

Problems And Countermeasures in The Development of China's Soybean Industry

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Abstract. With the development of China's economy and agriculture, people's demands for living standards have increased. As an essential daily protein source and oil plant, it plays an indispensable role in the daily diet structure of residents and the food processing industry, and the market demand for it has also been fortified year by year. This text aims at analyzing and solving the problems and countermeasures in the development of China's soybean industry, one by one. In the first place, in light of the current development status of the soybean industry, how to address the issue of mismatch between supply capacity and domestic demand by adjusting macro policy. Secondly, how to carry forward the preponderance of traditional soybeans to improve domestic soybeans' competitive force. Finally, how to improve interconnection of industrial by enhancing the connections of state-owned enterprises in the industrial chain. Through an in-depth analysis, this article aims to provide theoretical references and practical approaches for the high-quality and sustainable development of China's soybean industry.

Keywords: Soybean; market demand; variety of advantages; industry chain.

1. Introduction

Not only soybeans are the most important oil crop in the world but also rich in high levels of protein. Its protein content reaches up to approximately 40 percent and also has 8 essential amino acids for the human body. In addition to this, there are also some bioactive substances such as soy isoflavones and plant sterols, which are crucial for human health. In terms of agricultural production, the rhizobia that form symbiotic relationships with the roots of soybeans could fix nitrogen element from the air into the soil for other plant to absorb, which help form a mutually beneficial symbiotic relationship with other plants. In terms of economic development, soybean itself proves enormous commercial values. Moreover, soybeans could also be processed into all kinds of bean products, for instance, tofu, soy milk, fermented bean curd and so on, which have expanse eastern market.

As one of the oldest soybean-producing countries, the history of cultivation dates back over 5,000 years. Until 1949, China always remained in a state of self-sufficiency, which was also be a biggest producing countries and exporting countries [1-2]. From 1949 to approximately 1978, Chinese soybean industry begun to develop slowly, but the yield and the demand have also be in a stable condition. From 1978 to 1995, it was a period of transition and opening up for China's soybean industry. Due to its output declined and the backdrop of reform and opening up, China's soybean imports have been increasing continuously. After 1995 years, China even became a net importer. The period from 1995 to 2010 was the period of forming import dependence of Chinese soybean industry. with the pluralism of the market demand and the continuously improving quality of soybeans, import volume emerge increased trend. Since 2010 up to now, the policies about soybean industry are constantly innovating and upgrading. However, affected by international market, trade frictions and uncertain elements have also enhanced.

This paper was targeted to analysing problems and pointing out solutions about the development of soybean industry in China. For example, how to address the issue of mismatch between supply capacity and domestic demand by adjusting macropolicy. How to carry forward the preponderance of traditional soybeans to improve domestic soybeans' competitive force. How to improve interconnection of industrial by enhance the connections of state-owned enterprises in the industrial chain. Further providing a new direction for China's soybean industry in the future.

2. Problem

2.1. Mismatch between Supply Capacity and Domestic Demand

There is a significant difference between supply and demand about China's soybean. The main reason of the problem is that the total domestic output of soybeans could not satisfy consumption needs. Chinese consumption and import volume always rank first place in the world [3]. Take 2020 year as an example, the total global consumption of soybeans reached up to 363.76 million tons. While, the self-sufficiency rate is less than 20%, even if the consumption of China's soybean was 112.7626 million tons, accounting for 31 percent in the total global consumption of soybeans. According to the statistics, in 2024 the total domestic output is only 20.6524 million tons; However, in the same year, the import volume reached up to 105 million tons, which might be 5 times of the total output. Although since 2015, which is the soybean's production downturn period, China's soybean's production shows an upward trend entirely, since 1996 China's soybean industry became the first opened agricultural product market, the import volume has been increasing year by year in China's soybean industry. The misdistance between supply capacity and domestic demand constantly influencing the development of agriculture in China. High import dependence and concentrated sources of imports also carry out bad influence. In 2024, the import volume of soybeans from Brazil accounts for 71.07% of China's total soybean imports. The Ministry of Agriculture of the countryside released information in May stating that even though the total projected import volume for this year is expected to decrease, there are still over 90 million tons.

2.2. Characteristics of Soybean Varieties Differ from Market Demands

As one of the biggest natural soybean producing countries, unlike other countries, most of the soybeans grown in China are non-genetically modified [4-5]. By 2023, in the United States, genetically modified soybeans account for 95% of the total soybean planting area; in Argentina, the soybean planting area reaches 17 million hectares, with genetically modified soybeans accounting for approximately 100%; as of August 2025, data shows that genetically modified soybeans in Brazil account for about 96.5% of the total output. Compared with genetically modified soybean, which is produced in the United States, Brazil and Argentina, non-genetically modified soybean has higher-quality protein and vitamins, with lower fat content. However, its relatively weak pest and disease resistance, as well as high pesticide residue rates, will further affect the planting yield, cost and market price. Due to the low yield per unit area and high planting cost of non-genetically modified soybeans mainly grown in our country, they do not have a market price advantage. The economic returns from farmers' soybean cultivation remain at a low level, especially there are some alternative crops, such as corns. People tend to grow other crops with greater planting benefits, which, in turn, led to a decline in the area of soybean cultivation in our country, despite the fact that the world market demand for soybeans continued to rise.

2.3. Poor Connectivity within the Industrial Chain

While the primary soybean production bases are in Heilongjiang and Inner Mongolia, the processing facilities are heavily distributed in Henan, Shandong, other provinces, and coastal regions, not just within Heilongjiang itself. As the distance between production and sales increases, transaction costs keep rising, which seriously affects the enthusiasm of domestic soybean processing enterprises to purchase domestic soybeans. The disruptive activities of foreign-invested enterprises have also resulted in poor industrial chain connectivity. Their comprehensive entry into both upstream and downstream links of the domestic chain has placed substantial competitive pressure on processing segments. Since 2004, multinational agri-giants like ADM and Louis Dreyfus, along with numerous foreign enterprises, have massively entered China's soybean crushing and processing sector. Deploying their substantial financial and technological advantages, they have steadily expanded their influence across the entire industrial chain, from seed research and raw material procurement to oil crushing and feed processing. In contrast, in our country, most domestic soybean processing

enterprises are scattered and underdeveloped, and there is still much room for improvement in protein purification and development. Moreover, there is a lack of communication between upstream and downstream enterprises, and information is lagging with untimely exchanges. As a result, soybean farmers usually cannot adjust their planting scale in a timely manner based on market information transmission [6-8].

3. Solution

3.1. Macroeconomic Policies

Since 2008, China's soybean market has experienced significant price volatility, showing an overall downward trend. The government introduced a temporary soybean purchase and storage policy to stabilize market prices and safeguard farmers' interests. In 2014, the central government issued the "No. 1 Document," which aimed to establish a target price system for agricultural products gradually. The Northeast region officially launched a price subsidy pilot programme in May of that year. In 2022, China further implemented the Soybean and Oilseed Production Capacity Enhancement Project. That same year, China's soybean output surpassed the 20 million metric ton milestone for the first time, marking a new phase of development for the soybean industry. It is evident that macroeconomic policies influence soybean production. On the production front, policy subsidies can encourage farmers to plant soybeans, stimulate planting enthusiasm, and strengthen the cultivation foundation. On the technological front, policy implementation can promote technological advancement, drive intercropping practices such as soybean and sorghum, and thereby enhance production efficiency. Furthermore, macro policies can regulate the market by setting purchase and reserve prices to safeguard the interests of both soybean farmers and buyers. This resembles launching price subsidy pilot programs, where the government establishes and announces target prices. When market prices fall below the target price, subsidies covering the price difference are provided to soybean producers in pilot regions. Internationally, import policies should be optimized by diversifying import sources across multiple countries and controlling both the origins and volumes of imports to mitigate potential shocks from foreign markets to the domestic sector.

3.2. Strengths of Traditional Soybeans

Leveraging the advantages of non-GMO soybeans, traditional techniques such as "molecular marker-assisted breeding" and "hybrid backcross selection" can be employed at the technical level without resorting to genetic modification. This approach targets specific traits including high protein content, high oil yield, and high levels of functional components (e.g. soy isoflavones, oligosaccharides). Additionally, specific traits can be selectively bred for particular applications. For instance, targeting the fresh soybean market, gene marker-assisted selection can rapidly identify and locate genes controlling relevant proteins, thereby developing varieties with advantages like "large seeds and easy storage." At the national level, promote the international brand image of Chinese soybeans highlighting characteristics such as high-quality protein, high unsaturated fatty acids, safety, health benefits, and easy digestibility, further establishing the global presence of Chinese soybeans. By leveraging China's abundant soybean germplasm resources and culinary culture advantages, a complementary and differentiated competitive pattern can be formed with imported genetically modified soybeans. This approach will help Chinese soybeans and soy products establish a foothold in the domestic market and expand into international markets. Traditional techniques can enhance the advantages of non-GM soybeans, boosting domestic competitiveness while strengthening domestic and international promotion and market development [9].

3.3. State-owned Enterprises

To address the issue of poor industrial connectivity, the most critical step is to strengthen state-owned enterprises' control over the soybean production chain. This involves enhancing and developing state-owned soybean enterprises, fostering collaboration among upstream and

downstream companies in the industrial chain, and continuously improving connectivity. For instance, integrated development in soybean production and processing led by companies like Nehe City Shengdeli Agricultural Technology Development Limited Company and Heilongjiang Hongyuan Oil Limited Company promotes the integration of soybean production, processing, and technological innovation. Implementing preferential policies to attract soybean processing enterprises can significantly shorten the distance between production and sales while reducing production costs. Additionally, soybean-producing regions should take the lead in promoting and attracting state-owned enterprises. Continuously build industrial chain cooperation platforms, with state-owned enterprises spearheading the establishment of soybean industry alliances. Through technical exchanges and mutual financial support, these alliances can provide assistance to small and medium-sized enterprises. State-owned enterprises can leverage modern technologies like the internet to build digital platforms, accelerating information exchange and eliminating information gaps. This enables timely communication of market demands to soybean farmers, preventing oversupply or shortages. Simultaneously, these platforms can enhance digital collaboration among state-owned enterprises, strengthening their connections within the industrial chain. For instance, the “RootCloud Platform” can provide soybean enterprises with product lifecycle management services and real-time data collection services. This facilitates the synchronous reception of data from upstream and downstream enterprises in the industrial chain, preventing information bottlenecks [10].

4. Conclusion

As an essential source of protein and oil in daily life, soybean has seen its demand in China continuously rise, driven by the nation's steady economic growth. Since the 1960s, the global soybean industry has been booming, but the soybean industry in our country has developed slowly. In light of the current development of the soybean industry, the problem of mismatch between supply capacity and domestic demand, the excellent characteristics of soybean varieties differ from market demands and poor connectivity within the industrial chain becoming increasingly serious. To address the aforementioned issues, this paper proposes the following solutions: Firstly, utilize macro-policy regulation to resolve the mismatch between supply capacity and domestic demand. Secondly, focus on and develop the traditional strengths of soybeans by fully leveraging the non-genetically modified soybean advantage to align the superior traits of soybean varieties with market needs. Finally, continuously enhance the interconnectedness of state-owned enterprises within the industrial chain and strengthen their control over it to tackle the issue of poor chain connectivity.

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