sup>1</sup>, Yi SHI<sup>1</sup>, Jia GAN<sup>1</sup>, Maozhong FU<sup>1</sup>, Cheng GUI<sup>2</sup>, Desheng QU<sup>2</sup>, Zhicai ZUO<sup>3</sup>, Jun YI<sup>1\*</sup>

1. Sichuan Key Laboratory of Animal Genetics and Breeding, Sichuan Animal Sciences Academy, Chengdu 610066, China; 2. Xuanhan County Livestock and Poultry Breeding and Improvement Station, Xuanhan 636150, China; 3. Sichuan Agricultural University, Chengdu 611130, China

**Abstract** This paper analyzes the actual situation and bottleneck problems in the development of beef cattle industry in Xuanhan County. In view of the existing problems, this paper puts forward reasonable suggestions, with a view to better exploring the development model of characteristic beef cattle industry in Xuanhan County based on the unique cattle resources of Xuanhan County, and effectively promoting the implementation of the strategy of rural revitalization.

**Key words** Xuanhan County, Shuxuanhua cattle, Rural revitalization, Park construction

## 1 Introduction

**1.1 Shuxuanhua cattle is taken as the focus to steadily promote the beef cattle industry** In 2019, there were more than 90 000 Shuxuanhua cattle in Xuanhan county, including more than 40 000 basic cattle. The county now has a breeding farm having 1 000 head of Shuxuanhua cattle and 25 breeding farms (households) of moderate scale, and more than 10 000 head of Shuxuanhua cattle are promoted to the outside every year. Driven by the Shuxuanhua cattle industry, as of the end of 2019, there were 161 300 beef cattle on hand (103 500 cows capable of breeding) in the county, and 94 100 were sold from the farm. The output value of raising cattle accounted for 27.14% of the output value of animal husbandry.

**1.2 The business entity continues to grow and the degree of standardized breeding continues to improve** In 2019, the proportion of large-scale breeding in the county reached 16.37%. There were 2 standardized demonstration sites at the ministerial level, 10 at the provincial level, 32 at the municipal level and 20 at the county level. 34 specialized cooperatives for raising cattle were developed, including 5 specialized cooperatives at the provincial level and 18 family farms for raising beef cattle, with a product sales income of 1.7 billion yuan and 53 000 peasant households.

**1.3 The influence of brands is increasing and the secondary and tertiary industries are gradually strengthened** Shuxuanhua cattle has successfully registered geographical indications for industry and commerce. Around the Shuxuanhua cattle industry, the county established and cultivated 8 processing enterprises of milk and meat products, with a sales income of 780 million yuan. A joint development model of beef cattle industrialization has been gradually formed with milk and meat processing enterprises as the leader, linking cooperatives, family farms and moderate-scale households and other main breeders. With Shuxuanhua cattle as the brand, the county has successfully built a street and exhibition hall of cattle culture, and cultivated a series of characteristic restaurants featuring cattle.

**1.4 Attaching importance to the cycle of planting and breeding and the harmonious development of animal husbandry and ecological environment** The county focuses on green agriculture and promotes the circular development model of the combination of planting and breeding. In 2019, the planting area of high-quality forage grass and forage crops in the county was 15 666.67 ha, the annual output of forage grass for beef cattle was 137 000 t, and the annual treatment and utilization amount of straw is 350 000 t. The comprehensive utilization rate of livestock and poultry manure in the county was 91.3%, and the matching rate of facilities and equipment for manure treatment in large-scale farms was 100%. A total of 3 organic fertilizer processing plants have been built, with an annual output of 100 000 t of organic fertilizer. The annual output value of characteristic industries such as crispy plums and edible fungi developed by organic fertilizer reached 250 million yuan.

**1.5 Attaching importance to invigorating agriculture with quality and constantly improving the system construction** Xuanhan County has built a county-level cattle improvement center and 44 standardized bovine artificial insemination stations, forming a perfect breeding system of improved breeds, and the conception rate

Received: July 5, 2020 Accepted: September 5, 2020

Supported by National Key R&D Program (2018YFD0501705); Key R&D Project of Sichuan Science and Technology Program (18ZDYF3215); Sichuan Beef Cattle Innovation Team of Modern Agricultural Industrial Technology System (scextd-2020-13).

ΔThese authors contributed equally to this work.

\* Corresponding author. Jun YI (1971 - ), male, researcher, undergraduate, engaged in animal nutrition and feed processing related research.

Editorial Office E-mail: asiaar@163.com

after bovine artificial insemination is more than 88%. Xuanhan County has established and improved the livestock and poultry product quality inspection and testing system, the safety supervision system and the livestock and poultry product quality traceability system. At present, 42 farms have obtained the certification of pollution-free animal products. It established Xuanhan County Beef Cattle Breeding Association to regulate production, supply and marketing, and coordinate the joint cooperation among the government, scientific research institutions and breeding owners.

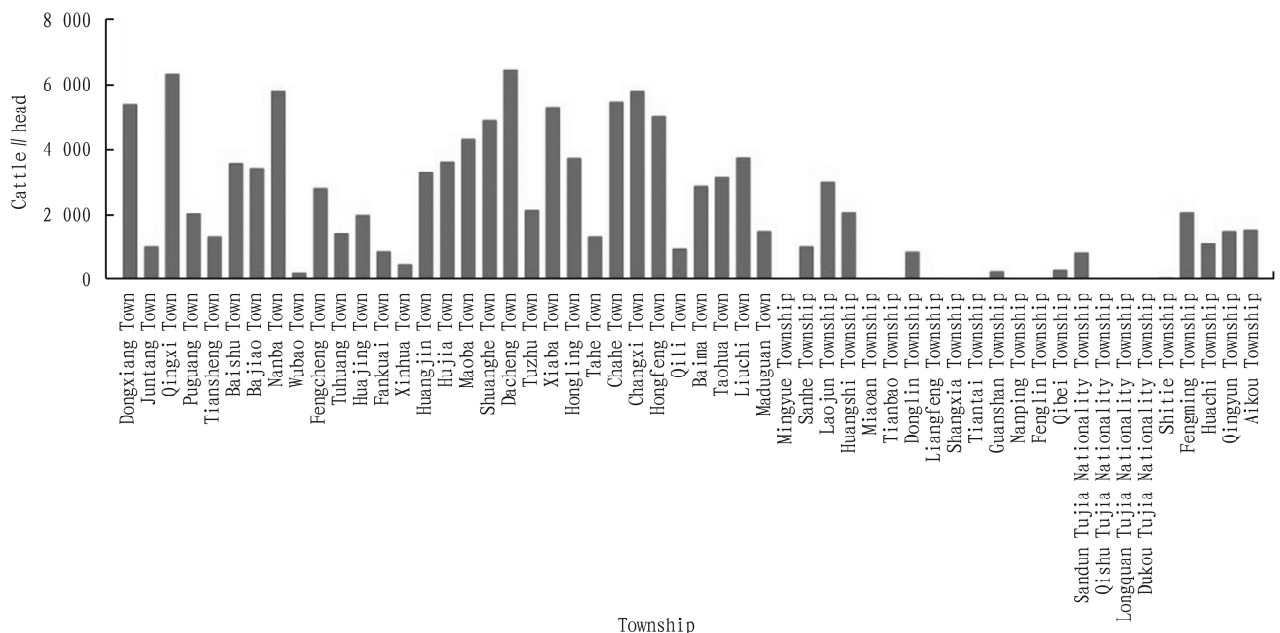
**1.6 Strong scientific and technological support and remarkable achievements in scientific and technological innovation** Aiming at the technological needs of the development of beef cattle industry, focusing on the breeding of new cattle breeds and the research, development and integration of efficient cattle breeding technology in southwest China, it has established a stable industry-university-research deep integration technology innovation system with Sichuan Animal Sciences Academy and Sichuan Beef Cattle Innovation team. Since the reform and opening up, it has won eight national, ministerial (provincial and municipal) scientific and technological achievements awards such as the First Prize of Scientific and Technological Progress in Sichuan Province, and the First Prize of Shennong China Agricultural Science and Technology Award of the Ministry of Agriculture. The transformation and application of scientific research achievements have promoted the scientific and technological progress of the beef cattle industry in Xuanhan County, and significantly improved the quantity of products and the comprehensive efficiency of animal husbandry production.

## 2 Analysis of the degree of resource accumulation

**2.1 Analysis of forage resources** Xuanhan County is a large

animal husbandry county, and has 1 850 square kilometers of grassy mountains and slopes, rich in grass resources and crop straw, which is very conducive to the development of cattle industry. It has been listed as the national demonstration county of using straw for cattle breeding and the national commercial cattle base county. In 2019, the planting area of high-quality forage grass in the county was 15 206.67 ha, including 3 333.33 ha of silage corn, with an annual output of forage grass at 727 100 t. The total capacity of silage ponds built in the county reached 1.12 million cubic meters, and the annual treatment and utilization amount of straw reached 351 100 t. The forage resources within the range of breeding are sufficient, which can be used as a guarantee for the development of beef cattle industry.

**2.2 Analysis of land carrying capacity** According to the *Technical Guide for Pollution Prevention and Control of Livestock and Poultry Breeding in Sichuan Province (Trial)* [ChuanNongYe-Han(2017)No. 647]<sup>[1]</sup>, under unconstrained conditions, based on the evaluation and measured value of livestock and poultry carrying capacity of cultivated land in Sichuan agricultural area, the livestock and poultry breeding capacity of cultivated land (agricultural land + economic forest land + artificial forage grassland) in Xuanhan County and villages and towns was determined. While keeping the quantity of other livestock and poultry unchanged, all the remaining space is used for the development of beef cattle. Under suitable carrying conditions, Xuanhan County can add 114 700 head of beef cattle. Most villages and towns in Xuanhan County still have room to develop beef cattle breeding, including Dongxiang, Qingxi, Nanba, Hujia, Maoba, Shuanghe, Dacheng, Hongling, Xiaba, Tahe, Changxi with carrying space of 3 000 to 6 000 head (Fig. 1).



Note: Carrying capacity = suitable bearing capacity - actual load; The calculation process is measured in pig units and it is converted into cattle unit according to the conversion standard of 5 pig units for one beef cattle.

**Fig. 1 Evaluation of suitable carrying capacity of arable land for beef cattle in agricultural areas of villages and towns in Xuanhan County**

**2.3 Analysis of market and circulation resources** Xuanhan County is 32 kilometers away from Dazhou City and 260 kilometers from Chongqing Municipality. Xiangyang – Chongqing Railway, Sichuan – Shaanxi Expressway and Dazhou – Wanzhou Expressway run through the county. We can make full use of the market resources in Sichuan, Shaanxi, Chongqing and other regions. The outstanding location advantages and open market provide efficient resource allocation and consumption space for the large circulation of beef cattle products in Xuanhan County.

### 3 Existing problems

**3.1 Lack of scientific layout and unobvious form of modern agricultural industrial park** Xuanhan County has the advantage of characteristic industry of Shuxuanhua cattle, and the primary, secondary and tertiary industries developed around Shuxuanhua cattle have already had a certain foundation, however, it needs to be further optimized and scientifically laid out in the aspects of planting and breeding cycle, accumulation of resource elements, strengthening processing industry and promoting the deep integration of the three industries.

**3.2 Low benefit of cow breeding and gradual decrease of population** Xuanhan County is limited by mountain and hilly environment, and the breeding method of cows is mainly barn feeding. With the increase of labor and transport costs year by year, the feeding cost of cows is high, the comparative benefit is low, and the breeding population decreases year by year. As a breed of dairy and meat cattle, Shuxuanhua cattle has an annual milk yield of about 4 t. Farmers can increase their income by selling milk. However, due to the lack of third-party dairy testing institutions such as milk stations, farmers are unable to provide milk quality testing data to dairy companies, so that the milk performance of Shuxuanhua cattle can not be brought into full play, limiting the number of cows.

**3.3 Weak processing enterprises and slow development of the secondary industry** The beef processing link in the county is relatively weak, lacking leading science and technology enterprises, with short industrial chain and low added value. At present, there are 5 beef product factories, only 3 are in production, and the main products are snack foods such as dehydrated beef with high market saturation and small market share. There is a lack of slaughtering and processing enterprises capable of producing chilled meat, pre-conditioned food and high-grade beef products. The slowness of the processing industry seriously restricts the rapid and healthy development of the cattle industry in the county.

**3.4 Low degree of industrialization and organization and non-standard transaction order** The development of professional cooperative economic organizations lags behind, and the degree of organization of farmers is low. There is no scientific interest connection mechanism among enterprises, specialized rural cooperatives and farmers, and the ability to share interest and risk is poor. The main channel for farmers to sell is cattle brokers, and cattle sources and prices are basically in the hands of cattle brokers. Most of the profits are earned by cattle brokers, which greatly dampened the enthusiasm of farmers to raise cattle.

**3.5 Insufficient capital investment and poor breeding conditions** The overall financial input is low, the loan guarantee and anti-guarantee mechanism have not yet been formed, so it is difficult to raise cattle with loans. Most of the farms or barns have simple facilities, some farms have imperfect infrastructure, the degree of facility and mechanization is low.

## 4 Development measures and suggestions

**4.1 Building modern beef cattle industrial park to promote rural revitalization** It is necessary to focus on the "10 + 3" industrial system, give full play to the breed advantages and industrial foundation of Shuxuanhua cattle in Xuanhan County, and make a scientific layout. According to the carrying capacity of livestock and poultry in villages and towns in Xuanhan County, agricultural industrial parks should be established in townships and towns such as Dacheng, Hongling, Juntang, Dongxiang, Xiaba, Nanba and Tahe. With the standardized breeding of high-quality beef cattle as the core, it is necessary to develop scientific and technological innovation leading zones, service sales exhibition zones and cold chain logistics processing zones. According to the model of "one core and three zones", it is necessary to build the breeding base of Shuxuanhua cattle, the production base of high-quality commercial cattle and the production base of high-quality forage grass to expand the primary industry. It is necessary to cultivate leading scientific and technological enterprises, improve the level of processing, improve the configuration of the industrial chain and strengthen the secondary industry. It is necessary to build an online trading platform, link with supermarkets, establish cold meat distribution stations, and expand market share. Based on the tourism industries such as Bailixia and Yanglie water town, it is necessary to focus on Tujia culture and cattle culture, to create a unique culture and travel system of Xuanhan, develop new business type, promote the integration of the three industries, and actively promote the implementation of the strategy of rural revitalization.

**4.2 Focusing on quantity and quality improvement and broadening the sales market** The main purpose of "quantity improvement" is to increase the feeding amount of cows, especially the number of improved cows and the number of cattle soon to be taken to market, so as to increase beef production. The main purpose of "quality improvement" is to improve the degree of fine breed, the level of per unit yield and product quality, develop safe and high-quality beef products that meet the diversified consumer needs of the market, and promote the quality of beef cattle industry. It is necessary to train and support all kinds of intermediary organizations and brokers, give full play to the role of professional cooperatives and family farms, make the farms directly sell products, develop e-commerce, and establish a diversified circulation system.

**4.3 Accelerating the cultivation of leading enterprises and adhering to the establishment of brands** It is necessary to cultivate leading enterprises at all levels, high-tech enterprises and other famous brand enterprises by means of investment introduction and asset reorganization. It is necessary to actively create famous

(To page 42)

Kimura et Migo will be divided according to the ratio of 5:5. "3" is the "three-change" reform, that is, turning resources into equity, turning funds into equity funds and turning farmers into shareholders, in order to maximize the use of financial poverty alleviation funds and drive poor households to get rid of poverty and become rich.

## References

- [1] ZHANG YG. Effect of geo-ecologic environment for the poverty-stricken karst regions in Southwest China[J]. *Carsologica Sinica*, 1995, 14(1): 71–76. (in Chinese).
- [2] Chinese Academy of Sciences. Some suggestions on promoting the comprehensive control of rocky desertification in Southwest China[J]. *Advances in Earth Science*, 2003, 18(4): 489–492. (in Chinese).
- [3] YANG ZS. Land consolidation and soil and water conservation benefits of karst rocky desertification in Southwest China[M]. Beijing: China Science and Technology Press, 2009. (in Chinese).
- [4] Central Committee of the Communist Party of China, The State Council of the People's Republic of China. Outline of poverty alleviation and development in rural China(2011–2020)[M]. Beijing: People's Publishing House, 2011. (in Chinese).
- [5] National Committee for Zoning of Agriculture Areas. Technical specifica-

tion for land use investigation[M]. Beijing: Surveying and Mapping Press, 1984. (in Chinese).

- [6] YANG ZS, LI YH, ZOU Z, *et al.* Study on the land resources development and utilization planning of Yunnan Province in the western development of China[M]. Kunming: Yunnan Science & Technology Press, 2003. (in Chinese).
- [7] YIN JQ. Discussion on the main management models for ecological recovery of rocky desertification areas in Guizhou[J]. *Guizhou Forestry Science and Technology*, 2005, 33(3): 52–56. (in Chinese).
- [8] YU S, DAN XQ, WU XB. Discussion on comprehensive management model of rocky desertification land[J]. *Central South Forest Inventory and Planning*, 2003, 22(3): 18–20. (in Chinese).
- [9] YANG ZS, LIU YS, BAO GG, *et al.* Rehabilitation and sustainable use pattern of rocky-desertified land in southwest China's poverty-stricken karst mountainous areas: A case study in Benggu Township, Xichou County, Yunnan, China[J]. *Journal of Mountain Science*, 2006, 3(3): 237–246.
- [10] QIU DS. Introduction of *Dendrobium officinale* Kimura et Migo[J]. *World Tropical Agriculture Information*, 2019(9): 29. (in Chinese).
- [11] HE C, HE XH. Guizhou: "Life-saving herb" adds new army for industry poverty alleviation[N]. *Science and Technology Daily*, 2019-04-22. (in Chinese).

(From page 37)

brand bases and famous brand products, and create famous and well-known brands and trademarks. It is necessary to establish a safety traceability system to achieve security and enhance the credibility of the brand. Through the implementation of brand strategy, it is necessary to enhance market competitiveness, increase added value and improve industrial efficiency.

**4.4 Strengthening organized production and developing the whole industry chain model** It is necessary to support and cultivate leading enterprises such as professional cooperatives and enterprise entities, and improve and implement the industrialization operation mode of "leading enterprises + specialized cooperatives + family farms". It is necessary to establish a reasonable interest connection mechanism to form an economic interest community with shared risks and benefits between the leading enterprises and the broad masses of breeders. It is necessary to improve the degree of industrial organization and industrialization, and enhance the ability of the market to resist risks. It is necessary to give full play to the leading role of the government and industry departments, strive to promote the new model of the whole industrial chain of beef cattle, and build a new industrial system, production system and management system of beef cattle.

**4.5 Improving the animal husbandry guarantee system to protect safe and efficient production** It is necessary to further improve the fine breeding system, the animal disease prevention and control system, the quality and safety monitoring system of animal products, and the science and technology promotion system, so as to effectively ensure the safe and efficient production of the cattle industry. It is necessary to further strengthen the collaborative innovation of "industry-university-research-application" and establish a scientific and technological support system in Xuanhan County. It is necessary to build an industry-university-re-

search-application collaborative innovation alliance with enterprises as the main body, implement innovative development demonstration projects, and strengthen the training of innovative and entrepreneurial talents. It is necessary to implement the strategy of scientific and technological innovation drive, and give policy and financial support to scientific and technological personnel in leading breeding farms, technical guidance, and subject research, so that the value of scientific and technological personnel can be fully reflected.

**4.6 Strengthening financial investment and establishing a social diversified support system** In view of the actual development of the cattle industry, the government and various departments should increase the capital investment in beef industry projects, realize the effective connection between the supporting projects and the key projects in the construction of modern agricultural parks, and promote the effective implementation of the construction of agricultural parks. It is necessary to integrate existing policy resources and funding channels, and guide credit funds, insurance funds and private capital to invest in the beef cattle industry. It is necessary to establish a diversified input support system to promote the scientific and sustainable development of the cattle industry and help farmers to increase their income<sup>[2]</sup>.

## References

- [1] Department of Agriculture of Sichuan Province, Environmental Protection Department of Sichuan Province. Technical guide for pollution prevention and control of livestock and poultry breeding in Sichuan Province (trial) [S]. <http://www.ygsite.cn/show.asp?id=68048>, 2018-08-13. (in Chinese).
- [2] FU MZ, WU ZL, YI J. Development status and countermeasures of beef cattle industry in Xuanhan County[J]. *Prataculture & Animal Husbandry*, 2017, 38(1): 73–76. (in Chinese).