



Low-carbon, ecology-oriented research on optimizing the export competitiveness of animal derived foods in Hunan province

Xing Liu

¹School of Business, Central South University, Changsha, China

²School of Business, Hunan International Economics University, Changsha, China

ABSTRACT

Hunan province is a large exporter of Animal Derived Foods in China, ranking highly in the country. This study begins from the current export situation existing problems of Animal Derived Foods of Hunan province in recent years, explores the causes of such problems, and proposes the measures on ecological design for these existing problems, so as to advance an export Animal Derived Food raw materials supply, production and processing, corporate management and governmental regulatory mode that both adapts to the actual circumstances of Hunan and also meets international standards, thus promoting a healthy development of the animal husbandry in Hunan province and actively boosting its exports.

Keywords: ecology-oriented research, Animal Derived Foods, export competitiveness, HACCP mode

INTRODUCTION

Animal Derived Food refers to all edible animal tissues, as well as eggs and milk, including meat and its products (including animal internal organs), aquatic products, and so on.

Animal Derived Food in Hunan province has been a traditional advantage industry for making export for many years. But, in recent years the issues of pesticide and antibiotics residues, environmental pollution, and carbon emission limit seriously impede the full display of this advantage in international market. In addition, the trade barriers of most importing countries of Animal Derived Food in the world tend to be increasingly serious, demanding for increasingly strict conditions, which make Chinese Animal Derived Food export basically under a difficult situation. For such a big agricultural province like ours, it is imperative to find a way that can guarantee Animal Derived Food quality and promote external export on one hand, and adapt to the existing Chinese economic and technological level and to the Chinese circumstances.

EXPERIMENTAL SECTION

Being a typical agricultural province, Hunan province is suited to the development of animal husbandry. Among the various types of Animal Derived Food, live pigs and fresh and frozen pork products are the dominating exports, accounting for 83.14%; the exports of fresh and frozen beef come in second, accounting for 10.01%, aquatic and fish exports come in third, and followed by the exports of poultry and frozen chicken.

Hunan province grows abundant types of livestock and poultry, of which the Ningxiang pigs, Xiangxi black pigs, Wuling (Xiangxi cattle), Lingxian white geese, youxian grey ducks, a total of 5 species, have been listed in the national conservation directory of livestock and poultry genetic resources. Local livestock and poultry and local fishery resources such as Shaziling pigs, Xuefeng black bone chickens, Youxian grey ducks, Linwu ducks, Binghu buffalos, Xiangdong black goats, Matou mountain sheep, Jiuyi mountain rabbits, Mandarin fish, four domestic fish

species, South large mouth catfish, Xianghua mud carps, and Wuchang fish have been protected and developed, forming featured industry with relatively large scale and advantage.

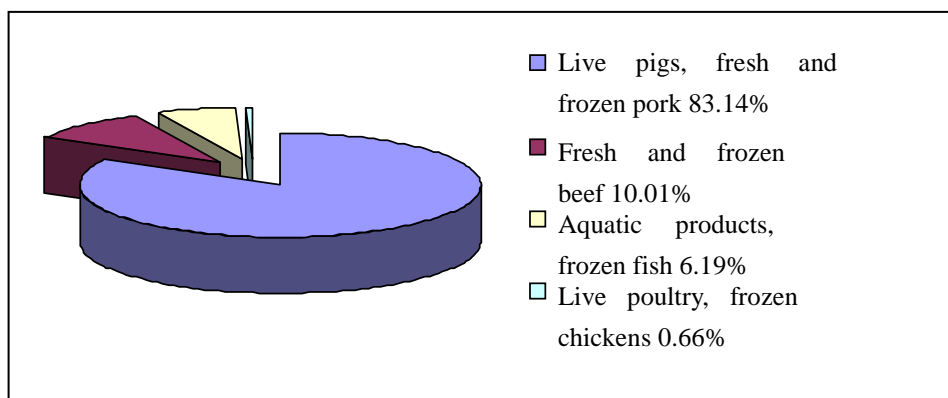


Figure 1. 2011-2012 export share of Animal Derived Food products in Hunan province
(Data source: compiled by the author according to the 2010-2011 Statistical Yearbook of Hunan)

Meat product exports of Hunan are mainly dominated by live pigs and pork products. Live pigs are all exported to Hong Kong and Macao, of which 89.9% to Hong Kong and 18.1% to Macao. pork products are the first largest animal products export in Hunan, the export market is mainly Hong Kong and Macao, accounting for nearly 90% and the rest are exported to Japan, Kyrgyzstan, Republic of Korea, Vietnam, Singapore, Malaysia, and other countries.

Beef is mainly exported to Hong Kong, Macau, Malaysia, Singapore, Russia, and other countries and regions. Among the countries that import chicken and its products from China, Japan is the largest importer in terms of amount, followed by Malaysia. As the "land of rice and fish", exports of fresh water products in Hunan province has been ranked among the top five in the country. Smoked, dried, and salted fish products are exported to Eastern Europe in large quantity; salted silver carp and bighead carp products are exported to Southeast Asia and Central Asia through the southwest and northwest frontier trade; fried flavor foods made of red swamp crayfish and Freshwater *shrimp* are popular in Europe and America; live herrings, eels, and loach fishes are directly sold to Hong Kong and Macao.

In recent years, the meat industry in Hunan province has been rapidly developing. However the international competitiveness of Animal Derived Food products in Hunan province was very weak, only accounting for 1.45% in the world market share. The main reason is that "due to diseases, pesticide residues and higher carbon content, Europe, the United States, Japan and other developed countries refuse Animal Derived Food from our country based on non-guarantee of meat quality and safety."

By a comprehensive analysis, the low international competitiveness of products is due to the following several reasons:

1. Single product structure, low proportion of processing

Due to the high percentage of manual or half machinery slaughtering and agent slaughter operation, insufficient technological update and transformation, the market features a situation of "four more and four less" (that: more carcass meat, less cut meat; more hot meat, less cold meat; more bulk sold meat, less packaged meat; more high temperature products, less low temperature products), the meat products are single in form, without distinction.

Take pork for example. 90% of the pork products in our province are exported to Hong Kong and Macao, and the remaining part is exported to neighboring countries, but difficult to enter the high-end markets of Europe and America in the form of high quality or high price. Among the export of pork products, carcass and frozen meat occupy a large share, while cut meat, chilled meat, and small packaged meat occupy a small share, with more raw meat products but less cooked meat products; more high temperature meat but less low temperature meat products; more low-end quality products but less high-end quality products; more primary and medium processed products, but less fine and deep processed variety. Accordance with standards of Europe and America, after processing a pig can be processed into more than 200 products, while the vast majority of enterprises in our province can only process into more than 80 products, less than half of the designed processing capacity. The technology and processing of pork are low, the overall export competitiveness is not obvious.

2. Quality and safety management not in place

In terms of meat production procedures, animal diseases and veterinary drug residues are the important factors affecting the quality and safety of meat products in Hunan province. On one hand, there are a variety of class A animal diseases that are not under effective control or have been eliminated, thus directly affecting the export of Animal Derived Food. On the other, the excessive residue of veterinary drugs is a serious problem in China, excessive residues of veterinary drugs in animal export products have been detected many times, which not only caused repeated export prohibition, but also seriously affected the international reputation of the products. Due to the effects of quality and safety, the international competitiveness of Animal Derived products has been greatly reduced.

3. Higher energy consumption and pollution

More than half of the freezing processing and storage facilities of China's meat enterprises were constructed before the 90s of the last century, with ageing equipment and facilities, and high energy consumption, which cannot adapt to the environmental protection and energy-saving requirements of production and storage.

Crops for raising livestock require large amounts of water, which reduce rivers and water sources to a dangerous level. Nitrates, pesticides and growth hormones in livestock excrement contaminate the soil, rivers and lakes, leaving large areas without safe drinking water. The demand for animal proteins consumes a large amount of coal, oil and gas.

The high cost of implementing the carbon labeling system would also hinder the access of some agricultural products of developing countries. Compared with developed countries, low-income developing countries, due to their less use of large agricultural machinery, greenhouse facility, processing equipment and fertilizers, would have certain degree of advantage in low carbon emissions in the production of agricultural products. But the high cost of carbon emission testing is difficult for many developing countries to afford (O. Nartova, 2009). In the future international trading environment, lack of carbon labelling would mean the loss of opportunities to participate in international competition, which will reduce the share of agricultural exports of developing countries.

RESULTS AND DISCUSSION

Under the impact of the sluggish global economy, concerning the increasingly acute export situation, considering the status of Animal Derived Food export in Hunan province, the author proposes the following corresponding countermeasures.

1. Implementation of quality and safety management by HACCP mode

HACCP (Hazard Analysis and critical control point) is by far one of the most effective and scientific approach to food safety and quality management.

With HACCP method, the key control points can be identified through Hazard Analysis of each link during the green poultry and livestock feeding management process; to make effective monitoring and correction measures on potential hazards of the key control points, and to establish archives and records on the key control points, to formulate HACCP system work table for green poultry and livestock feeding management; to draw green poultry and livestock feeding management process hazard analysis table and green pig feeding management HACCP planning table, and thus to build a preliminary green poultry and livestock management HACCP mode. In this way the potential hazards in the feeding and management process can be effectively controlled.

2. Actively promoting ecological farming model with features of garden-like and low-carbon breeding

Farmers should be vigorously guided to change the traditional breeding concept to developing a low-carbonized breeding and adopting an ecologically-led animal husbandry that features four aspects into one, that is, "grain - feedstuff - biogas - fertilizer", in which the grasses and feedstuff feed the livestock, the livestock manure fertilizes the farmlands. A forceful development of low carbonized breeding can achieve centralized sewage treatment and emissions requirements after fermentation.

A total of 1.52 million biogas pools were built across Hunan province, with yearly processing capacity of 13 million tons of animal manure. The province has been actively promoting "two projects and two combinations", that is, converting cropland to grasslands, breeding by straws, pig and fish combination, planting and breeding combination. To speed up the development of ecological aquaculture by enhancing breeding resource recycling so as to achieve a virtuous cycle of integrating the leading livestock industry and agriculture and animal husbandry development.

In Xinjie community, Puji Town, Liuyang, there is a "zero emission" demonstration farm in Hunan Province---the

pig farms of Liuyang Fuhua Ecological Agriculture Development Co., Ltd. People can be permitted to enter after ultraviolet ray, atomization, decontaminating solution and several sterilization procedures. Here there is no stink, no excrement cross-flowing, only there are occasional grunts from pigs. This 12,000 square meter pig farm with biological fermentation has truly realized “zero emission” of excrement.

3. Implement ecological function regionalization & develop local featured breeding by local good species

Ecological function regionalization is important guarantee to realize the sustainable development of agriculture. Dividing Hunan into several ecology districts according to the resource characteristics and the difference of ecological system helps to set the directions and the agricultural functions for each district. Featured products are usually preferred in international and domestic markets, subject to very small market impact. There are many excellent local species in Hunan province, such as Wugang copper geese, Linwu ducks, Taoyuan chickens, Ningxiang pigs, Hunan yellow chickens, Liuyang black goats, and so on. Local governments, animal husbandry administrative departments, and agriculture-related companies should take full advantage of these local species to forcefully advocate and support these species so as to make these local featured species into international famous brands, where possible.

4. Improve the eco-efficiency and construct a featured model of industrial organization

Eco-efficiency describes the upgrade of economic and ecological improvements in agricultural development, it's an effective tool of integrating the sustainability into farm management and combining the economic value and environmental value. The government should establish the layout for ecological agriculture construction, strengthen peasants' concepts of constructing ecological agriculture. Encourage agricultural industries to raise the utilization rate of resources, enhance the feed efficiency, to reduce the emission and to construct technical support system of circular agricultural in this hilly area in southern China.

Currently, the animal derived food industry of Hunan should take full advantage of its advantages in location, resources, and low labor costs, and construct a featured mode of industrial organization: “breeding, processing + establishing export bases.” This mode is designed to advocate its strengths and avoid its weaknesses so to break through the technological and trade barriers both at home and abroad encountered by Hunan's agricultural exports.

5. Establish international standardization system for poultry meat products, improve green industry level

China green food industry grows up gradually in recently years. Under the market economic environment, green food industry can bring along the development of agricultural exports.

The current production standards for animal derived food products are confusing, with 70~80% of the technical standards lower than international standards and advanced overseas standards. But the poultry meat exports are subject to the production and inspection standards of international and developed countries. Therefore, concerned government departments should learn from the successful experience of foreign developed countries on standardization, should speed up the standardization construction pace so as to meet international standards and practice during implementation.

CONCLUSION

With the governmental emphasis, constant development and gradual perfection of the industry, and deepened research of green breeding technology, the control mode “from source to end, from farmland to table” will inevitably bring new thought to the development of eco-production of animal derived food in our country. It is believed that taking effective ecological measures will greatly improve the export trade of animal derived foods in Hunan province.

REFERENCES

- [1] Statistical Yearbook of Hunan Province- **2011**
- [2] Statistical Yearbook of Hunan Province- **2012**
- [3] Bai Lin; Li Xuewei; Gong Lanfang, *Journal of Sichuan Agricultural University* (**2009**) (02)
- [4] Deng Desheng, Yang Lihua. *Productivity Studies*, **2007**, (7)
- [5] Zheng Junting. Obstacles to the green marketing implementation of agricultural products and countermeasures [J]. *Modernization of Shopping: early magazine*, **2006**, (3)
- [6] Liu Xia, Tang Wanjin, Cheng Kuitong, Zheng Feng. Implementation of HACCP by Chinese enterprises and its diffusion mechanism study. *World Standardization and Quality Management*, **2008**. 1
- [7] Li Bai. Sector Regulation and Corporate Actions Based on Food Safety. Doctoral dissertation. Jilin University, **2005**. 5

[8] Cheng Qizhi, Li Guangde. *Journal of Shanxi University of Finance and Economics*, 2007. 6