



Agricultural Production and Development in Northeast Jilin Province of China

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Abstract

This paper presented the status of agricultural production, research efforts and developments in agriculture in China northeast province of Jilin. The province is a major agricultural province with rich farming resources in China. Jilin province climate, soil and other natural conditions are conducive to quality corn production. Available statistics showed that through the years Jilin has ranked first in China in terms of total maize/corn output share, corn export volume and the amount of corn processed into other products. This is in addition to playing leading role in satisfying the food needs of the population.

Keywords: China, corn, agricultural production, development

1. Introduction

Jilin province, “food basket” is located in the central part of northeast China. It is adjoined by Heilongjiang Province in the north, Liaoning Province in the south, and the Inner Mongolian Autonomous Region in the west. Jilin Province is located between 40°52’ and 46°18’ latitude north and between 121°38’ and 131°19’ longitude east. The land area is 187,400 square kilometers. Its length is approximately 600 kilometers, and its width approximately 750 kilometers and its population is 27.49 million as at 2013 and 59.6% of the population live in the rural areas and are involved in agriculture and allied activities (Adekola *et al*, 2014) .

The land is high in the southeastern part and low in the northwestern, with a vast plain lying in its mid-west. The province has a distinct temperate continental monsoon climate with a clear-cut change of four seasons. The annual time of sunshine of 2,200—3,000 hours is good enough for crop production. The precipitation of the province in a year is 550—910 mm and the frost-free period lasts 120—160 days with about 65% of the rainfall between June and August. With hot and rainy days in the same season, it is good for farming. The frost period begins in the last 10 days of September and lasts until the end of April or early May.

As at 2007, Jilin province has 5.33 million ha of farmland and is capable of producing 25 billion kg of grain annually. The province is one of China six major forestry areas. The province land used for forestry covers 9.7226 million hectares (Adekola, 2010). The prairie in western Jilin is one of the famous grasslands in China. The prairie is known for its rich forage grasses for sheep, most of which are perennial rootstock and bushy grasses.

It is also one of the breeding bases of commercial cattle and fine-wool sheep in northern China. There are 4.379 million hectares of grassland are available in the province, mainly in its western and eastern parts.



2. Rural Economy

The development of the rural economy is directly related to the development of the agricultural production, this in turn influence the decision on research needs. The province soil noted for it fertility is suitable for growing grains, beans, oil crops, beetroot, tobacco, jute, potato, ginseng, traditional Chinese medicinal herbs, and fruits. Jilin province is China's largest base for commercial grain production. It produces corn, soybean and rice. The Song-Liao Plain in Jilin is an important grain base of the country and a world-known corn-growing zone.

In 2006, the total output of the grains reached 27.20 million tons. Corn actually makes up about 60% of the total farm acreage, and accounts for about 70% of the province's total grain output (Han et al, 2006). Corn is taken as not only a kind of grain crop but also as a cash crop in perspective of industrial economy. A number of major corn processing enterprises are growing in strength, including a 600,000-ton-a-year alcohol production project in the province. Besides corn production, the total production value of animal husbandry was 50.55 billion Yuan. The amount of meat per capita has ranked the first in China for nine years (He et al, 2004).

Current statistics showed that, the sale income of agricultural production processing industries was 126 billion Yuan. Gardening industry realized production value 28.37 billion Yuan. The output of the organic grocery reached 19.5 million tons. The villages and towns enterprises realized added value 87.76 billion Yuan. Driven by the industrialization, farmer per capita income increased to 3600 Yuan from 3264 Yuan in 2005.

Jilin province scientific and technological progress reached 50%, 2 % point higher than the average level in the country. In 2005, the arable land for growing special high quality corn, soybean and rice reached 349,100 hectares, 50% of national planting areas. Synthetic mechanization level of main crops reached 47%. In 2006, the province has countryside methane-generating pit for 5841 households.

3. Agricultural Production

3.1 Achievements

The world famous "Changbai" Mountain in the east of the province is a great treasury of natural ecology and has been listed by the United Nations as a wild animal and plant natural protective heritage and species gene bank. Jilin Province is the national main production area of agricultural and livestock products and the key ecological province developed by the national government.

The Songliao plain in the center of the province, known as a "golden corn belt of the world", produces 17 million tons of corn annually, ranking the first place in the country. It is also the national grain security production base and the key area for implementing the industrialization construction of high-quality agricultural and livestock products. The west part is a complex artificial ecological system mainly consisting of farmland, grassland and forestry.

The annual export amount of corn is 2-3million tons, the outputs accounting for more than 60% of the country's total corn export volume. Jilin yellow corn has the advantages of good coloration, high oil and crude protein contents, no transferred gene. The main green food products include glutinous corn, corn flour, instant hominy and series corn dumpling with the filling of smashed beans.

In recent years, livestock industry has been developing rapidly in Jilin Province. The per capita consumption of meat, egg and milk has ranked the first place in the country. The 15 lean commodity meat-type hog production bases, 23 high-quality beef cattle production bases and 12 commodity meat chicken production bases have been set up successively in the province. The 20 brands of green livestock products have been developed.



Jilin Province, with fertile black soil, adequate sunlight and ample rainfall, especially suitable for the growth of soybean, is the famous home of soybean in the country where high-quality soybean has been produced for a long time. Jilin soybean has the advantages of quality variety and high yield of 3000-4000kg per hectare, and higher contents of oil and protein than conventional soybean varieties.

Jilin Province, with distinct four seasons, abundant water resource and good cold and thermal resources, provides extremely advantageous natural conditions for the production of annual high-quality rice. At present, the province owns 12 high-quality rice production bases. Jilin rice, which is pure white and transparent and like bright pearls, contains abundant vegetable protein, fat, fiber, amino acids and many kinds of microelements such as calcium, phosphorus, iron, zinc, selenium, etc. (Quan et al, 2004).

The application of agricultural machinery in agricultural production in the province is increasing yearly. Attention is being focused on the application of advanced grain harvesting machinery, rice transplanting machinery, water-saving sprinkler irrigation machinery, orchard facilities machinery, mechanized precision seeding and drought planting mechanization technologies among others.

By the end of 2008, it is expected that the total power of agricultural machinery in the whole province will reach 18 million kw., the integrated mechanization proportion of 48.39% for plowing and the mechanized harvesting of rice and maize will reach 39.69% and 41.9% respectively. The number of farmers and cooperative organizations using agricultural machinery and operating land with a scale of more than 300 hectares in the whole province is expected to reach 260 (Yang, et al, 2004). The potential for mechanized farming in agricultural production is high in the province and more research works are needed.

3.2 Problems

Compared with advanced agricultural production and research in developed economies, the province is still faced with many problems despite rapid modernization already achieved. Some of the problems are discussed below:

A. The inability of the local farmers to compete favorably with imported agricultural products in term of competitive price, product quality, product varieties and economic of scale of mechanization. With China entry into WTO, many of the imported agricultural products are not only cheaper than the local product but are also of better quality. The prices of the main local grain crops such as wheat, corn and soybean are 20% to 50% higher than the price of world markets. Accordingly, the price of local grain must fall in order to remain in the market, which means lower income for the province farmers (Guo, 2003).

B. With increasing agricultural output, there are no adequate storage facilities for the products. As a result, the farmers have to sell their produce at a give away price in order to avoid wastage. So with increasing grain production still no increasing income for the farmer. Provision of modern high tech storage facilities would have been able to keep the quality and command higher prices.

C. Agricultural production in Jilin province is very vulnerable to different form of natural disaster such as flooding. Lack of scientific weather forecast alarm to be able to resist and prevent agricultural calamity and post-disaster management organization further complicated the losses the farmer have to bear in case of flooding and other natural disasters.

D. The grain planting area is more than 70% of the total cultivated area, and the income from grain production is still a large proportion of the farmers' income. Green crop production and livestock and poultry production are still on a small scale.

E. Even though researches have been done in order to improve the quality of agro-products, the products are still of low quality in term of nutritional values. Corn planting occupies more than 72% of the total cultivated area, comparatively green food production and livestock are still on a small scale.

Emphasis is still more on quantity rather than quality. The oil content of the soybean is about 2% lower than American soybean and impurity is 1.5% higher. Corn starch content is lower and with higher water



content compared to imported corn. The quality of beef, pork and chicken production is lower than the international standard. Research into livestock feed formulation, livestock drug use, waste management among others will be helpful to improve quality. This emphasis has to be reversed in order for the province agricultural products to be competitive in world market.

F. The scale of farming is small with so many farmers individually holding between 3-5 hm², which is about 1/40th of an American farm. The annual crop production per labor force is between 4-7tons, which is about 1/80th of the equivalent American system. This situation makes it difficult to undertake full mechanization. The farmers can not take the advantage of economy of scale associated with full mechanization. The resultant effect is higher cost of agricultural production when compared to the cost in western countries. The production cost of soybean and corn in the province are 30% and 37% higher than that in American respectively (Yang, et al, 2004).

G. Agricultural products processing level is low. The demand for raw food rather for processed agro-products is higher. The high tech machinery and equipment for onsite pre-processing and processing are still inadequate. In Jilin province, the ratio of agricultural products conversion to processed products is 1:0.4 but it is up to 1:4 in developed countries (Adekola, 2011).

3.3 Solutions

The basis of advancing solution to the aforementioned problems is for the development of agricultural production in Jilin Province. For development, any solution must 1) improve farm full mechanization to reduce cost of production 2) make agricultural products competitive in world markets in terms of price and quality 3) increase the income of the farmers and provide other incentives in order to ensure stable supply of agricultural products.

A. Diversification of Agricultural Production.

In order to increase the income level of the farmers, diversity should be introduced into crops grown by farmers. On accession to the WTO by China, the grain production was seriously affected. It is necessary to allocate some cultivated land for grain to forestry, grasslands and wetlands, and develop economical crops and forage crops. Up to this years, the proportion of land allocation for grain, economic crops and forage crops is 75 : 23 : 2. This proportion needs to be adjusted up for economic and forage crops in such a way as not to reduce grain production but rather to improve the earning ability of the farmers. Based on preliminary investigations, a proportion of 72 : 25 : 3 will be appropriate (Yang et al, 2004).

B. Strategic focus on Livestock and Green Food Production:

Since the opening up policy of 1978, China economy has been receiving great boost. The standard of living of the people is getting higher so is the demand for quality, healthy and varieties of food products. In the line of this, the province has to speed up action on the development of livestock production. In order to improve the rural economy, emphasis should be placed on the most competitive industries such as livestock and green crop production. It is estimated that the production output of livestock products will increase by over 13% compared to last year and can reach 38% of total value of agricultural production this year (Han et al, 2006).

As for now, the development of livestock should mainly be for milk, beef and pig production. Investigations should be carried out to identify counties that are most suitable for the production of pig, chicken, cattle or sheep. Industries should also be developed to process milk products. Contrary to the past years and with increase in dairy cattle, Jilin province is set to be the new center for meat and milk production in northeast China.

In order to achieve the above objective, the following requirements must be met. 1) Develop and maintain an excellent livestock breeding system based on international standards 2) introduce good livestock breeds. 3) Implement appropriate scale of production to save cost and maintain standards 4) Develop custom meat and



milk processing industry for livestock 5) pay greater attention to the prevention, treatment and monitoring of livestock disease. This is crucial to prevent economic loss, consumer confidence loss which in turn can adversely food safety and quality.

C. Further Development of Green Food Production.

With the last year production output of 4.23 million tons of green food netting in 6.23 billion yuan income, green food production has great potentials to improve the per capita income of the farmers and improve the quality of food. More attention should be on management of green food quality, environmental monitoring and standardization of green food system.

D. Agricultural Industrialization.

The importance of industrialization of agriculture can not be over-emphasized. However, for industrialization to take place, the farmers must be reorganized into co-operative society so as to take the advantage of economics of scale. Farming activities level of mechanization at pre-planting, planting, harvesting and post-harvesting should be improved. Foreign investors and technology should be encouraged for agricultural products storage and processing (Adekola, 2011).

E. Establishment of Model International Standard Agricultural Practices System.

In order to take advantage of the benefits of the WTO, quite a number of agricultural practices still operating in the province need to be modified to meet international standard. To achieve this standard production, the farmers should be trained and exposed to new and advanced technology in every stage of agricultural production from field clearing, seedling production, cultivation, planting, crop management, harvesting and post-harvesting activities (including transportation, storage and processing among others). Model farms should be set up to carry out standard agricultural production and avail the other farmers the chance to learn.

F. Reduction of the cost of production.

Reduction of the cost of agricultural production implies less burdens for the farmers and reduced cost of agricultural products. To realize this, the government 1) should subsidize the cost of fertilizers, chemicals, machinery and other sundry costs 2) advance the use of more machineries for crop production and water conservation 3) should make scientific and technological information readily available on time to the farmers through cooperative societies, local government information office, mass media and internet information website 4) the province should organized the individual small scale farmers together into cooperative large scale farmers and provide the policy to support large scale land management 5) prevent bureaucratic bottlenecks in rural farming management system. The rural revenue system should be reformed to remove any unreasonable expenses incurred by farmers 6) encourage development of agricultural machinery according to the local prevailing conditions 7) reallocate low-yielding land to forestry, grassland and wetland to prevent wastage and for optimum use of land resources.

G. Provision of Agricultural Disaster Management and Infrastructural Facilities

Even though the problems of disaster such as flood, drought are not drastic in the province, however facilities must be in place to forecast, prevent, monitor and manage such disaster anytime they occur. In addition, the government should provide adequate roads for farm products, electricity and drinking water for the rural residents.

4. Conclusion

Agricultural production in Jilin province is growing and this trend will continue in the coming years. With the province strategic position in contribution to food sufficiency and security in China, the province will continue to receive local and national government support. Incentives in various ways should be provided for the farmers to encourage production.



The scale of mechanization needs to be upgraded and agricultural production diversified. In addition to grain production, the province should encourage large scale livestock production, rural enterprise, organic “green” food production, forestry products among others. The available natural resources should be optimized to continue to provide healthy and quality products for the local needs and export.

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AUTHOR’S PROFILE

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