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Study on the Reform of Agricultural Supply Side Based on Food Security

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Abstract In December 2015 ,the Central Rural Work Conference put forward the structural reform of agricultural supply side ,to ensure the national food security. At present ,China's grain production is increasing ,the supply and demand structure of grain market is not balanced ,and the ineffective supply due to the lack of market supply and demand has caused the problem of structural surplus and structural shortage. And price and quality difference of domestic and international grain is obvious ,and the agricultural products in China are overstock ,so the reform of agricultural supply side based on food security must be implemented. To adjust structure ,reduce stock ,reduce cost ,increase quality ,promote the primary ,secondary and tertiary industries convergence will become the focus of China's agricultural supply side structural reform ,and we can develop the ecological agriculture ,improve the competitiveness of the grain market in price and quality ,to ensure food security for the nation.

Key words Food security ,Agricultural supply side ,Price mechanism ,Eco-agriculture ,Industry convergence

1 Introduction

At present ,with the transformation of the consumption structure in China ,the residents' consumption preference is gradually changing from the survival type to the enjoyment type ,so people put forward higher requirements on the quality ,brand and safety of the product. The agricultural supply side reform must be based on the changes in market demand ,and it must adjust the structure of agricultural products timely (especially grain production structure) ,to set production and price from perspective of the market and consumption instead of the government ,thus forming the new international competitiveness of food industry and food price mechanism ,setting up the new concept of food security.

2 Basic connotation of agricultural supply side reform based on food security

At present ,the fundamental purpose of China's agricultural supply side reform is to ensure national food security: structural adjustment ,inventory reduction ,cost reduction ,quality improvement and in-depth integration of three major industries^[1]. The basic connotation of agricultural supply side reform includes three aspects: land system reform ,agricultural structure adjustment and grain price subsidy system reform. Based on the research objectives ,this paper mainly studies the issue of agricultural supply side reform from the perspective of food security.

2.1 Connotation of agricultural structure adjustment From the perspective of long-term market supply and demand ,the core

of the reform of agricultural supply side is the adjustment of agricultural structure especially grain. Variety structure of grain production is to constantly adapt to the level of economic development and changes in people's living standards. The agricultural structure reform put forward a document in this year ,and its fundamental connotation is that the supply structure of agricultural products (especially grain) must be guided by the market ,and the supply structure must change with the change of market demand structure. For the market oversupply of grain varieties ,farming area should be properly reduced ,while other varieties in short supply should be cultivated. Grain crops and economic crops should be balanced ,and grain production ,processing and sales of the three main industries should be integrated to improve the quality of agricultural development and economic benefits ,and promote the transformation of traditional agriculture to modern agriculture. By the way of planting structure adjustment and rational allocation of resources for agricultural production ,it is necessary to solve the contradiction between economic development and environmental protection ,and pay more attention to the guiding role of the market in the supply and demand relationship ,in order to reduce excessive industrial capacity and stock and improve weak links. In addition ,the state implements " four subsidies" for grain products ,and according to the state subsidies for agricultural producers ,the connotation of structural adjustment is separating price from subsidy ,letting the market supply and demand determine the price of agricultural products ,and when the price is too low to pay for production costs ,we can use independent compensation for producers ,in order to reduce the cost and inventory.

2.2 Problems in adjustment of agricultural structure After China's grain production achieved continuous increase ,the phenomenon of production ,stock and import volume as "three growth forces" appeared. A series of protective policies promulgated by

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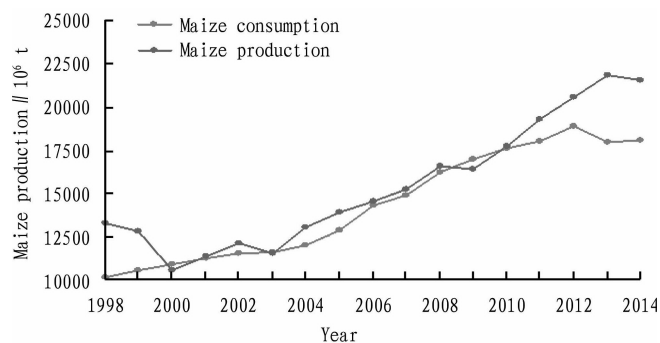
the state led to the lowering price phenomenon and further exacerbated the contradiction between supply and demand. Taking corn as an example, from 2007 to 2014, due to the shortage of feed grain, China's maize reserve price increased consecutively, the domestic price of corn was much higher than the price of imported corn, and the corn produced could not enter the market and could only enter the warehouse stock, leading to much larger stock. The fundamental reason is that the excessive government intervention for the purpose of protecting the interests of farmers, causes prices to deviate from the market, and price does not reflect the true consumer demand, and farmers cannot rely on accurate market demand for agricultural production, but excessively pursue production price of agricultural products to get higher income of agricultural production. Because of higher price, the products cannot enter the market circulation^[2], leading to the unbalance of structure of grain and other agricultural products. In addition, in the process of urbanization, some problems are encountered in the reform of the land system, for example, the land circulation is not standardized and how to coordinate the relationship between urban and rural land system affects the balanced development of agricultural structure. The new rural business entity formed by the land system reform is the key to ensuring the supply side structural reform, however, the current land system reform has not fully determined farmers' land ownership, farmers cannot secure land production or migrant workers, and the cultivation of new rural business entities is hindered, resulting in challenges facing structural adjustment^[3].

3 Analysis of grain supply and demand structure in China

Since 1978, the supply and demand of grain production and market of China have experienced changes^[4]; especially since 2004, China's grain output growth has changed from tight balance to overstock of some varieties of grain. Grain production is no longer a general problem but a structure or variety problem that has a direct impact on the national food security strategy.

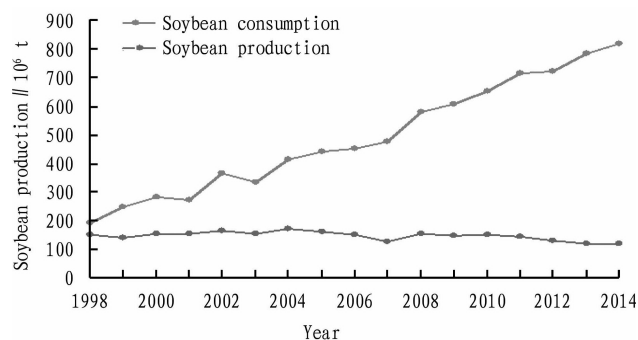
3.1 Contradiction of grain structure In this paper, with rice, maize, wheat, soybean as example, we analyze the contradiction between supply and demand structure of China's food varieties. The current market supply of rice is slightly greater than demand, the market supply and demand of wheat are roughly balanced, and there is a significant oversupply of maize, there is a serious shortage of soybeans. Therefore, there is an obvious structural surplus and structural shortage of maize and soybean, and the planting structure is seriously unbalanced. For the two kinds of grain products, countries must take measures to reduce stock and make up for the short board. As shown in Fig. 1, from 2003, the maize was in rough balance of supply and demand, but the contradiction of supply and demand became increasingly prominent, especially after 2010, the maize yield was much higher than the consumption. Now the maize is overstocked at present. The main reason for this phenomenon is that on the one hand people's prefer-

ence for animal products is more and more obvious with the improvement in the level of urbanization and the change of living consumption concept. Maize is taken as the main feed grain for consumption, and the market is increasingly big. Because of the domestic shortage of feed maize, the country has raised corn prices, and driven by the interests, grain producers reduce soybean acreage for maize planting, making maize planting area and production continue to increase. On the other hand the domestic maize market competitiveness is not high, especially because of the impact of food safety accidents after 2011, the produced maize in the warehouse could not enter the market, resulting in increasing maize stock. As shown in Fig. 2, the gap of soybean supply and demand began to grow from the 1990s, and soybean production remained at a relatively stable level, but in recent years it has declined slightly. The demand for soybean rose straight, and China has become the world's largest importer of soybeans. The main factor causing serious shortage of soybean is the impact of soaring domestic feed maize prices, and soybean production situation has undergone large changes, and China has changed to net importing country from net exporting country of soybeans, especially since the beginning of the 21st century, people's consumer demand for soybean food has rapidly increased, but the soybean production has declined and planting area has been reduced. In 2003, it was the first time that China's soybean import exceeded production.



Data source: China Statistical Yearbook.

Fig. 1 Maize production and consumption



Data source: China Statistical Yearbook.

Fig. 2 Soybean production and consumption

3.2 Grain price at home and abroad At present, China's policy on the purchase and sale of grain products is that most of the major grain producers are not selling their own food to the mar-

ket, but government procures it. This can not only protect the interests of farmers, but also ensure the steady supply of grain to the market. But in recent years, the country's food product acquisition price has been getting higher and higher, and the phenomenon of high grain prices and stock has appeared. In addition, the current cost of agricultural production is constantly increased with chemical fertilizer and pesticide price increase, and the government makes the price rise for the protection purpose, and the price of agricultural products reaches the "ceiling". In 2015, in the international market, the price of rice, wheat, corn and soybean imported was 1145, 626, 923, 1175 yuan per ton lower than the price in the domestic market. China's grain prices are much higher than international market prices, even higher than the international price of some high-quality agricultural products. It is necessary to reduce costs, reduce the use of pesticides and fertilizers and other agricultural costs, and reduce the state purchasing and storage price of food. The grain price and the interest subsidy should be separated, to let the price reflect the true market supply and demand situation.

4 Recommendations

4.1 Strengthening land fallow and adjusting agricultural planting structure

At present, China's per capita arable land is only one-third of the world average, and in the case of limited arable land, food security has been a problem of great importance to the country. China's grain production, imports and storage all increase, international grain prices are lower than domestic prices, so the international grain market occupies domestic market, and we should timely adjust the current grain planting structure and management structure^[5]. For the market supply structural surplus varieties (such as maize), we can reduce the output and turn to planting the structural shortage grain varieties (such as soybean); some arable land can be fallowed, and we can give appropriate subsidies for farmers practising land fallow, to protect and enhance the quality of farmland, balance the planting structure, and finally reduce the stock, and make up for the short board. In addition, under the trend of the development of urbanization, we should vigorously cultivate large grain, family farms and farmers' professional cooperatives or other new business entities in rural areas, change the small-scale and decentralized management structure of "small farmers", and attract agricultural production operation and management personnel, to improve the agricultural science and technology innovation. Only by changing the concept of production can we take the modern rural development road and guarantee the structural reform of agricultural production.

4.2 Developing ecological agriculture and enhancing international competitiveness of agricultural products

The reason behind the increase of grain production is the over-emphasis on the productive function of agriculture, and the benefit of agricultural production. This mode of production not only increases the cost of agricultural products, reduces the market price competitiveness, but also leads to frequent food safety issues which are not conducive to the protection of soil and water resources, and damages the foundation of the sustainable development of green ecological agriculture. Under the dual pressure of environment and resources,

the burden of agricultural production is aggravated. To promote the development of ecological agriculture, there is a need to ensure the safety of quality and price of agricultural products^[6]. On the one hand, we can strengthen the management and protection of water resources from the source, reduce the use of pesticides and fertilizers; on the other hand, we can regulate the chemical composition of agricultural production materials, establish the standards for the production of components. It is necessary to reduce pesticides and fertilizers to avoid the loss of soil fertility, and promote the popularization of biological pesticides. In addition, it is necessary to develop ecological agriculture. The ecological agriculture can be realized by ensuring food security, reducing food prices, enhancing the international competitiveness of grain. After doing this, grain stock will naturally decrease accordingly, and finally it will promote the agricultural supply side reform.

4.3 Promoting integration of three industries and formatting modern agricultural industrial system

Based on the adjustment of agricultural planting structure and ecological agriculture, we should ensure the domestic grain market competitiveness and promote the integration of three industries. From the initial processing to deep processing of agricultural products, it is necessary to meet different consumer preferences. China's rural areas are still dominated by production, processing and packaging of agricultural products development in rural areas is seriously lagging behind, and the output value of agricultural product processing industry has a very small proportion in the total output value in rural areas. We should also give full play to the advantages of agricultural production, expand the development of agricultural product processing industry, use food processing to promote the production of grain, and adjust and optimize the rural industrial structure. In addition, it is necessary to integrate the rural industrial chain, broad the production form, make full use of agricultural resources to play the ecological and cultural functions, and rely on the natural scenery to develop the green farm. At present, China's rural industrial development is still at the initial stage, and there is a need to increase efforts to promote rural industrial integration, form the modern industrial system of agriculture, and develop a new way to increase farmers' income, to transform traditional agriculture to modern agriculture.

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