

# **SURVEY REPORT FOR PRESENT SITUATION OF TECHNOLOGY SYSTEM OF CHINA RABBIT INDUSTRY NATIONAL SURVEY GROUP FOR TECHNOLOGY SYSTEM OF RABBIT INDUSTRY**

**Liu Hanzhong**

Sichuan Academy of Grassland Sciences, Chengdu, 611731, China  
Corresponding author: gj@caaa.cn, leesinglee@gmail.com

## **ABSTRACT**

Through the survey of China rabbit industry in main rabbit production provinces/cities, we know the basic situation of rabbit production, development status of rabbit products, organization level of rabbit industry, technologies research, and existing main questions in China, which will provide the scientific basis for building a modern rabbit industrial system for decision-maker.

**Key words:** Rabbit, Industry, Technology system, Survey.

## **INTRODUCTION**

The investigation was carried out in 11 main rabbit production provinces/cities including Sichuan, Shandong, Hebei, Henan, Jiangsu, Hujian, Chongqing, Zhejiang, Shanxi, Anhui, and Beijing. Through the efforts of experts, and the strong support of the leading institution of each province, the leading expert (Liu Hanzhong) of investigation group summarized and formed this survey report. It will provide the scientific basis for building a modern rabbit industrial system for decision-maker.

## **MATERIALS AND METHODS**

This survey was conducted in provinces/cities which rank top ten in Chinese rabbit industry for 5 years and Beijing where China Agricultural University lies. This survey adopts a multi facet approach such as referring to production report form of rabbit industries over the past 10 years, surveying in the processing enterprises and cooperative organization of rabbit industry, telephone interviews, visiting farmers, and so on. Datum on rabbit technology system in China was collected and analyzed. It is hope it will provide the scientific basis for sustainable and healthy development of a rabbit industry for decision-makers.

## **RESULTS AND DISCUSSIONS**

### **The basic situation of rabbit industry**

#### *General production situation*

China is a main rabbit raising country with a yearly rabbit meat production of 600,000 tons, 10,000,000 tons of Rex Rabbit fur and 10,000 tons of wool, Chinese production of rabbit meat accounted for 1/4 of world total. The export of rabbit wool accounted for 90% of world trade, and China is the sole country for exporting Rex-Rabbit fur and its products. In 2006, the stock number of domestic rabbit was 23,520,230 and lay out 444,068,600 in China. This was an increase of 2.6% and 8.62% respectively compared with 2005. The amount of rabbit meat, rabbit wool and skin amounted to 636,407,980 kg and 10,000,000 kg, 15,000,000 in 2006, respectively while rabbit meat increased by

10% compared with in 2005. The increase of rabbit wool and rex-rabbit fur were even more. Rabbit industry is a fastest growing industry in China's animal husbandry.

*Obvious regional advantages for rabbit rearing*

In the 10 main rabbit raising areas (except Beijing where there was no statistical data of production) investigated, the stock number was 168,993,200 or about 71.85% of the total national number in 2006; the lay out number was 336,500,000, and accounted for 75.78% of national total. According to yearly lay out number, the ranking was Sichuan, Shandong, Henan, Jiangsu, Chongqing, Fujian, Hebei, Zhejiang, Shanxi and Anhui. In Sichuan and Shandong the numbers were 160,270,000 and 67,000,000 respectively. By meat-rabbit production the ranking was Sichuan, Shandong, Henan, Jiangsu, Chongqing, Fujian, Hebei, Zhejiang, Shanxi and Anhui.

*Abundant resource of rabbit varieties, more optimized structure for rabbit industry*

In the initial phase of rabbit industry, rabbit was raised only for its meat. With changes of demands for rabbit wool and Rex-Rabbit skin at home and abroad markets, there was restricted export of rabbit meat the meat-rabbit declined in some provinces, but the performance was significantly improved. The gestation period for 2.5 kg commercial meat-rabbit dropped from 100 days to 80-90 days. The development for Rex-Rabbit is quicker than meat-rabbit and wool-rabbit, the number increases from about 5,000,000 in 2000 to 15,000,000 in 2006, and its performance and economic benefits are higher than meat-rabbit and wool-rabbit obviously. The number of wool-rabbit is stable and maintains around 50,000,000. China is rich for rabbit germ plasma resources. There is over 60 varieties of meat rabbits. The varieties of meat-rabbit introduced are Belgium Rabbit, Germany Huge Rabbit, French chinchilla, French Lop, New Zealand White Rabbit, Japanese White Rabbit, Denmark Rabbit, German Giant Rabbit, and 4 lines and 3 lines crossbreed of French Hyla, Buletania and Elco Rabbit. Cultivated varieties of meat-rabbit in China are Harbin White Rabbit, Saibei Rabbit, Yufeng Yellow Rabbit, Fujian Black Rabbit, Qixing Meat-rabbit, Taishan Meat-rabbit, Lianshan Black Rabbit, Rapid growth breed of New Zealand White Rabbit, etc, Angora Rabbit introduced are German breed, French breed and Japanese stock, and cultivated angora rabbit in China are Pearl Angora Rabbit, Rongjing Angora Rabbit, Qimeng High Performance Angora rabbit and Laiwu Angora Rabbit with black ear. Based on Rex-rabbits of America stock, German stock and French stock, cultivated Rex-rabbits in China are Sichuan White Rex-rabbit and Jirong Rex-rabbit.

*Rabbit industry become an important industry for increasing farmer's income*

With the development of modern animal husbandry, the animal breed structure in animal husbandry has changed. Rabbit industry, an emerging industry with high economic value and notable market prospect, has unique advantages in animal husbandry. Local government and farmers recognize that rabbit industry has potential market value, even though the industry is small in number. The products such as meat, skin and wool have special economic value. Furthermore, the rabbit industry is the effective method for meat production for its high reproduction and meat production rate. Rabbit industry has high productivity, fine quality, low energy consuming and high efficiency, so it is a suitable economic project for developing the modern agriculture. Rabbit is food saving animal, with low investment and high income, it is effective for increasing farmer's income. It is said, "If one family has several rabbits, it will not lack oil, salt and vinegar", "if one family has one hundred rabbits, it will not lack clothes and pants", and "if one family has one thousand rabbits, it will not lack building". Rabbit industry is becoming an effective approach for increasing the income of local farmers, unemployed youths in city and laid-off workers.

*Rabbit industry promote the well development of ecological agriculture*

There are a lot of grasslands and agricultural byproducts in China, so we have enough forage and agricultural byproducts for rabbit industry. Feeding ten million commercial rabbits need at least 40,000 t forages. At present, with developing rabbit industry, the utilization of straw is greatly improved; even some rabbit warrens (big warrens) buy forages from outside. Furthermore, rabbit dung can produce biogas and the by product as manure in the field; or rabbit dung can be processed for fish food and by product as manure in field. Rabbit dung can improve soil structure and increase the content of organic matter, which can be used for producing pollution-free vegetables and fruits with

average increase of 10% in the output. Also, planting forages (for food for the rabbits )in uninhabited hill and riverbed can improve the ecological environment, which helps adjust agricultural structure and resolves the dispute of human and animal for food.

#### *Cooperative Organization of Rabbit Industry*

##### Cooperative organization of rabbit industry develops fast.

17 cooperative organizations were surveyed- 3 in Sichuan, 5 in Shandong, 2 in Henan, 2 in Hujian, 1 in Zhejiang and 4 in Jiangsu, with 49,881 households. The top 5 organizations have enrolled members of 45,740 households, which accounted for 91.7%. The biggest cooperative organization is rabbit industry association of Yilong County in Sichuan, which enrolled 15,800 households.

##### Diversified cooperative production patterns of rabbit industry

Main rabbit raising areas In China have abundant resources. With the demands of developing domestic and foreign markets, production patterns of rabbit have diversified in recent years. In breeding facilities for example, Shandong Qingdao Kangda Enterprise has adopted foreign production pattern of meat-rabbit industry. It has developed the famous fine breed reproduction base and demonstration base of pollution-free meat-rabbit in China, and a chain meat-rabbit enterprise. Leading enterprise is responsible for food export security and improved large-scale management of meat-rabbit remarkably, leading more than 20,000 households to develop unified, standardized and centralized rabbit raising regions. In Sichuan, Jiangsu, Henan, Fujian and Zhejiang, the patterns were based on large scale of households raising as the unit and raising region as the management unit. It is beneficial for improving the systematization of production, optimizing rural living conditions and improving the extension of advanced technology, criterion service, achieving connection for market and household, obtaining development simultaneously.

#### *Leading Enterprises*

##### Processing leading-enterprises of rabbit develop fast

Amongst the 41 processing leading-enterprises of rabbit studied including 5 enterprises in Shandong, 2 in Sichuan, 8 in Henan, 5 in Fujian, 3 in Jiangxi, 1 in Zhejiang, 5 in Jiangsu, 4 in Anhui and 5 in Chongqing, 10 enterprises have production value of over 100 million Yuan RMB (5 in Shandong,2 in Sichuan, 1 in Shanxi, 1 in Hebei and 1 in Zhejiang).

##### Obvious export priority of processing leading-enterprises

In Shandong the fine rabbit products processing enterprises were ranked at forefront in China and involved over 20 large-scale rabbit meat processing enterprises with 11 enterprises having registered with the Europe Union. These enterprise have a yearly production of 50,000 kg of frozen rabbit meat. Processing of rabbit wool include grading raw material and exporting spinning made of rabbit wool, and products of rabbit wool are quilts and clothes. Zhejiang Shengzhou Animal Product Co, Ltd. has the capacity of processing 300,000 kg rabbit wool spinning, and purchasing, processing and exporting 1000,000 kg rabbit wool every year; Processing of Rex-rabbit fur has been developed later, but rapidly.

##### Diversified rabbit products

Rabbit products have developed from sole frozen rabbit meat to rabbit leather, rabbit spinning. At the same time, to explore abroad and home markets, it has extended the market from sole EU market to multi-national international market; the products have been distributed to more than 20 country and regions.

## **Rabbit research and development**

#### *Possessing high-level and specialized research staffs*

There are 104 senior scientific and technical staffs to carry out rabbit industry research and technology extension in investigated provinces/cities, which composed of research institutions, universities, extension and research and development staffs in enterprises among of them,, 38 with professor title, 51 with associated professor title, 15 with above masters degree. By education background there are

20 PhDs, 24 Masters, 50 undergraduates. Young researchers are gradually becoming bigger in number in the research and development of rabbit industry in China. Now most researcher and technology extension staffs are around 40 years old, which provided human resources for developing China's rabbit industry.

#### *Forming the research and development system focus on Sichuan, Shandong and Jiangsu*

In recent years it has carried out effective work with support from national, ministry and provincial level. In Sichuan, there are group research teams composed of Sichuan Academy of Grassland Sciences, Sichuan Academy of Animal Sciences, Sichuan Agriculture University, Sichuan University etc. They have made new research achievement from breeds cultivating to rabbit meat and rabbit fur processing. 3 local new-strains of rabbit named "Sichuan white rex-rabbit", "Qixing meat-rabbit" and "Rongjing angora rabbit" have been cultivated; In Shandong, there is a research team comprising of Shandong Academy of Agriculture Science, Shandong Agriculture University, Large-scale processing Enterprises. The Ministry of Agriculture has invested 5 million Yuan RMB to build the sole national performance test station for breeding rabbit in Shandong. These test stations, which carry out measurement of breeding meat-rabbit, angora rabbit and rex-rabbit performance in China. A lot of works have been done on rabbit selection and breeding, effectively feeding, disease control and prevention, rabbit meat/fur processing and comprehensive utilization field in Shandong There is a research team composed of Jiangsu Academy of Agriculture Sciences, Yangzhou University and Jiangsu Agriculture Department, which have conducted key projects such as SPF rabbit breeding technology, rabbit vaccine manufacture from the Ministry of Agriculture, it was ranked in forefront of rabbit diseases research, and put into industry production for rabbit vaccine. Moreover, Hebei and Fujian were setting up regional system for research and development based on Hebei Agriculture University and Fujian Academy of Agriculture Sciences. A well developed regional research and development center for rabbit industry was established.

#### *Widely research field and level improving*

106 projects have been implemented from national, ministries and provincial departments since 1996 in investigated 11 provinces or cities, therein 12 projects came from national level, 92 from provincial, and 2 from others. Research has covered all aspects of rabbit research from rabbit breeding, standardization, comprehensive feeding technique, vaccine manufacturing and rabbit products development. Molecular biology techniques, genetics and breeding technology have been used in researches.

#### *Research condition further improved*

22 national and provincial research and development basis have been established in 11 investigated province or cities, in which there are 1 national base, 4 provincial key laboratories, 5 provincial engineering and technology research centers, and 12 others. Some universities have better equipments such as Shandong Agriculture University, Yangzhou University and Henan Science and Technology University, which own 6 equipments in Shandong Animal Institute of Shandong Academy and 3 equipment in Sichuan Academy of Grassland Sciences with a prize of more than 100,000 Yuan RMB. The equipment facilities have improved very much compared with that in 80's and 90's.

#### **Main problems in technology system of rabbit industry**

Research system of integrated "enterprise -university-institute" is not yet formed due lack of establishing effective and sustainable mechanism for research investment.

### **CONCLUSIONS**

From this survey, main production areas and breeding scale of rabbits were identified. These would provide a scientific base for chartering the layout frame of the rabbit industry, development of processing rabbit product, and international trade and cooperation. Also this survey shows a technology based system is needed for China rabbit industry. Finally it shows the main problems in

the technology system of rabbit industry and technical problems have to be resolved urgently in the rabbit industry.

### REFERENCES

Annual report forms of China livestock production for 2000-2006.

Du Yuchuan, Ying Chengye 2006. Development situation of China rabbit industry. *China Animal Husbandry Bulletin*, 18, 42-44.

Gao Wenqing 2007. Industrial operation of rabbitry and its development strategy. *Chinese Journal of Rabbit Farming*, 4, 3.

Liu Hanzhong 2007. Survey Report for Present Situation of Technology System of China Rabbit Industry. *Chinese Journal of Rabbit Farming*, 6, 3-5.

