

Chapter 13

Agricultural Production and Related Business by Public Firms: A Case Study on Xinhua Farm, Heilongjiang

Hironori Yagi and Yonghao Zhu

Abstract We evaluated the current status of rice production in Heilongjiang Province based on our survey interviews of Xinhua farmers. First, there is the problem of the gap between farmers on state and conventional farms. The scale of conventional farming is small, and suffers from so-called structural problems. Social unrest will increase with further widening of the gap between the rich and poor. If a subset of farmers moves to large-scale operations with machineries, then securing employment opportunities for the remaining farmers will become an issue. Second, farmers will have difficulties in achieving a further increase in the volume of production by yield increase and farmland reclamation. Third, regarding rice-planting machines and driers, while current performance is not high, their gradual but growing use has a high potential to increase operational efficiency. Fourth, because farmers use few organic fertilizers such as compost, and depend on chemical fertilizers, profitability will worsen as prices for these resources increase. Fifth, labor costs will trend upward with the rise in GDP. Sixth is the problem of water resources and securing prime agricultural land. The demand for water from cities and factories is high, and it is possible that water resources will become tight in the future.

Keywords Rice production • State farm • Heilongjiang Province

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1 Purpose of This Chapter

Heilongjiang Province, northeastern China, is one of the country's leading grain-producing regions, particularly of Japonica rice. However, its rice-production history is relatively recent.

Following the reforms that came with China's Open Door Policy, Heilongjiang's total arable land increased from 8.46 million ha in 1978 to 9.62 million ha in 2000. Over the same period, the percentage area of irrigated land expanded from 3.2 to 17.1 % (Wang et al. 2003). The province also experienced a remarkable increase in land productivity. The rice yield, which was 2–3 tons/ha or more from the 1950s through the 1970s, rapidly increased in the 1980s, reaching approximately 7 tons/ha by the end of the 1990s.¹

We can classify farm management entities in China into two broad types based on land ownership and managerial decision-making authority. One type is private management by private individuals, while the other is management by the state (nongken: "state-owned land-reclamation enterprises" or "state farms"). The former, through the implementation of the production contracting system, was implemented in 1984, and allocated 30-year contract (land-use) rights from the People's Communes to individual farmers, while maintaining the collective ownership of the land.² The latter, on the other hand, implemented a production contracting system on state-owned land. Here farmers were employed in state farm enterprises as "workers" under the specific guidance and supervision of farm executives who managed production (note that most workers were unsalaried and paid rent). Heilongjiang's state farms were established in 1949, and centered on the return of the People's Liberation Army to collective farming (rongjun nongchang) and the liberation of Kuomintang Army prisoners (jiefang tuan nongchang). By the end of 1955, about half of Heilongjiang's present farms were established, accounting for 225,000 ha (3.3 %) of the province's arable land area and 0.9 % of the provincial farm population. Subsequently, the return of military personnel and youth to farming further expanded the state farms' share of agriculture in Heilongjiang, reaching 22.5 % of the provincial arable land area and 15.7 % of total agricultural production by 1995.³

Nine branch offices under the Heilongjiang State Farm Division guide individual farmers and ranchers. Each farm not only produces farm products but also manages factories, hospitals, and schools. Indeed, state farms form a sort of "town" on the reclaimed land. While the control of agricultural production is left to individual farm management, the state-owned sector handles purchasing, processing, sales, and exports.⁴

¹Park and Sakashita (1998), p. 92.

²See Park and Sakashita (1996), Zhou and Abe (2000), and Sun (2003) for the issues for private farms in Northeast China.

³Park and Sakashita (1998), pp. 92–99. Also, see Dong (1998) for details of state farms.

⁴Park and Sakashita (1998), pp. 93–94.

By the end of 2007, the population of the state farm division was 1.65 million, agricultural acreage increased to 2.39 million ha (including 2.162 million ha in food-crop acreage), and agricultural production (including potatoes) reached 12.46 million tons.⁵

In early September 2008, we conducted an interview survey at a state farm enterprise in Xinhua.⁶ In particular, we visited the Heilongjiang Beizhu Rice Co., Ltd. (hereinafter Beizhu Rice), which coordinates Xinhua Farm production regiments and sells rice from the farms. In addition to conducting interviews on the general conditions of production and sales, we visited State Farm Harbin's branch office and the Northeast Asia Research Station to collect information on state farm enterprises in Heilongjiang Province. In this chapter, based on the results of our interview survey for Xinhua Farm, we analyze the state of agricultural production and related businesses and present a vision for the future of rice production.

2 Survey Results for Xinhua Farm

2.1 *Position of State Farm Enterprises in Heilongjiang Province*

According to the interviews conducted with the relevant authorities, Heilongjiang's state farm enterprises account for approximately a quarter of the food crop area under production in the province, approximately one third of the agricultural production, and half of the commercial agricultural products. In particular, state farms produce 60 % of the province's commercial rice.

On average, farm households on state farms are 10 ha in size, although some are over 300 ha. These farms enhance efficiency by using fertilizing machines and aerial pesticide control, and increase the yield to 30–50 % per unit area. The state owns the state-farm land, which accounts for most of the land reclaimed over the last half century. In recent years, however, the government had to regulate land development due to land erosion and water shortages. Barriers to entry into the state farm also exist. Before one can become a state farmer, one must become an employee of the state farm. Moreover, when a farmer purchases heavy machinery, the government provides financial assistance of 20–30 %. Although some farmers work under contract using their own machinery, at present, few farmers own the machinery.

In contrast, Heilongjiang's conventional farm households, outside the state farms, have an average area of 2 ha and number approximately four million. Many conventional farms have 30-year contracts that give them agricultural land-use rights, and they are free to decide on which seeds, pesticides, and machinery to use

⁵ See pp. 43–59 of Heilongjiang Province State Farm Directorate Bureau of Statistics (2008).

⁶ For details of the survey interview, see Zhu (2009). Regarding the situation of Xinhua Farm, the following paper had already presented analysis results: Park et al. (2001), pp. 85–98.



Fig. 13.1 Xinhua Town center

among other farm-related issues. Manual work predominates; therefore, pesticides are not used. As a result, input costs are lower on these conventional farms.

2.2 Realities of Production on Xinhua Farm

Xinhua is located in the vast Sanjiang Plain, at the confluence of the Amur, Songhua, and Ussuri Rivers. The farms are named after their location in Xinhua Town, Dongshan District, Hegang City, Heilongjiang Province (Fig. 13.1).

At the end of 2007, Xinhua Farm had a total population of 23,266 and included 8,615 farm households. The employees numbered 12,717 (of which 9,049 were farmers). The total farm area was 55,873 ha and the agricultural land area was 29,307 ha (11,333 ha of which were rice paddies). The main crops were rice, soybeans, corn, wheat, and barley. Cereal production reached 152,469 tons in 2007, of which rice and soybeans accounted for 96,267 and 8,225 tons, respectively.⁷

⁷ Heilongjiang Province State Farm Directorate Bureau of Statistics, op. cit. (Footnote 5), pp. 341, 375–379.

About half of the Xinhua farm households were 100 mu (1 mu = 6.7 a) and under. Production was divided into regiments, with each regiment of approximately 1,000 ha in size and comprising 100 households. According to our interviews, large-scale farms were 16–17 ha or more.

The cost of renting land on a Xinhua farm is 3,300 yuan/ha. There is also an additional water fee of 300 yuan/ha, according to interviews with regimental leaders. The rice yield is fairly large at 7–7.5 tons/ha. The yield of soybeans is 3 tons/ha. The average household on the farm earns a salary of 3,000–4,000 yuan/ha, which assures a good standard of living. A typical farm household on the state farm does not receive a salary, although a farm's regimental leader (lianduizhang) receives a salary of 20,000 yuan/year. Further, it is compulsory to participate in crop mutual aid as insurance in case of failed crops or other calamities.

Rice paddies as large as 1 ha exist, although such large plots are discouraged and it is thought that 0.5 ha is a reasonable size. Farm roads are gradually becoming two-laned and paved, as can be seen in Fig. 13.2, and by 2009 all regiments were to have upgraded their roads to this standard.

It was not general practice to use compost on Xinhua Farm, although it was used on part of the farm on a trial basis. Rice seed was centrally managed by the farms.

To ensure a long growing season, farmers are directed to plant their fields by 20 May. Rice-planting machines planted 95–100 % of the paddies and mechanization



Fig. 13.2 Paved farm road



Fig. 13.3 Rice harvester (simplified type, six rows) in storage shed

has continued. Almost all farm households possess a rice-planting machine and there are common-use sheds where a simplified type of rice-planting machine (six rows) can be stored, as seen in Fig. 13.3. These rice-planting machines cost approximately 12,000 yuan each and have a working capacity of 2 ha/day. The rice-planting season is the busiest, and the upper limit for one person working alone is approximately 5 ha of rice acreage. After the planting season, most farmers work as day laborers in other sectors and earn about 100 yuan/day as temporary income.

All crop protection on the farm is conducted by aerial spraying, at a cost of 150 yuan/ha, and is usually done twice a year. Within the cost of crop protection, 70 yuan goes to airplane rental and 80 yuan covers pesticide costs.

Almost all harvesting is done by machine (95–100%), but this does not mean all farmers own a combine harvester. Those who own combine harvesters also work under contract. Contract work fees at the time of interview was about 600–700 yuan/ha, increasing to about 1,000 yuan/ha for rice fields in which rice stalks had fallen over, thus causing more work. It is possible to harvest 10 ha/day, with a working capacity of 10 h/day. One of the regiments (liandui) has 20 2-m-width-class harvesters and 7 3-m-width-class harvesters (which cost about 230,000 yuan) (Fig. 13.4). They also have a head-feeding combine. In addition, service businesses exist that perform combine harvesting under contract. It is said that if farmers save for 2–3 years, they can purchase a machine and redeem their investment within 4 years.



Fig. 13.4 Combine harvester in storage shed

2.3 Processing and Shipping: Results of Our Interview Survey on Beizhu Rice

At the time of our study, Heilongjiang's Beizhu Rice, which solely handles the rice production of Xinhua Farm, was a Japanese–Chinese joint venture that dried, stored, milled, and sold rice (Fig. 13.5). Beizhu Rice has a capital of 6.05 million yuan, with total assets of 230 million yuan. Major stakeholders are: Sojitz, a Japanese trading company with a 25 % stake; Tsuruoka Rice Processing Co., Ltd., with a 65.6 % stake; and Heilongjiang State Farm Division, which has a 9.4 % stake. Beizhu Rice at the time had about 40 full-time, permanent employees, with 36 people outside of the management section in a double-shift system. In addition to a group chief, each group had 18 members: 1 person as a leader, 12 persons in product processing, 1 person in charge of inspection, 1 person in material procurement, 1 person in maintenance, 1 person in product management, 1 person in government relations, 2 persons in finance, and a number in sales. In addition, there were part-time workers who handled simple tasks, and the facilities were often run at night, because electricity rates were cheaper during these off-peak hours.

All 380 contract farmers are on Xinhua Farm and have a total area of 4,200 ha under contract. These contract farmers ship all rice meant for sale to Beizhu Rice. Being particularly thorough on cultivation methods, farmers are brought together for a meeting before planting in order to be instructed on how to use fertilizer and pesticides. It is said that non-Xinhua farmers are not contracted because they do not follow the prescribed practices (Fig. 13.6).



Fig. 13.5 External view of Beizhu Rice Processing Co., Ltd

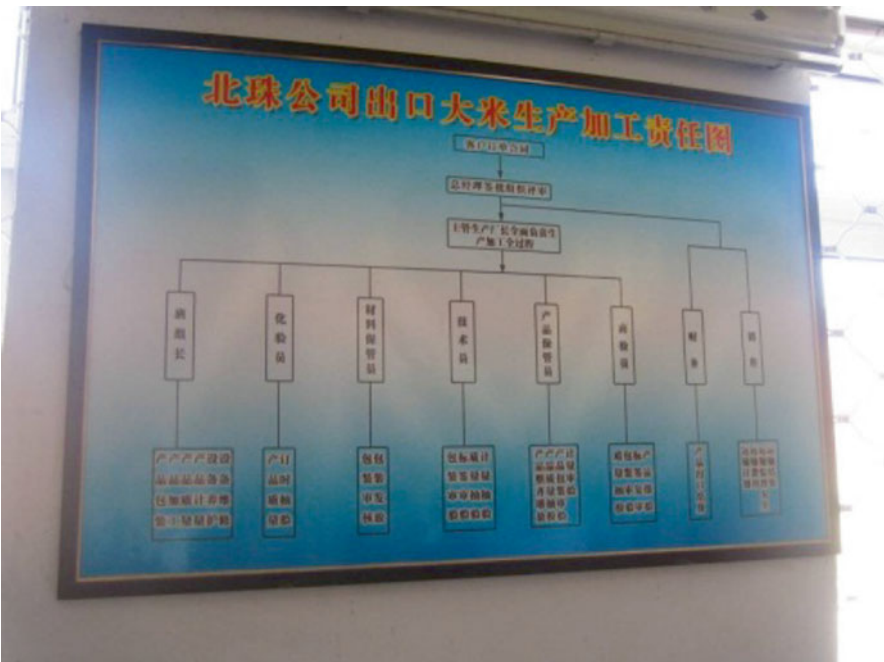


Fig. 13.6 Organizational chart of Beizhu Rice Processing Co., Ltd

The farmers can only acquire designated varieties of rice, grade 3 and above. Rice varieties consisted of Soraiku 131 (which accounts for one third of all varieties), Soraiku 163, and New Koshihikari. Farmers pay an extra 0.05 yuan/500 g for Soraiku 131, which is a top-rated variety. However, farmers sometimes do not want to plant it as it falls down easily and is susceptible to damage from the weather. The usual price to buy grade 3 rice from farmers is 1.8 yuan/kg, but a premium of 0.02 yuan is added for grade 2 rice.

Harvested rice paddy is delivered in October and left at the entrance of Beizhu Rice to dry in the sun. It is then temporarily stored in the silo shown in Fig. 13.7 (storage capacity of 200 tons). Next, it is placed in the back of the mill and dried in a drier. The mill has two Kaneko driers with a capacity of 10 tons each.

Of the dried brown rice, the portion under a sales contract is immediately milled. There are two milling machines: one 14.4 kl (made by Satake for 1.2 million yuan, installed in 1998) and one 16.2 kl (made by the Anzai Manufacturing Co., Ltd. for 600,000 yuan, installed in 2001). Beizhu Rice mills 100 tons of rice daily, and ships about 30,000 tons every year. There are eight new silos for storing the dried brown rice (Fig. 13.8), but because they only have a total storage capacity of 2,000 tons, Beizhu Rice also stores brown rice outside in the winter.

The processed rice is exported abroad via the China National Cereals, Oils and Foodstuffs Corporation (COFCO). This is China's largest food company, and it holds export rights. Until 2007, foreign markets accounted for 60 % of rice exports, beginning with Japan at 5,000 tons, then Hong Kong at 3,000 tons, and the rest



Fig. 13.7 Temporary storage facility for unprocessed rice



Fig. 13.8 Storage facilities for brown rice

going to Southeast Asia, Britain, and other countries. The remaining 40 % of production is for mainland China. However, in September 2008, because the government enacted export regulations, COFCO actively searched for domestic markets to which they could ship rice, and consequently profits were cut in half. The company hoped to return profits to prior levels; however, in addition to the government not providing special compensation, domestic prices did not increase much, and stand at about 3,000 yuan/ton.

3 Current Status of and Future Challenges for Rice Production in Heilongjiang Province

We evaluated the current status of rice production in Heilongjiang Province based on our survey interviews of Xinhua farmers.

First, in recent years we have seen rapid growth or improvements in labor costs, land rent, machinery investment, roads, and rice quality. Among these, we expect labor costs to adjust with economic growth and to approach those of advanced nations.

Regarding machinery, while almost no farmers owned combine harvesters in the 1990s,⁸ our 2008 investigation revealed that the use of combine harvesters has become fairly common and that highly efficient machines have also been introduced. However, farmers still have simple rice-planting machines, and maintenance standards for drying and storage facilities are insufficient given the amount of production. Finally, although farmers lack sufficient drying and storage facilities and almost none use organic fertilizer, these issues are improving, at least in regards to rice quality.

Second, some regions lagged in aspects such as yield per unit area and agricultural land development. The rice yield had already risen to the 7 ton/ha level 10 years ago, and it is difficult to imagine that this yield will increase sharply in the future. Further, it is becoming difficult to find land suitable for new agricultural development; where such land is available, it is hard to find resources to develop it.

Third, small-scale conventional farmers remain stalled at a low standard of living. Unlike farmers on state farms, conventional farmers do not own many machines, and because the area of arable land they manage is small-scale, their labor efficiency and income levels are low.

Fourth, the factors that could inhibit the maintenance and expansion of rice production in the future include water resource shortages and price increases for inputs such as oil and other resources.

In light of these points, and from the standpoint of rice production in Heilongjiang Province, we may make the following observations regarding the future prospects for food security in the Northeast Asian region.

First, there is the problem of the gap between farmers on state and conventional farms. The scale of conventional farming is small, and, like Japanese farms, conventional farms suffer from so-called structural problems. Also, some are concerned that social unrest will increase with further widening of the gap between the rich and poor. Thus, if a subset of farmers moves to large-scale operations and increased mechanization, then securing employment opportunities for the remaining farmers will become a major issue.

Second, farmers will have difficulties in achieving a further increase in the volume of production. As noted earlier, because we cannot foresee an increase in yield and crop acreage, expanding the value of agricultural production through an increase in the volume of production might be difficult in the future.

Third, regarding rice-planting machines and driers, while the performance and ownership of this machinery is not high, their gradual but growing use has a high potential to increase operational efficiency.

Fourth, because farmers use few organic fertilizers such as compost, and depend on chemical fertilizers, profitability will worsen as prices for these resources increase. Consequently, further value added will require farmers to reduce the use of chemical fertilizers and pesticides.

⁸Park et al. (2001), pp. 93–95.

Fifth, labor costs will trend upward with the rise in GDP. To counter this, there are plans to increase the labor productivity of farmers on state farms by enlarging rice paddy partitions, introducing large machinery, and scaling up the acreage of arable land managed.

Sixth is the problem of water resources and securing prime agricultural land. The demand for water from cities and factories is high, and it is possible that water resources will become tight in the future.

Further, from the viewpoint of food security in Northeast Asia, the significance of Japan's rice paddy agriculture is high with regard to water resources and land suitable for agriculture. When we compare the rice paddy agriculture of Heilongjiang Province to that of Japan, Japan's wage level is still high, although the gap is gradually shrinking. On the other hand, Japan has been transferring rice varieties and cultivation technology to China and elsewhere, thereby helping Heilongjiang's state farms achieve very high rice yields. It can be difficult to judge overall quality, but as of September 2008, the probability that Japanese consumers would prefer the taste of rice produced in Japan was high. In the future, along with securing prime agricultural land and expanding the scale of managed arable land, Japan will need to promote agriculture that addresses the depletion of oil resources and uses lower amounts of chemical fertilizers and fossil fuels.

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