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GRADUATION THESIS

on

Features of Chinese agricultural international trade

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ASSIGNMENT
FOR THE GRADUATION THESIS OF

Master's degree student Ma Ruiqi, group 22ЭЭBma1, full-time mode of study

1 The topic of the graduation thesis: «Features of Chinese agricultural international trade»

was approved by the university order

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2 The deadline for the Master's degree student to complete the graduation thesis is 11.06.2024.

3 The input data for the graduation thesis is the regulatory and legal framework, scientific literature and reference books, and Internet data.

4 The list of issues to be studied includes theoretical basis of research of agricultural products trade in the global economy, current state of agricultural products trade in China, future development environment and existing problems of China's agricultural products international trade.

5 The list of visuals contains tables and figures.

6 The date of setting the assignment is 28.11.2023.

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Schedule for completing the graduation thesis

№ п/п	Content of the thesis	Deadline for completion	Due date, signature of the academic adviser
First year of study			
1	Substantiating of the research topic and methodology, subject and object of research	1.09.2022 – 31.10.2022	
2	Framing the scientific concept of research	1.11.2022 – 18.12.2022	
3	Collection of scientific literature for the thesis	19.12.2022 – 15.01.2023	
4	Substantiating the relevance, concept, and novelty of the research	16.01.2023 – 19.02.2023	
5	Framing of a detailed plan and layout of the research	20.02.2023 – 12.03.2023	
6	Studying new literature sources within the topic of the thesis	13.03.2023 – 26.03.2023	
7	Conducting theoretical research within the first chapter of the thesis	27.03.2023 – 30.04.2023	
8	Preparing the first chapter of the thesis	1.05.2023 – 30.06.2023	
Second year of study			
9	Conducting analytical research within the second chapter of the thesis	1.09.2023 – 22.10.2023	
10	Preparing the second chapter of the thesis	23.10.2023 – 24.12.2023	
11	Conducting analytical research within the third chapter of the thesis	25.12.2023 – 25.02.2024	
12	Preparing the third chapter of the thesis	26.02.2024 – 21.04.2024	
13	Preparing the introduction and conclusion	22.04.2024 – 12.05.2024	
14	Completing the graduation thesis	13.05.2024 – 26.05.2024	
15	Handing in the thesis for compliance control and antiplagiat	27.05.2024 – 9.06.2024	
16	Getting acquainted with the feedback and review	10.06.2024	
17	Presenting the written thesis	11.06.2024	

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Summary

The graduation thesis comprises 77 pages, 3 chapters, 15 figures, 7 tables, 64 sources.

INTERNATIONAL TRADE, AGRICULTURAL TRADE, EXPORT, IMPORT, CHINA

The object of research is the world market of agricultural products. The subject of the study is the current situation, challenge and future development of China's agricultural trade.

The goal of the research is to study agricultural products trade in China and elaborate proposals for its development.

The methodological framework of the paper is formed by system approach, analysis and synthesis, statistical and comparative methods. To display identified economic dependencies graphical method was applied.

The results of research include: the meaning and characteristics of agricultural products trade was studied; the connotation of international competitiveness of agricultural products was identified; factors affecting the international competitiveness of agricultural products were analysed; import and export of agricultural products and trade development among major trading partners was analysed; the future development environment of China's agricultural products international trade and China's agricultural products international trade optimization countermeasures were identified.

The results of the research can be used in the teaching of educational disciplines «World Economy», «International Economic Relations», «International Trade».

The novelty of the work is trends and prospects for the development of agricultural trade cooperation of China and measures to strengthen China's relationship with trading partners are revealed.

Theoretical importance of the research is in its definition of the meaning of agricultural trade as an important institution of current world economy, analysis of specific character of China's agricultural trade creation, and cooperation and prospects between China and different countries. The practical importance of the research is in the possibility to use the results in the following research in the sphere of analysis of China's agricultural trade as an important institution of current world economy.

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Introduction

Since China joined the World Trade Organization (WTO), the total volume of foreign trade has continued to grow and the degree of trade liberalization has improved. Trade opening has become an important driving force for China's economic growth, which is closely related to the development of various fields, and has brought great influence on China's agricultural production. And China, as a big agricultural country and the most populous country in the world, China is very concerned about agricultural issues. Therefore, this paper analyzes the characteristics of international trade of agricultural products in China.

Chinese government underscores the importance of rural land reform, developing modern agriculture and maintaining agriculture as the foundation of its economy. China will intensify policy support and protection of agriculture by promoting steady increases in agricultural expenditures, financial subsidy policies for agriculture and setting up an interest compensation mechanism based on the price difference on the market. Of course, China also has a lot of challenges in the process of agricultural trade development, while ensuring modernization of agriculture itself so as to combine sustainable rural development with the necessary adjustment of the agricultural sector to the further opening for trade, in particular since the nation's accession to the World Trade Organization (WTO) in December 2001, and to emerging scarcity on international agricultural markets.

Continued trade liberalization should enable China to ease the pressure on its foodmarkets, where the trend of a fast growing demand for meat and animal feeds experience dover the past two decades is expected to persist for another two decades or more. However, it will also necessitate significant adaptation in existing farming practices and regional specialization patterns within China, as farmers will in many areas find it difficult to sustain competition with imports.

The theoretical basis of the study is the importance of Chinese scientists and foreign these scientists, the following should be pointed out: Linda A., Hugh M., Liu J., Lv J., Mai Y. H., Xie G., Zheng Y. X., Roebiano M., Danilo C., Hertel T. D., Hummels M., Huang J. K, Liu Y., Mai Y. H., Adams P.

The object of research is the world market of agricultural products. The subject of the study is the current situation, challenge and future development of China's agricultural trade.

The goal of the research is to study agricultural products trade in China and elaborate proposals for its development. We have set the following tasks to achieve the described goal:

- describe the meaning and characteristics of international trade in agricultural products and the connotation of international competitiveness of agricultural products;
- study current state of agricultural trade in China and analyze import and export of agricultural products;
- analyze trade development among major trading partners;
- analyze the existing problems in China's agricultural trade;
- describe the China's agricultural products international trade optimization countermeasures.

The present study is based on data and information collected from a variety of sources. The major source of data is International trade statistics from statistical data published in Chinese research literature, international trade map, journals, reference materials, Internet sources.

During the research the complex of theoretical and practical methods was employed such as methods of comparative statistics, inductive and deductive reasoning, logical analysis and synthesis.

The novelty of the work is trends and prospects for the development of agricultural trade cooperation of China and measures to strengthen China's relationship with trading partners are revealed.

Theoretical importance of the research is in its definition of the meaning of agricultural trade as an important institution of current world economy, analysis of specific character of China's agricultural trade creation, and cooperation and prospects between China and different countries. The practical importance of the research is in the possibility to use the results in the following research in the sphere of analysis of China's agricultural trade as an important institution of current world economy.

The work structure is determined by the purpose and tasks decided in the work. The research paper consists of introduction, three chapters, conclusion and references.

Chapter 1 Theoretical basis of research of agricultural products trade in the global economy

1.1 The meaning and characteristics of agricultural products trade

The agricultural products that people often say in life mainly refer to crops, such as sorghum, rice, peanuts, corn, wheat, and souvenirs in various regions. According to the current research results, there is no exact unified definition of agricultural products in foreign countries or in China. FAO has a distinction between general agricultural products and narrowly defined agricultural products. Among them, agricultural products in a broad sense refer to crops, forest products, livestock products, and aquatic products; while narrow-form agricultural products refer to oil crops, sugar crops and beverage crops in food, animal products, aquatic products and crops [5, p. 12].

First of all, this thesis defines agricultural products. The first problem in the relevant research on agricultural trade is to define agricultural products, but there is a lack of unified definition of the concept and scope of agricultural products internationally. According to the definition of agricultural products in Agricultural Statistical Yearbook, agricultural products include not only products directly produced in production activities, but also related crop by-products. To fully understand the definition of agricultural products, we need to consider agricultural products and related products. Aquatic products are not included in the statistics of basic agricultural products of the World Trade Organization (WTO), but according to China's statistical habits and classification methods, aquatic products are usually regarded as a part of agricultural products. Based on the definition of agricultural products by scholars [5; 14; 23; 35] and the types of demand for agricultural products in residents' dietary structure, this thesis divides agricultural products into cereals, fruits, nuts and soybeans, vegetables, livestock products, aquatic products and milk eggs.

The classification of agricultural products in international trade has not formed a unified caliber, and there are different classification methods in different agricultural trade data publishing departments. Common agricultural products classification methods in

international trade include standard international trade classification (SITC classification), Maritime Cooperation Council Tariff Commodity Classification Catalogue (CCCN code), Classification by Economic Category (BEC) and Customs Statistics Commodity Catalogue. Referring to the appendix: Description of Classification and Statistical Dimensions of Agricultural Products in the Report on the Development of China's Agricultural Products Trade, this paper divides agricultural products into six categories according to HS codes according to the categories of agricultural products (HS product dimensions) defined in the Uruguay Round Agricultural Agreement and aquatic products, and the HS codes involved in each category are as follows, as shown in Table 1.1.

Table 1.1 – Coverage of Agricultural Products [8]

product category	Specific category	HS coding
cereal	wheat	1001, 1008, 1101, 1103, 1904
	corn	1005, 1102-1104
	Paddy and rice	1006, 1102, 1103
	barley	1003, 1104
Fruit, nut and soybean		0801-0814, 1201, 2006-2009
vegetables		0701-0714, 0904, 0910, 1207, 1209, 1212,
		2001-2005, 2103
animal by-products	Beef, mutton, pork and poultry.	0101-0106, 0201-0210, 1601, 1602
aquatic product		0106, 0301-0309, 1603-1605
Milk egg	Fresh milk, eggs	0401, 0407

Agricultural products trade is an important part of China's three rural work and foreign trade, a necessary means to make overall use of agricultural domestic and

international resources, and a key hub to smooth the domestic and international double circulation in agricultural field. To play the card of agricultural products trade well, we must control the agricultural products trade pattern as a whole.

Compared with industrial products, agricultural products have different characteristics in trade. First of all, the production of agricultural products is influenced by natural conditions and has obvious seasonality, regionality and dispersion. Secondly, most agricultural products are people's daily necessities, and supply and demand are inelastic; Thirdly, most agricultural products are organisms, which are bulky, abundant, moist, heavy, fresh and perishable, and uneven in quality. Therefore, they require higher requirements in acquisition, packaging, transportation, storage and sales, require specific trading facilities, and have high costs and risks. Determined by these trade characteristics of agricultural products, the trade of most agricultural products in the international market shows the following important characteristics [35, p. 18].

Concentration of trade commodities. This feature means that the varieties of agricultural products exported by most underdeveloped countries are limited. For example, Brazil mainly relies on coffee exports; Ghana's main export material is cocoa; Bangladesh and India mainly export jute; Sri Lanka and Kenya mainly export tea; Rubber is one of the main export materials in Malaysia. Argentina and Thailand mainly rely on food exports. In other words, the trade of underdeveloped countries mainly depends on exporting a few major agricultural products [35, p. 20].

Concentration of trade areas or markets. Regional concentration of trade or market concentration means that most of the main export materials are usually sold in the markets of several industrialized countries. Tea, coffee, jute, cocoa and rubber are sold in Europe, North America, Australia and Japan. The trade area shows that the economic fate of underdeveloped countries is related to the domestic situation and the ups and downs of economic activities in several industrialized countries [35, p. 22].

The large price fluctuation causes the fluctuation of export income. The fluctuation range of agricultural products or primary products trade is very high, at least higher than the fluctuation range of manufacturing products traded in the world market.

The international trade of agricultural products is very time-sensitive, which is different from other commodities. Because of the biological characteristics of agricultural products and their direct effects on human body, people's demand for agricultural products, especially food, is very strict. If a country or region has to buy from the international market and transport it to its own country due to abnormal climate or social factors, the shorter the better, otherwise it will affect the normal operation of social economy and the maintenance of people's lives. On the other hand, the preservation and fresh-keeping of agricultural products are far more stringent than other commodities: the time people need for agricultural products is basically unaffected by other factors. No matter the supply time, the amount of food people consume every day is basically the same. The perishable nature of agricultural products requires that the transportation time of agricultural products be shortened as much as possible. This puts forward stricter requirements for the means of transportation in the international trade of agricultural products than for transporting other commodities [30, p. 13].

International trade in agricultural products is more beneficial to developed countries than developing countries. Generally speaking, most agricultural products exported by developed countries, especially the United States and the European Union, are food and meat, except for many unfair trade exchanges. However, the demand elasticity of grain is the least sufficient in agricultural products, and the largest demand is in developing countries with large populations. On the contrary, most agricultural products exported by developing countries are economic or tropical crops, and their demand elasticity is much more sufficient than that of grain. As for their mutual substitution, there is also a lot of food. Due to the progress of science and technology, some raw agricultural products have become increasingly substitutable, so the market price will inevitably fall, which is obviously unfavorable to developing countries that export such agricultural products. Especially since the establishment of the WTO, although the tariffs on agricultural products have been greatly reduced, the non-tariff technical barriers have been significantly improved. Either the agricultural products produced by developing countries cannot meet the requirements of safety and health quality in developed countries and are rejected, or in order to meet the requirements of safety and health quality in developed

countries, the production cost will be greatly increased, so the price competitiveness and profit rate will be greatly reduced.

China is a traditional agricultural country with a long history of agricultural production and rich production experience. Since the founding of New China, China's international trade in agricultural products has achieved great development and has played an important role in China's foreign trade and even world trade. In the nearly 30 years since the birth of New China, Western countries have imposed political isolation and economic blockade on the newly established Chinese government, and the international political environment required for China's foreign trade is lacking. The production of agricultural products is backward, the supply of agricultural products is seriously short, and the basic food and clothing of the people has not been resolved for a long time. The main characteristics of China's agricultural trade during this period are: small trade scale and slow growth. From 1953 to 1978, China's agricultural products were small, and the annual export volume was mostly around 2 billion US dollars. In 1978, the export value of agricultural products was only 6.1 billion US dollars. There are not many trading partners and the market is relatively simple. During this period, there were only 60 countries and regions that traded agricultural products with China. These countries and regions were mainly socialist countries in Eastern Europe, Asia, and Africa and other developing countries. Agriculture is the pillar industry of foreign trade. Before the reform and opening up, due to the lack of industrial foundation, China's industrial development was relatively backward, and the export of products was mainly agricultural products. The proportion of agricultural products exports accounted for more than 70 % of China's total foreign trade exports. At this stage, China's foreign trade is actually agricultural products. Foreign trade. As a major foreign exchange earning product of China, agricultural products have made tremendous contributions to China's foreign trade and the development of the national economy [17, p. 12].

In 1978, China began to implement reform and opening up, and the rural land implemented a household contract system, which greatly mobilized farmers' enthusiasm for growing grain, increased grain output year after year, and rapid agricultural development. In 1984, China's total grain output exceeded 800 billion jin, and China's

food and clothing problem has been basically guaranteed. With the further enhancement of China's comprehensive agricultural capacity, the total grain output in 1993 jumped to a new level of 900 billion jin, providing a stable foundation and product source for agricultural trade. At the same time, with the continuous reform and implementation of China's foreign trade management system and foreign trade management mechanism, China's foreign trade activities have become increasingly active, which has effectively promoted the development of agricultural trade. During this period, the proportion of agricultural trade in China's total merchandise trade showed a downward trend. In 1980, China's agricultural exports accounted for 26 % of the country's total merchandise trade, and agricultural imports accounted for 34 % of total merchandise trade. By 1993, the proportion of agricultural exports to total merchandise trade fell to 14 %. The proportion of agricultural imports to total merchandise trade fell to 8 %, and the role of agricultural trade in export earnings was weakened. This reflects from one side that the ratio of China's agriculture to China's industrial development has undergone important changes. The main characteristics of agricultural trade during this period were: the scale continued to expand and the growth was relatively stable. After 1978, the growth rate of China's agricultural trade accelerated. In 1979, the total trade volume of agricultural products exceeded 10 billion US dollars. In 1989, the total trade volume of agricultural products exceeded 20 billion US dollars. In 1993, the total trade volume of agricultural products reached 20.5 billion US dollars, with an average annual growth rate of 4.3 %. Exports have expanded steadily and the surplus has increased significantly. In 1979, China's agricultural exports amounted to only 7.6 billion U.S. dollars, and in 1993 agricultural exports reached 12.6 billion U.S. dollars. After 1984, China's agricultural trade continued to be a surplus, with an average annual surplus of about 870 million US dollars. In 1993, the trade surplus was the highest, amounting to 4.17 billion US dollars [15, p. 10]. The number of trading partners has increased and the market has gradually diversified. At this stage, the countries and regions that have traded with China's agricultural products have expanded from more than 60 to most of the world's countries and regions. The market structure of agricultural products trade has also undergone fundamental changes, from the original socialist countries to the market economy countries and regions. The United States, Japan, Western

Europe, Southeast Asia, Canada and Australia have become China's agricultural products. The main trading partner. Export products are gradually concentrated, and comparative advantages are beginning to emerge. The main products at this stage are labor-intensive products such as aquatic products, horticultural products and livestock products. The total export value of these products accounts for 60 % of the total agricultural exports of China, and the rapid growth is aquatic products.

After opening up in recent years, China's idea of building a socialist market has become clearer, its objectives have become clearer, and various reforms have been broadened and developed in depth. The pace of China's accession to the World Trade Organization's negotiation process has been further accelerated and a new situation of full openness. It is gradually forming; agricultural development has entered a new stage in which the supply and demand of major agricultural products are basically balanced and abundant. The important characteristics of agricultural products trade formed during this period are: scale has expanded, growth has fluctuated; exports have been basically stable, imports have fluctuated greatly; proportions have declined, trade surplus has increased; trade structure has changed, and comparative advantage products have become more apparent. In 1994, China's agricultural trade totaled US 25.8 billion dollars. In 1995, the total trade volume of agricultural products exceeded US 30 billion dollars. In 2001, the total export value of agricultural products was US 27.9 billion dollars, with an average annual growth rate of only 1.1. The average annual export volume is 16 billion U.S. dollars; the import fluctuates greatly. In 1997, the import volume was 2.3 times that of 1999. The proportion of foreign trade in agricultural products to China's total foreign trade fell from 10.9 % in 1994 to 5.5 % in 2004, but trade surplus continued to increase, and the trade surplus increased from an annual average of 870 million dollars in the previous phase to 2.39 billion dollars. In China's agricultural exports, the proportion of labor-intensive products such as vegetables, fruits, aquatic products and livestock products has further increased, of which fruit and vegetable products account for 23 %, aquatic products account for 25 %, and livestock products are about 17 % of the three totaled 65 %. In terms of imports, wheat imports decreased year by year, and soybean imports increased sharply, which became the focus of attention during this period [17, p. 13–14].

At the end of 2001, China joined the WTO and opened up to a new stage of development. The agricultural trade has achieved sustained and rapid growth and comprehensive development, and China has become a major agricultural trade country in the world. At the same time as the total agricultural trade volume surged, the trade structure changed. The environment facing agricultural trade is becoming more complex. With the acceleration of market opening, the commitments such as tariff reductions for agricultural products after the accession to the WTO have gradually been fulfilled, and the import of agricultural products has increased substantially. Since 2004, China has changed from a net exporter of agricultural products to a net importer.

1.2 The connotation of international competitiveness of agricultural products

International competitiveness was first proposed in the World Economic Forum in 1985. However, scholars have not reached a consensus on its definition for many years, but the essence of each statement is the same, that is, international competitiveness should be understood as a country's productivity as reflected in the sale of its products on the international market. In the existing literature, scholars have divided the international competitiveness horizontally and vertically. They believe that international competitiveness is a comprehensive manifestation of all levels of competitiveness. Horizontally, the most representative is Buckley, P., which has two levels of competitive performance and competitiveness potential [22, p. 270]. He believes that competitive performance can be measured by indicators such as market share and comparative advantage. Competitive potential is measured from the perspective of the reasons for competitiveness [23, p. 14]. From the perspective of vertical division, international competitiveness is divided according to the scope of research, including national level, industrial level and enterprise level. Among them, national competitiveness is the ability of a country to increase per capita income and national welfare growth; the international competitiveness of enterprises is simply measured by corporate profitability. The research on industrial competitiveness is the most extensive, but because of the large differences between industries, there is no unified measurement standard and practice. Generally, the

strength of an international competitiveness of a certain industry can pass the import and export volume and labor in international trade.

According to the subject of its attachment, international competitiveness can be divided into international competitiveness of products, international competitiveness of enterprises, international competitiveness of industries and national competitiveness. Among them, the international competition of production and enterprises must use products as the carrier to win the competition by reducing product cost, improving product quality, increasing product functions, improving product quality and improving production efficiency. Product market competitiveness is the ultimate embodiment of industrial competitiveness and enterprise competitiveness in the market. Competitive enterprise groups form an internationally competitive industry, and high-productivity advantageous industrial clusters will ultimately drive the growth of national productivity. In turn, it forms a national competitive advantage. In turn, the national advantage contributes to the formation of a good environment for the development of industry and enterprises, thereby promoting the industrial competitiveness and the further improvement of the competitiveness of enterprises, which in turn represents the international competitiveness of specific products. With the development of economic globalization and China's accession to the World Trade Organization, China's national competitiveness, especially the competitiveness of some important industries, is attracting people's attention. Agriculture is one of them, and the focus is on the international competition of Chinese agricultural products [32, p. 164].

Specifically, the concept of international competitiveness of agricultural products includes the following connotations: the core of agricultural product market competitiveness is «buyer value». Buyer value is depending on the range of utilities and consumers that products or services are considered to provide for consumers [24, p. 46]. The buyer's value includes two aspects of the competitiveness of the agricultural product market, one is price competitiveness, and the other is non-price competitiveness. In other words, buyer value can be expressed in terms of agricultural product prices, agricultural production efficiency, agricultural product quality, marketing, and meeting consumer demand levels. Therefore, we should start from this path and explore the reasons for the

formation of agricultural product market competitiveness and the strategy to enhance the competitiveness of agricultural products market. A free and fair market is a prerequisite for competition. Because of the existence of trade wall fish and the strength of state support, it is difficult to make a fair evaluation of the international competitiveness of agricultural products in countries around the world. The competitiveness of agricultural products market is related to the specific market in which competition takes place, and the same agricultural products will show unsatisfactory competitiveness in different markets. Therefore, when analyzing the international competitiveness of agricultural products, we must not only consider all aspects of production, processing and sales of agricultural products, but also must consider the impact of different degrees of openness of agricultural products in various countries. With the expansion of the market in China, the so-called market conditions are not limited to the international market, but must also consider the domestic market. Competitive performance as market share and profitability from the perspective of producers and operators, the competitiveness of agricultural products market is reflected in the ability to win market share and profit. The market share standard means that the international competition of agricultural products only involves competition in the form of commodity trade, and does not involve industrial competition in which the international direct investment of multinational corporations is the main mode. The level of profitability standard means that the competitive agricultural products are characterized by profitability, excluding the exchange of agricultural products for non-profit purposes.

The competitiveness of agricultural products and agricultural competitiveness may be inconsistent. The international competitiveness of agricultural products is not the essence of agricultural competitiveness. Especially in the case that the current international trade wall has not been completely eliminated, the international competitiveness of agricultural products often cannot correctly reflect the agricultural conditions of a country. For example, the United States and the European Union have provided a large amount of subsidies to their own agriculture, directly increasing the quantity and price advantage of agricultural products, and have not truly reflected the international competitiveness of their agricultural products, but have distorted international agricultural trade. In this case, although the production costs of soybeans and other agricultural products in Brazil,

Argentina and other countries are lower, but because there is no subsidy, South American soybeans do not have the competitive advantage of American soybeans in the international market [32, p. 165].

It traces the theoretical roots of the formation of international competitiveness of agricultural products, but it is mainly derived from the following two aspects. First, it is derived from the interpretation of the comparative advantage theory of international economics. The analytical paradigm of this theory is based on comparative advantage. The second is the interpretation of the theory of competitive advantage in management. The analytical framework of this theory is based on competitive advantage. As long as there are economic activities such as agricultural products trade between different countries, there will be problems in the competitiveness of agricultural industries and their agricultural products. The origin and development of international trade theory can be traced back to mercantilism in the ancient Greek era. In the middle of the 18th century, Adam Smith introduced the theory of division of labor into the field of international trade on the basis of criticizing mercantilist views, and proposed the «absolute superiority theory» based on the absolute difference of production technology between countries. Smith believes that the absolute advantage is caused by the absolute technical difference in the production of the same product between countries and the absolute difference in the production cost per unit of product. Generally speaking, the absolute cost advantage of a country's products comes from the innate advantage. The natural endowment advantage is «the advantage of a country in terms of geography, environment, soil, climate, mineral products and other natural conditions», followed by the acquired advantage. The advantage is «the advantage gained through acquired learning, experience accumulation, education and training». If a country has at least one of its advantages, its products have an absolute cost advantage or an absolute advantage, that is, they are internationally competitive. At the beginning of the 18th century, Li Jiatu first proposed the «comparative advantage theory» of the relative differences in production technology in his «Political Economics and Taxation Principles» in terms of the limitations of the theory of absolute superiority. He believes that «as long as a country has a comparative advantage in a certain product, then the product has certain international competitiveness», stressing that «the

factor determining international trade is the relative labor cost of the two countries' goods, not the absolute labor cost» [35, p. 42]. It clarifies that the basis of international trade division is not the difference in absolute cost. As long as there is a relative difference in the production costs of products between countries (comparative cost differences), that is international competitiveness. Heckscher-Ohlin (based on the serious shortcomings of the comparative advantage theory, further improved and developed the theory of comparative advantage, explaining the reasons for the international competitiveness from the perspective of resource allocation from the perspective of the abundance of production factors, the «Elemental Endowment Theory» was created. Olin explained the impact of international trade on the distribution of income arising from the difference in factor endowments in a country, emphasizing that the precondition for international trade is that a country's products are produced cheaper than those produced in other countries. The price difference is determined by the difference in the proportion of production costs, and the difference in production cost ratio is caused by the price ratio of production factors, that is, the degree of factor endowment. Therefore, the factor endowment theory believes that «the international competitiveness of a product is as determined by the degree of endowment of the country's production factors, as long as it can make full use of its relatively abundant production factors to produce its exported goods intensively, it will have competitive advantages and competitiveness». At the end of the last century, Yang Xiaokai and others have excavated and innovated the traditional comparative advantage theory, and constructed the theoretical framework of emerging classical economics, that is, the theory of endogenous comparative advantage theory. It is mainly composed of the emerging classical growth model and its modern trade theory. The emerging classical growth model is the familiar model, referred to as the model. Yang Xiaokai expounded the relationship between practice and transaction costs, the evolution of division of labor and the increasing scale, and proposed that the endogenous comparative advantage is the idea created by human beings in the long-term experience accumulation. The assumption of this model is that productivity gains are generated by the combination of lower transaction costs and consumer groups with different consumer preferences and skilled producers. The core content of the emerging classical trade theory is that it emphasizes the endogenous

and dynamic nature of comparative advantage, and believes that endogenous comparative advantage can be generated from the acquired professional learning and independent knowledge innovation and long-term experience accumulation process and transformed into competitive advantage. The evolution of endogenous comparative advantages heralds the dynamic development of a country's trade and the possibility of sustained economic growth. It can be seen that the international competitiveness of agricultural products not only stems from the exogenous comparative advantage, but also from the endogenous school advantage. The evolution and promotion of this endogenous comparative advantage and exogenous comparative advantage become the sustainable development of a country's agricultural products international trade.

The theoretical interpretation from the above sources of international competitiveness shows that the root cause of the international competitiveness of agricultural products is multifaceted, and therefore its manifestation or its performance characteristics are diverse. According to the classification of scholars such as Qiao Juan, this thesis divides the expressions of international competitiveness of agricultural products into two types: one is explicit international competitiveness, and the performance is achieved by international competitiveness [35, p. 81]. Its metrics are mainly IMS, RCA, TSC, QCI, etc.; the other is implicit potential international competitiveness, showing the potential advantages of international competitiveness. Its metrics are mainly, and so on. According to the international competitiveness subdivision, the expression of international competitiveness of agricultural products can be divided into price, cost and quality competitiveness. In fact, from the theoretical roots of the international competitiveness of agricultural products to the understanding of the international competitiveness of agricultural products, it is not difficult to see that agricultural products are a kind of commodity with special natural attributes, especially as a kind of food, it is in a complete In competitive market transactions, the characteristics that should be revealed should first be price and quality. According to people's purchasing experience, the price is the same for homogeneous products, and the quality is for products with the same price. For those with higher consumption levels and experience in purchasing agricultural products. Also depends on its brand (including brand awareness, after-sales service, etc., characteristics

(including nutritional value, health function, scarcity, etc.) and reputation, etc. Therefore, starting from quantifiability, this article considers agricultural products, especially citrus products. The most basic performance characteristics of international competitiveness should be: price competitiveness, quality competitiveness and cost competitiveness.

The price competitiveness of agricultural products refers to the price advantage of agricultural products of the same variety, the same quality and brand under a completely competitive market condition. The price competitiveness of agricultural products is an important feature and the most important form of its international competitiveness. According to the theory of market price theory, the cost in the formation of agricultural products not only includes production costs, but also includes circulation costs and transaction costs [32, p. 172]. The production costs include the material costs necessary for production, labor and production facilities, equipment and other costs. If the circulation cost and transaction cost are not high, the production cost advantage may be expressed as price advantage or price competitiveness. The strength of agricultural product price competitiveness is directly reflected in the comparative advantage of the price of similar products in the domestic market and the international market. According to the different competitive markets, the price competitiveness of agricultural products can be decomposed into export competitiveness and domestic competitiveness. If the price of agricultural products in a country is lower than the price of imported homogeneous agricultural products in the domestic market, it is domestically competitive. In the same way, if the price of agricultural products in a country is lower than the price of similar agricultural products in the international market, it is export competitiveness; therefore, it is generally considered that the price competitiveness of agricultural products is a dominant international competitiveness.

The competitiveness of agricultural products is one of the basic elements and main manifestations of its international competitiveness. From the perspective of commodity science, nutrition, and hygiene, the quality competitiveness of an agricultural product is mainly reflected in the size, shape, color, taste, nutrient content of the agricultural product itself, and easy storage and transportation (value added, suitable for processing needs (dedicated) and other aspects of biological characteristics, but also in the product of

disease, various drug residues and harmful substances content and other food safety indicators. The strength of agricultural product quality competitiveness is not only its own biological characteristics Related to health and safety, and related to its marketing service characteristics, there is a certain deviation between consumers' perception and evaluation of the quality of the same agricultural product. Under normal circumstances, the overall evaluation of homogeneous agricultural products by consumers is consistent, but in a few cases, the subjective judgment of consumers may play a very important role, even if the final product's verifiable quality is exactly the same, but because of the different production processes and methods, the consumer's judgment will not be the same, which may be related to consumption. It can be seen that quality competitiveness is also a kind of explicit international competitiveness.

What is the cost competitiveness of agricultural products? So far, there is no unified definition in China. However, the concept of cost is generally considered to be two types: one is the cost of accounting, that is, the accounting cost, which refers to the various expenses incurred by the producer to provide labor for producing a certain product, usually called the production cost. Production costs are actually a historical cost, which is the price paid when measuring production. According to the theory of market price theory, the production cost of agricultural products or accounting cost is the main component of the production price of agricultural products. The high and low production cost determines whether the agricultural products have price competitiveness and profitability. The other is the cost of economics, that is, the opportunity cost, which refers to the sum of the values of various production factors invested by a certain production unit to produce a certain amount of products. According to explanation, «the opportunity cost of choosing one thing in a scarce resource is the value of the abandoned item or labor». Therefore, the cost of economics is not a production cost, but a theoretical method or principle for economists to analyze and calculate costs, usually called opportunity cost. According to explanation of economic costs, this thesis argues that the cost competitiveness of agricultural products refers to cost competitiveness in economics, or opportunity cost competitiveness. It is a measure of whether a certain agricultural product in a country or region has a comparative advantage [47, p. 28]. It is also an important indicator of its strength and weakness, and it

is also one of the main manifestations of its international competitiveness. It is usually assessed and compared. Therefore, it is generally believed that the cost competitiveness of agricultural products is actually a potential international competitiveness.

China's agriculture as a whole lacks basic competitiveness, especially bulk agricultural products. Agriculture is an industry highly dependent on natural resources, and the scale of land determines the basic competitiveness of planting industry, which in turn determines the basic competitiveness of aquaculture. The average agricultural household size in China is only 0.5 hectares, and the scale of agricultural operation is roughly equivalent to 1/6 of Japan, 1/30 of the EU and 1/340 of the US. Even if China's rural population is reduced to 300–400 million by 2050, the average agricultural household scale is only about 1 hectare, which cannot be compared with the production scale of major exporting countries such as the United States, Canada, Australia and Brazil [35, p. 54]. In recent years, with the cost of labor, land, environmental protection, quality and safety becoming more and more obvious, the problem of insufficient competitiveness of China's agricultural base has become increasingly prominent. The production cost of bulk agricultural products is close to that of Switzerland, the European Union, Japan and South Korea, and the gap with major exporting countries such as the United States, Canada and Australia is widening [39, p. 196].

The lack of explicit basic competitiveness leads to the reversal of production costs in international comparison. The United States is the world's largest exporter of bulk agricultural products, and its production costs largely determine the international prices of bulk agricultural products. The comparison of agricultural production costs between China and the United States is of typical significance.

The livelihood cost of agriculture is high, and it is difficult to reduce the cost of agriculture. China's production cost is higher than that of the United States mainly because of the high labor cost and land cost. Land rent and labor cost are actually converted into farmers' income, which is an important source to support the livelihood of farmers in China. Therefore, the essence of the difference in the production cost of bulk agricultural products between China and the United States is the difference in the livelihood cost borne by agriculture in the two countries, that is, the high production cost of bulk agricultural

products in China is mainly due to the high livelihood cost of supporting the agricultural population.

In addition, the construction of rural social security system in China started late, and the multi-functional characteristics of agriculture are remarkable, which undertakes many non-commodity functions such as food security, social security, environmental protection and rural development. The realization of these functions is at the expense of efficiency, which also weakens the competitiveness of China's agriculture to some extent.

Of course, China has a certain comparative advantage in labor-intensive products, and there is still room for improving agricultural competitiveness through measures such as moderate scale operation, socialized service and scientific and technological progress. However, on the whole, compared with the major exporting countries in the world, China's agriculture, especially bulk agricultural products, has a huge gap in basic competitiveness and is difficult to change. With the increase of the income level of Chinese residents and the opportunity cost of agricultural labor force, this gap will be further widened, and the problems of lack of agricultural basic competitiveness and high production cost in China will become more and more prominent.

Chapter 2 Current state of agricultural products trade in China

2.1 Current state of agricultural domestic development in China

Agriculture is the «mother industry» of human beings. In ancient times, agriculture has been the basis for human beings to resist natural threats and survive. Agriculture has fed and developed human beings. Without agriculture, there would be nothing for human beings, let alone modern civilization of human beings. The development of social production begins with agriculture, and only on the basis of agricultural development can there be the emergence and development of industry, and only on the basis of agricultural and industrial development can there be the development of tertiary industry. It can be seen that agriculture is a well-deserved mother industry. The position and function of agriculture cannot be summarized as the foundation of national economy in one sentence.

Economic perspective. Agriculture is the foundation of national economy and economic development. Because agriculture is the source of food and clothing and the foundation of survival for human beings. The development of agriculture directly affects and influences the development of national economy. Agriculture is the most basic material production sector in the national economy. Agriculture is the source of food and clothing and the foundation of survival of human society. Agriculture is a necessary condition for the existence and development of production departments such as industry. Agriculture is the main source of raw materials for light industry. Agriculture provides a broad market for industrial development. The countryside is not only a vast market for heavy industrial goods, but also a vast market for light industrial goods. Agriculture is an important source of national construction funds accumulation. Agriculture directly accumulates funds for the country by paying agricultural taxes, and indirectly accumulates considerable funds for the country through light industry with agricultural products as raw materials. Agriculture can provide labor for other sectors of the national economy. With the development of agriculture, the surplus labor force in rural areas is increasing day by day, and these surplus labor forces are enriched to other labor departments of the national economy. Agriculture is also an important source of export goods. In the composition of

export commodities, the proportion of industrial exports has increased year by year, but agriculture, by-products and their processed products still occupy an important position. Agriculture still plays a very important role in earning foreign exchange from commodity exports. Agriculture is the guarantee to support the continuous development and progress of the whole national economy [35, p. 34].

Social perspective. Agriculture is the foundation of social stability and the industry that stabilizes the world. Whether agriculture can develop steadily is related to social stability. Food is the most important thing for the people, and food is the most basic means of survival for human beings. The basic position of agriculture in the national economy is prominently manifested in the production of food. If agriculture can't provide food and necessary food, then people's life will not be stable, production will not develop, and the country will lose the foundation of self-reliance. In this sense, agriculture is an industry that stabilizes the world [35, p. 34].

Political perspective. Agriculture is the foundation of national self-reliance. China's self-reliance depends largely on the development of agriculture. If agricultural and by-products cannot maintain self-sufficiency and rely too much on imports, they will be subject to people. Once the international political situation changes, it is bound to be passive and even endanger national security. Therefore, whether the basic position of agriculture is firm is related to the vital interests of the people, social stability and the development of the whole national economy, and it is also related to whether China can adhere to its independent position in international competition [35, p. 36].

Agricultural development perspective. China is a big agricultural country. Facing the international competition, China's national industry is backed by the huge domestic market. Without the support of increasing farmers' income, there will be greater risks in expanding domestic demand. Without the modernization of agriculture, there can be no modernization of the whole national economy.

The rural work conference held by the Central Committee further pointed out: to build a well-off society in an all-round way, we must coordinate urban and rural economic and social development, pay more attention to the countryside, care for farmers, support agriculture, make solving the problems of agriculture, rural areas and farmers the top

priority of the whole party's work, put them in a more prominent position, and strive to create a new situation in agriculture and rural work. Agriculture has developed smoothly, the growth rate has accelerated, and the entire national economy has developed rapidly. Backward agricultural production and slow development will bring harm to the development of the whole national economy. Agricultural development restricts the development of other sectors of the national economy. China must put agriculture in the first place in the whole economic work and attach great importance to agricultural production. At any stage of economic development, the basic position of agriculture cannot be weakened, but can only be strengthened.

With the aggravation of global climate change and environmental deterioration, people are increasingly aware of the importance of agriculture to the ecological environment. In order to maintain sustainable development, people are looking for sustainable agricultural development mode. In this regard, China, as a populous country and a major agricultural country, has started a series of exploration and practice, and made great efforts to develop green agriculture.

The importance of a country's agriculture in food security is not only to provide food as a special commodity, but also to have other importance, that is, to ensure a certain level of food self-sufficiency, reduce the fear of over-reliance on the international market, increase the sense of security of food security, and ensure the realization of the national macro-strategy. For countries facing food shortage and insufficient purchasing power, agricultural production has the special function of eliminating hunger and malnutrition.

The environmental importance of agriculture includes reducing pollution by managing soil and plants, increasing biomass and nutrient fixation by rotating multiple plants, and improving the elasticity of ecosystem by controlling soil erosion technology.

In addition to the traditional economic functions of providing products and employment opportunities, agriculture also has other non-commodity output functions, such as ensuring labor employment, buffering the economy, maintaining the balanced development of national territory and space, and promoting social equity.

Because of its regional distribution, agriculture not only provides rural residents with means of livelihood and employment opportunities, but also provides them with

places to live and socialize, which helps to form and maintain rural life patterns and the vitality of rural communities, and can reduce the blind migration of rural population to cities and maintain social stability.

China is not only a big agricultural country, but also a populous country. Solving the problem of feeding more than one billion people has always been one of the most important problems in China and the stability of agricultural products is of great significance to China.

China's agriculture has inestimable advantages in natural resources, and its agricultural natural resources are diversified. In the whole map plate, it spans nine heat zones from north to south, with vast territory, mountainous grassland, various biological resources and rich varieties. The central and western regions, especially the north, northwest and southwest, are rich in green resources, which creates favorable conditions for the development of all kinds of characteristic green agricultural products.

China is a big agricultural country, and its vast land and abundant resources are the advantages of agricultural development. At the same time, the diversity of climate and natural environment in China provides favorable conditions for the growth of crops.

China has invested heavily in agricultural science and technology, and has the world's leading technology, theory and management experience. With the advancement of emerging technologies such as Internet, big data and artificial intelligence, green agriculture will gain more support and development opportunities.

Because of its large population, China has a vast consumer market, which is very beneficial to the development of green agriculture. The consumption market demand of green agricultural products is growing day by day, so green agriculture has great growth potential.

The government of China put forward the goal of sustainable development, taking agriculture as one of the key areas of sustainable development, and fully supporting the development of green agriculture. In addition, the government has continuously strengthened the publicity of green agriculture and raised people's awareness and awareness of green consumption.

The main agricultural products are as follows:

Garlic: Garlic is one of the most important vegetable export varieties in China, mainly exported to Southeast Asia, the Middle East and Europe. Garlic in China is of good quality and delicious taste, which is favored by international consumers.

Carrot: China's carrot production and export are among the highest in the world, mainly exported to the Middle East, Japan and Southeast Asia. China carrots are very popular in the international market because of their excellent quality and delicious taste.

Mushroom: China's mushroom production and export are very large, mainly exported to the United States, Canada and Europe. China mushrooms have a wide variety and delicious taste, which are favored by international consumers.

Pepper: Pepper is one of the important vegetable export varieties in China, mainly exported to Europe, America, Southeast Asia and the Middle East. There are many kinds of peppers in China with rich taste, which are favored by international consumers.

Chinese cabbage: Cabbage is one of the most important vegetables in China, and it is also one of the main varieties exported by China, mainly exported to Korean, Japanese and Central Asia. China cabbage is very popular in the international market because of its excellent quality and delicious taste.

Ginger: Ginger is one of the important vegetable export varieties in China, mainly exported to Southeast Asia, the Middle East and Europe. China's ginger has excellent quality, delicious taste and good health care effect, which is favored by international consumers.

Potato: China's potato production and export are very large, mainly exported to the Middle East, Central Asia, West Asia and Southeast Asia, which is suitable for Southeast Asian cuisine. China potatoes are very popular in the international market because of their excellent quality and delicious taste.

Spinach: China's spinach production and export are very large, mainly exported to Japan, South Korea and other places. Because of its rich nutritional value, China spinach is favored in the international market.

Onion: Onion is one of the most important vegetables in China and one of the most important vegetable varieties in the world. China's onion production and export volume are very large, mainly exported to West Asia, Central Asia, South Korea, Japan and

Southeast Asia, and it belongs to the Belt and Road high-quality agricultural products.

Lotus root: Lotus root is one of the characteristic aquatic vegetables in China and a unique vegetable variety in China. The output and export of lotus roots in China are very large, mainly exported to Japan, South Korea and Southeast Asia. China lotus root is very popular in the international market because of its excellent quality and delicious taste.

According to the data released on the website of the National Bureau of Statistics on December 11th, 2023, the national grain production achieved another bumper harvest in 2023, with a total output of 695.41 million tons (1,390.8 billion Jin), an increase of 8.88 million tons (17.8 billion Jin) or 1.3 % over 2022 (table 2.1).

Table 2.1 – Total Output and Output per Unit Area in 2023 [8]

	Sown area (Thousand hectares)	Total output (Ten thousand tons)	Grain unit area (kilo)
Annual grain	118968.5	69541.0	5845.3
By season:			
summer grain	26608.6	14615.2	5492.7
early rice	4733.1	2833.7	5987.0
autumn grain	87626.8	52092.0	5944.8
By variety:			
1 Cereal:	99926.4	64143.0	6419.0
paddy	28949.1	20660.3	7136.8
wheat	23627.2	13659.0	5781.0
corn	44218.9	28884.2	6532.1
2 Beans	11994.2	2384.1	1987.7
3 Potato	7048.0	3013.9	4276.2

Sowing area: The sown area of grain in China is 118,969 thousand hectares (1,784.53 million mu), an increase of 636 thousand hectares (9.55 million mu) or 0.5 % compared with 2022. Among them, the sown area of grain was 99,926 thousand hectares (1,498.9 million mu), an increase of 658 thousand hectares (9.86 million mu) or 0.7 % compared with 2022.

Grain unit area: The national grain output per unit area is 5845 kg/ha (390 kg/mu), an increase of 43.6 kg/ha (2.9 kg/mu) or 0.8 % compared with 2022. Among them, the grain yield per unit area was 6419 kg/ha (428 kg/mu), an increase of 40.0 kg/ha (2.7 kg/mu) or 0.6 % compared with 2022.

Total grain output: The national total grain output was 695.41 million tons (1,390.8 billion Jin), an increase of 8.88 million tons (17.8 billion Jin) or 1.3 % over 2022. Among them, the grain output was 641.43 million tons (1,282.9 billion Jin), an increase of 8.19 million tons (16.4 billion Jin) or 1.3 % over 2022. Grain output of China and provinces in 2023 is shown in table 2.3.

Table 2.2 – Grain output of China and provinces in 2023 [8]

	Sown area (Thousand hectares)	Total output (Ten thousand tons)	Grain unit area (kilo)
National total	118968.5	69541.0	5845.3
Beijing	89.5	47.8	5340.6
Tianjin	390.0	255.7	6556.7
Hebei	6455.2	3809.9	5902.1
Shanxi	3161.2	1478.1	4676.1
Neimengu	6984.7	3957.8	5666.4
Liaoning	3578.4	2563.4	7163.5
Jilin	5825.6	4186.5	7186.4
Heilongjiang	14743.1	7788.2	5282.6
Shanghai	127.2	101.9	8010.1
Jiangsu	5458.9	3797.7	6956.8
Zhejiang	1024.7	638.8	6234.1
Anhui	7334.5	4150.8	5659.2
Fujian	841.1	511.0	6074.9
Jiangxi	3774.3	2198.3	5824.4
Shandong	8387.9	5655.3	6742.2
Henan	10785.3	6624.3	6142.0
Hubei	4707.0	2777.0	5899.9
Hunan	4763.5	3068.0	6440.7
Guangdong	2229.5	1285.2	5764.4
Guangxi	2834.7	1395.4	4922.4
Hainan	273.6	147.0	5373.8
Chongqing	2025.9	1095.9	5409.3
Sichuan	6404.0	3593.8	5611.8
Guizhou	2773.8	1119.7	4036.6
Yunnan	4243.2	1974.0	4652.1
Xizang	194.6	108.9	5594.8
Shanxi	3023.0	1323.7	4378.7
Gansu	2710.9	1272.9	4695.4
Qinghai	304.9	116.2	3812.0
Ningxia	693.9	378.8	5459.1
Xinjiang	2824.8	2119.2	7502.1

China's agricultural production has been in a state of high yield. China is the largest producer of wheat, rice and corn in the world. In addition, China also produces a large number of rice, wheat, corn, soybeans, cotton, sugar and other agricultural products. These

rich agricultural products provide abundant food and raw materials for domestic and international markets.

However, despite the huge scale of agricultural production, China's agriculture still faces some challenges. Land resources are limited, the area of farmland is decreasing, and the quality of farmland is uneven. In addition, climate change, natural disasters, pests and diseases have also had a negative impact on agriculture. In addition, the degree of agricultural modernization is relatively low, agricultural labor productivity is not high, and poverty in rural areas still exists.

China's agricultural industrial structure is changing. In the past, agriculture was mainly based on grain cultivation, but now agriculture has diversified, including grain, vegetables, fruits, livestock and poultry breeding. This diversification is helpful to improve the anti-risk ability of agricultural industry and reduce the risk of a single industry.

At the same time, China's agricultural industrial chain is also expanding. From agricultural production to primary processing, transportation and sales, the whole industrial chain of agricultural products has been formed. This not only improves the added value of agricultural products, but also promotes the economic growth in rural areas. In addition, the deep processing of agricultural products is also developing constantly, such as food processing, agricultural products export and other fields, which makes agricultural products further enter the international market.

Government has been committed to promoting rural modernization. The rural reform and rural development policies have made remarkable achievements. Since the reform and opening up, the infrastructure, rural finance, rural education and rural medical care in rural areas have all improved significantly. This has provided strong support for improving the living standards of rural residents and agricultural modernization.

Rural e-commerce is also emerging, providing new development opportunities for rural areas. Online sales of agricultural products and the construction of rural e-commerce platform will help solve the problem of difficult sales of agricultural products and let farmers better integrate into the market. In addition, modern agricultural technology is also spreading to rural areas, improving agricultural production efficiency.

Government attaches great importance to the sustainable development of agriculture.

With the prominent problems of resources and environment, the sustainable development of agriculture has become more urgent. The government has adopted a series of policies and measures, such as land improvement, ecological agriculture and water resources management, to protect land and water resources and improve the quality and safety of agricultural products.

In addition, ecological agriculture has also received extensive attention. New agricultural models such as organic agriculture, green agriculture and ecological agriculture are gradually emerging, which reduces the dependence on chemical fertilizers and pesticides and helps to improve the quality of agricultural products.

China has become one of the largest producers and exporters of agricultural products in the world. International cooperation plays an important role in China's agricultural development. China actively participated in international agricultural cooperation and cooperated with other countries and international organizations, which promoted agricultural trade, technical exchange and sustainable agricultural development.

International trade also has a positive impact on China's agricultural industry. The increasing export of agricultural products in China provides more income opportunities for domestic farmers. At the same time, China also introduced new agricultural technologies and models from the international market, which promoted agricultural modernization.

Although China's agriculture has made remarkable achievements, it still faces some challenges. First of all, land resources are limited, land area is limited, and land quality is uneven. The limited land resources pose a threat to agricultural output and sustainable development. Secondly, climate change, natural disasters, pests and diseases have had a negative impact on agriculture. Climate change may lead to uneven precipitation and extreme weather events, increasing the uncertainty of crops. Furthermore, the process of agricultural modernization is still relatively slow, and the agricultural labor productivity is relatively low. The income level of farmers is still relatively low, and poverty still exists.

However, these challenges are also accompanied by opportunities. With the continuous progress of science and technology, new technologies including Internet of Things technology, big data analysis, machine learning and artificial intelligence will provide more innovative solutions for agriculture. These technologies will help to improve

the efficiency of agricultural production, reduce the waste of resources and improve the quality of agricultural products.

At the same time, international cooperation will provide more opportunities for agriculture in China. International trade will provide a wider market for China's agricultural products and promote their export. Cooperation with other countries will also promote the exchange of agricultural technology and knowledge and contribute to agricultural modernization.

2.2 Analysis of agricultural products export and import

The chart mainly screens the annual changes of foreign trade of agricultural products in China from 2014 to 2023. From the table 2.3, it can be seen that the total import and export volume showed a downward trend from 2014 to 2016, and the total import and export volume of agricultural products increased from 2017 to 2022, while the total import and export volume decreased slightly in 2023. The import volume is greater than the export volume, and the import volume and export volume are also increasing year by year. In order to better present the increase and decrease state, the trend will be presented by histogram (figure 2.1).

Table 2.3 – Annual Changes of Foreign Trade of Agricultural Products in China [10; 20]

Date	Total export-import volume	Proportion of all commodities	Value of export	Volume of import	Export-import
2014	1944.99	4.52 %	719.60	1225.38	-505.78
2015	1875.62	4.74 %	706.82	1168.81	-461.99
2016	1845.55	5.01 %	729.86	1115.69	-385.83
2017	2013.88	4.90 %	755.32	1258.56	-503.24
2018	2177.08	4.71 %	804.48	1372.60	-568.12
2019	2300.68	5.03 %	790.98	1509.70	-718.72
2020	2485.43	4.96 %	765.31	1720.11	-954.8
2021	3064.67	4.37 %	850.05	2214.61	-1364.56
2022	3372.38	5.08 %	993.18	2379.20	-1386.03
2023	3360.62	5.02 %	1001.45	2359.18	-1357.73

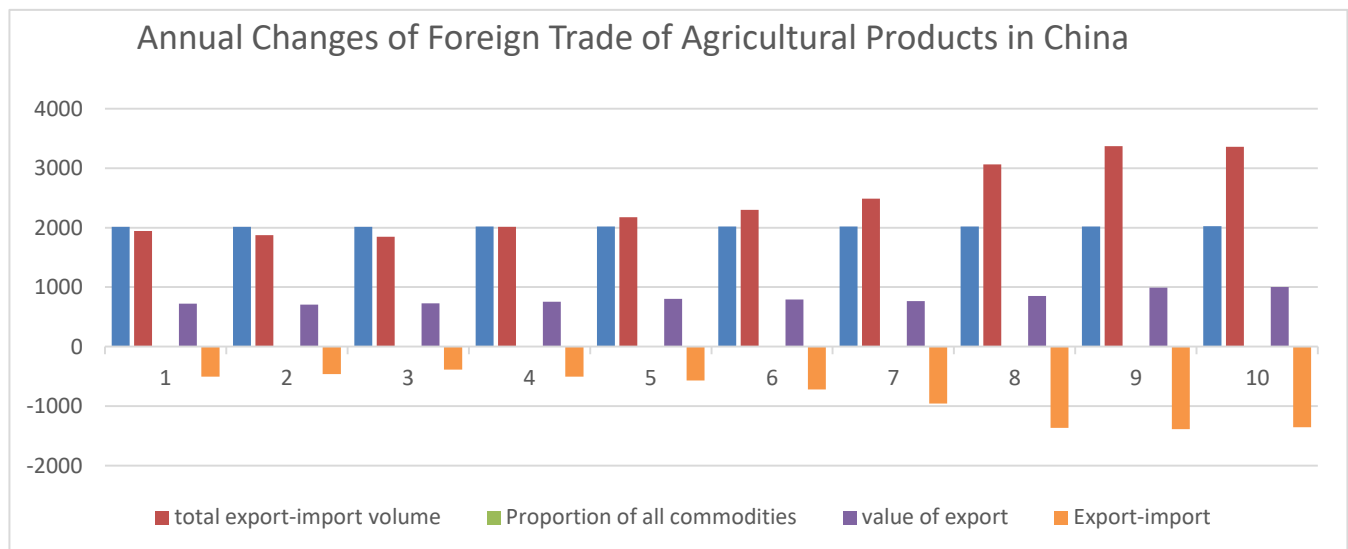


Figure 2.1 – Annual Changes of Foreign Trade of Agricultural Products in China [10; 20]

Total import and export volume of agricultural products in China. Let's analyze the import and export of agricultural products in 2023 and compare it with the import and export in previous years (figure 2.2).

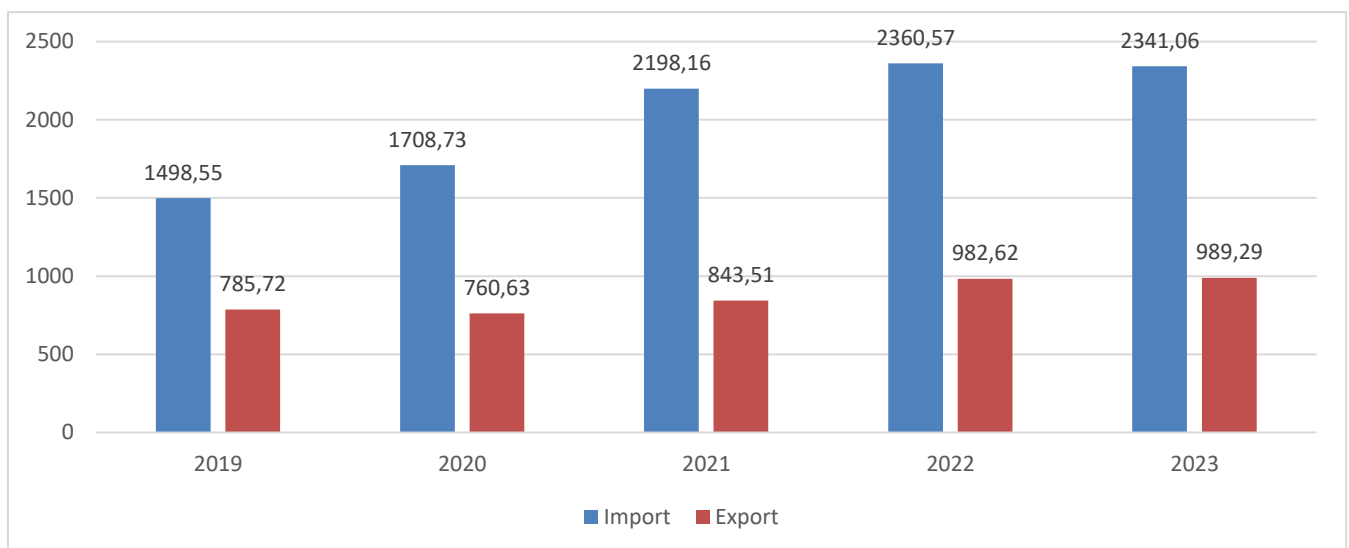


Figure 2.2 – Agricultural products trade in China from 2019 to 2023 [8]

According to customs statistics, in 2023, China's total import and export of agricultural products down 0.4 % from the same period of last year, accounting for 5.6 % of China's total foreign trade import and export. Among them, exports amounted to 98.93 billion US dollars, up 0.7 % over the same period of last year, accounting for 2.9 % of

China's total foreign trade exports; Imports reached US 234.11 billion dollars, down 0.8 % from the same period of last year, accounting for 9.2 % of China's total foreign trade imports. The trade deficit was 135.18 billion dollars, narrowing by 1.9 % over the same period of last year. Monthly export and import trend of agricultural products in China is shown in figure 2.3, 2.4.

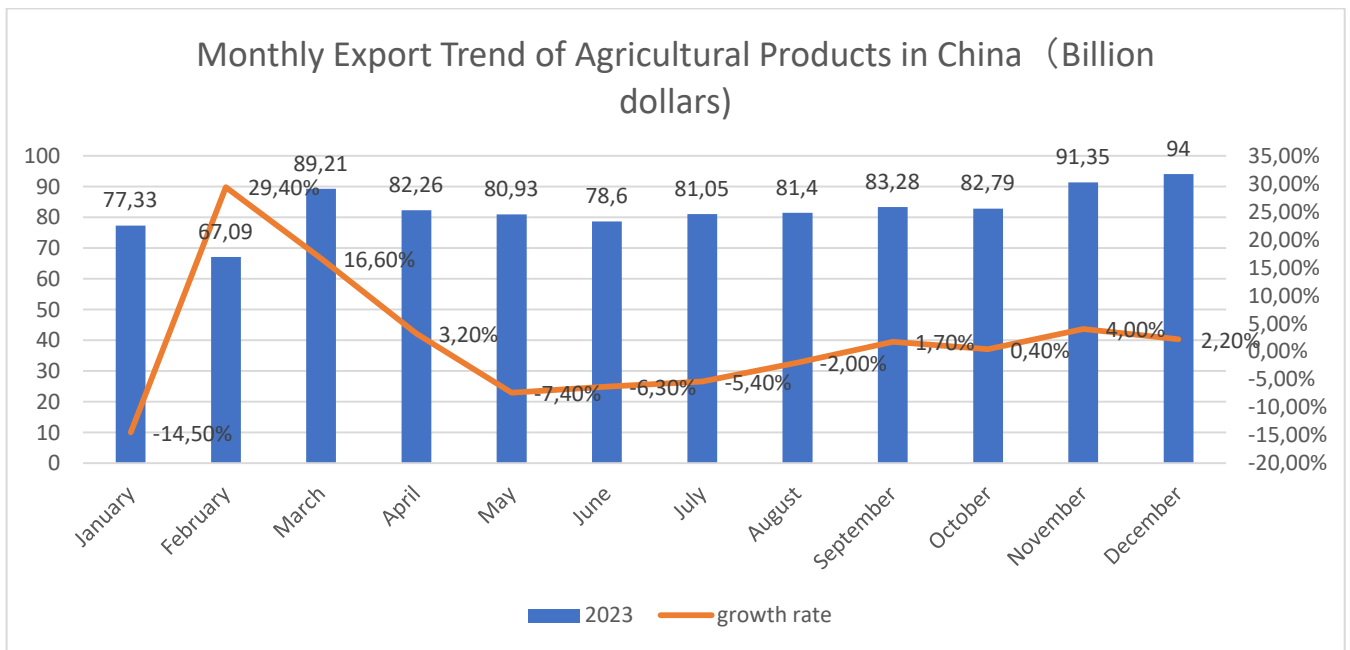


Figure 2.3 – Monthly Export Trend of Agricultural Products in China [11]

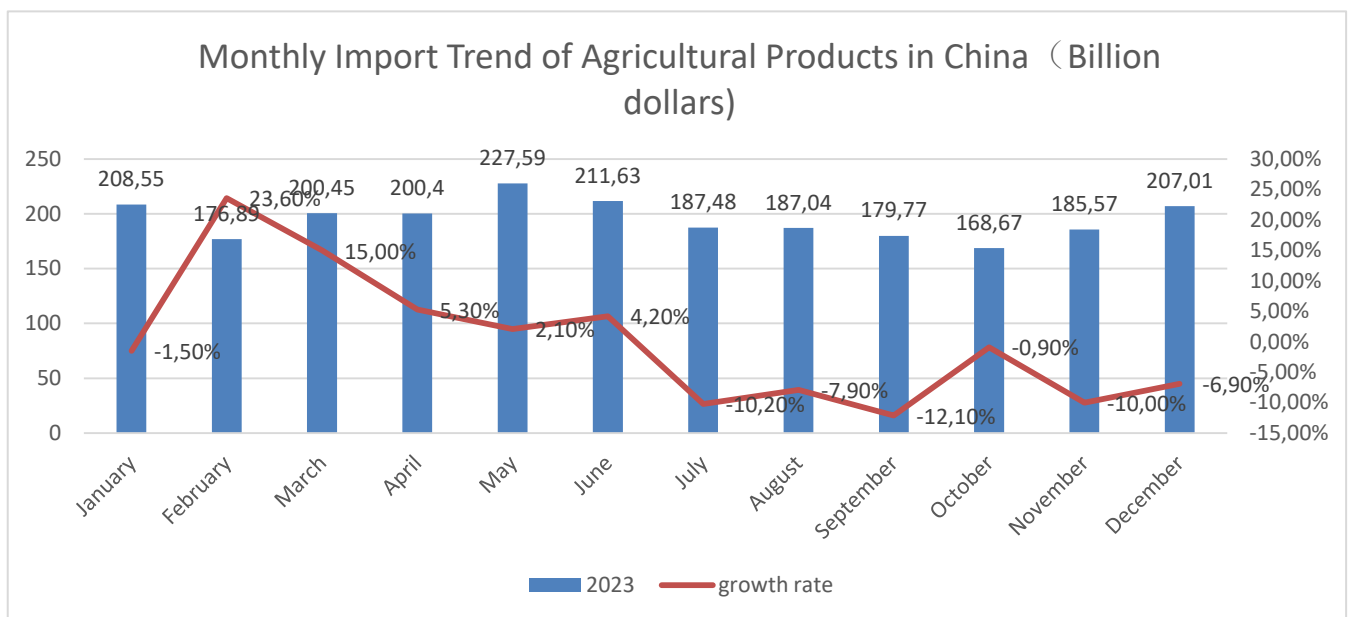


Figure 2.4 – Monthly Import Trend of Agricultural Products in China [21]

Let's study China's major agricultural export countries.

The top three export markets of agricultural products in China are Hongkong (China), Japan and the United States in turn.

In 2023, China's top ten agricultural export markets accounted for 62 % of the total agricultural exports. China and Hongkong ranked first in the export market, with an export value of US 10.98 billion dollars, down 3.3 % over the same period of last year, accounting for 11.1 % of the total agricultural exports. Japan and the United States ranked second and third respectively. Among them, the export of agricultural products to Japan was US 10.16 billion dollars, down by 4.2 % compared with the same period of last year, accounting for 10.3 % of the total export of agricultural products, and the export of agricultural products to the United States was US 10.09 billion dollars, down by 1.6 % compared with the same period of last year, accounting for 10.2 % of the total export of agricultural products. Among the top ten export markets, the highest increase in export volume was in Britain, with an increase of 16.9 % over the same period of last year (table 2.4, figure 2.5).

Table 2.4 – Main countries of agricultural products exports in 2023 [12]

Country	Proportion of exports	Volume of export	Compared with last year's growth rate
Hong Kong, China	11.02 %	109.83	-3.30 %
Japan	10.18 %	101.62	-4.20 %
America	10.21 %	100.89	-1.60 %
South Korea	6.23 %	61.94	-0.40 %
Viet Nam	5.38 %	53.82	-3.90 %
Malaysia	5.11 %	51.03	-5.60 %
Thailand	4.67 %	46.49	-5.00 %
Indonesia	3.14 %	31.24	10.20 %
Britain	2.86 %	28.47	16.90 %
Netherlands	2.81 %	27.63	-7.30 %

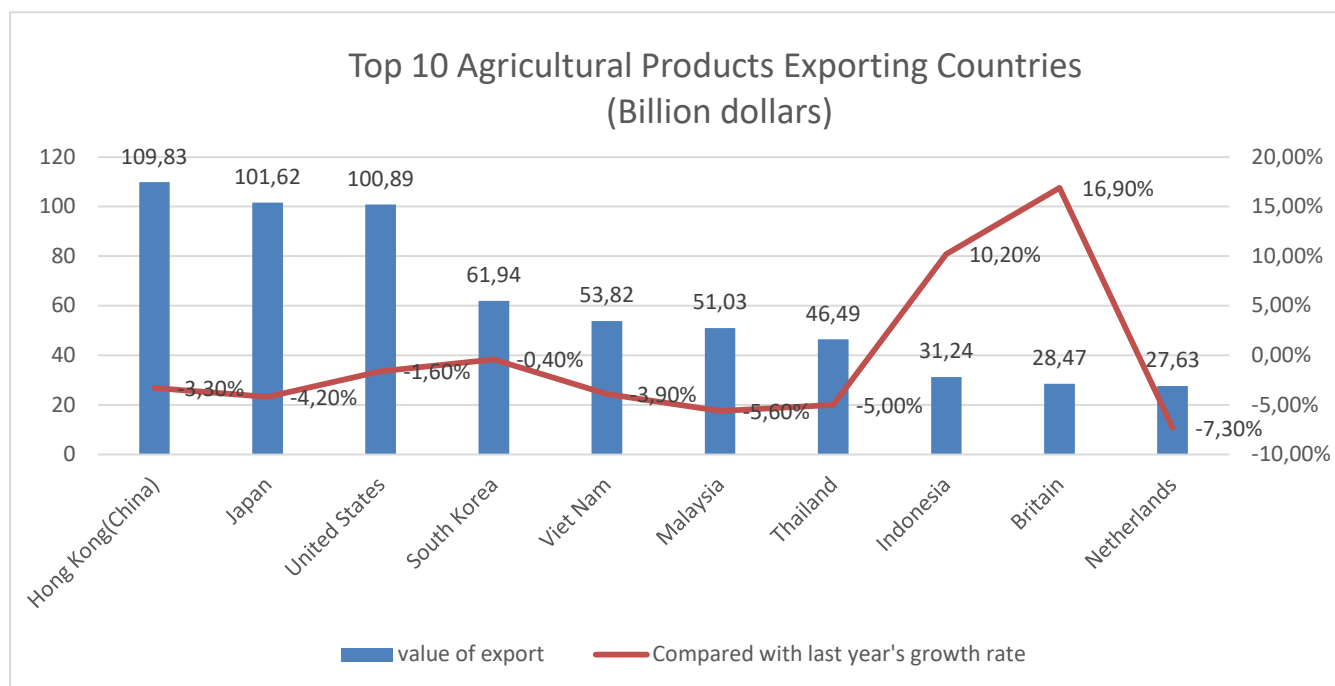


Figure 2.5 – Top 10 Agricultural Products Exporting Countries [12]

In 2023, the export of agricultural products to the Belt and Road countries was 46.73 billion US dollars, an increase of 3.5 % over the same period of last year. The export of agricultural products to RCEP countries was US 41.6 billion dollars, down by 1.9 % over the same period of last year. Exports of agricultural products to ASEAN countries reached US 23.33 billion dollars, down by 1.8 % over the same period of last year. Exports of agricultural products to EU countries reached US 11.19 billion dollars, down 3.4 % from the same period of last year.

China's major agricultural products import countries.

The top three import sources of agricultural products in China are Brazil, the United States and Thailand in turn.

In 2023, the top ten import sources of agricultural products in China accounted for 72.3 % of the total import of agricultural products. Brazil is the largest import source of agricultural products in China, with an import value of US 58.58 billion dollars, an increase of 11.7 % over the same period of last year, accounting for 25 % of the total import of agricultural products. The second largest source of imports is the United States, with an import volume of US 32.89 billion dollars, down by 21.8 % over the same period of last year, accounting for 14.1 % of the total agricultural imports. Ranked third is

Thailand, with an import value of US 131.6 billion, an increase of 4.4 % over the same period of last year, accounting for 5.6 % of the total import of agricultural products. Among the top ten sources of imports, Russia has the highest increase in import volume, up 44 % over the same period of last year (table 2.5, figure 2.6).

Table 2.5 – Main sources of agricultural products imports in 2023 [21]

Country	Proportion of imports	Volume of import	Compared with last year's growth rate
Brazil	24.85 %	585.79	11.70 %
America	13.96 %	328.93	-21.80 %
Thailand	5.60 %	131.55	4.40 %
Australia	5.23 %	123.45	8.70 %
Indonesia	4.40 %	97.68	-5.80 %
Canada	4.34 %	102.44	34.90 %
New Zealand	4.28 %	101	-14.80 %
Russia	3.73 %	87.98	44.00 %
Viet Nam	2.88 %	67.77	11.70 %
France	2.84 %	66.70	20.50 %

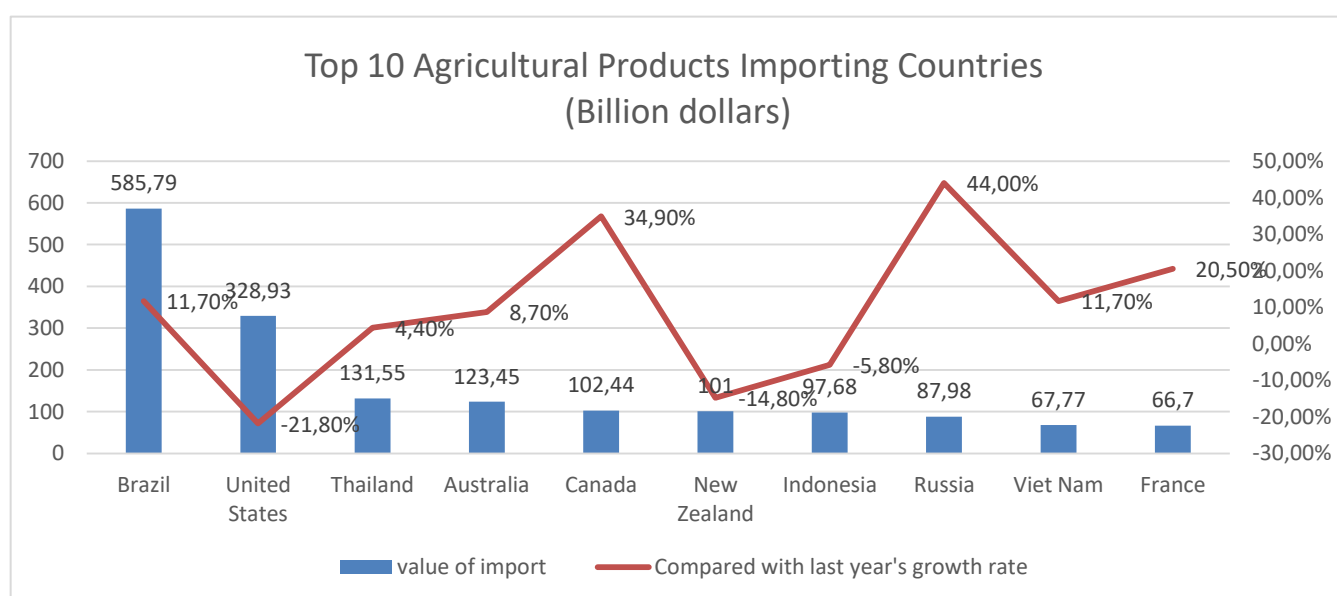


Figure 2.6 – Top 10 Agricultural Products Importing Countries [21]

In 2023, the import of agricultural products from the Belt and Road countries was 91.27 billion US dollars, a decrease of 3.2 % over the same period of last year. Imports of agricultural products from RCEP countries reached US 61.77 billion, a decrease of 2.4 %

over the same period of last year. Imports of agricultural products from ASEAN countries reached US 36.33 billion, down by 1.8 % over the same period of last year. Imports of agricultural products from EU countries reached US 19.8 billion, an increase of 4.3 % over the same period of last year.

The top ten export provinces of agricultural products in China. Shandong, Guangdong and Fujian provinces are the top three export provinces of agricultural products in China (figure 2.7).

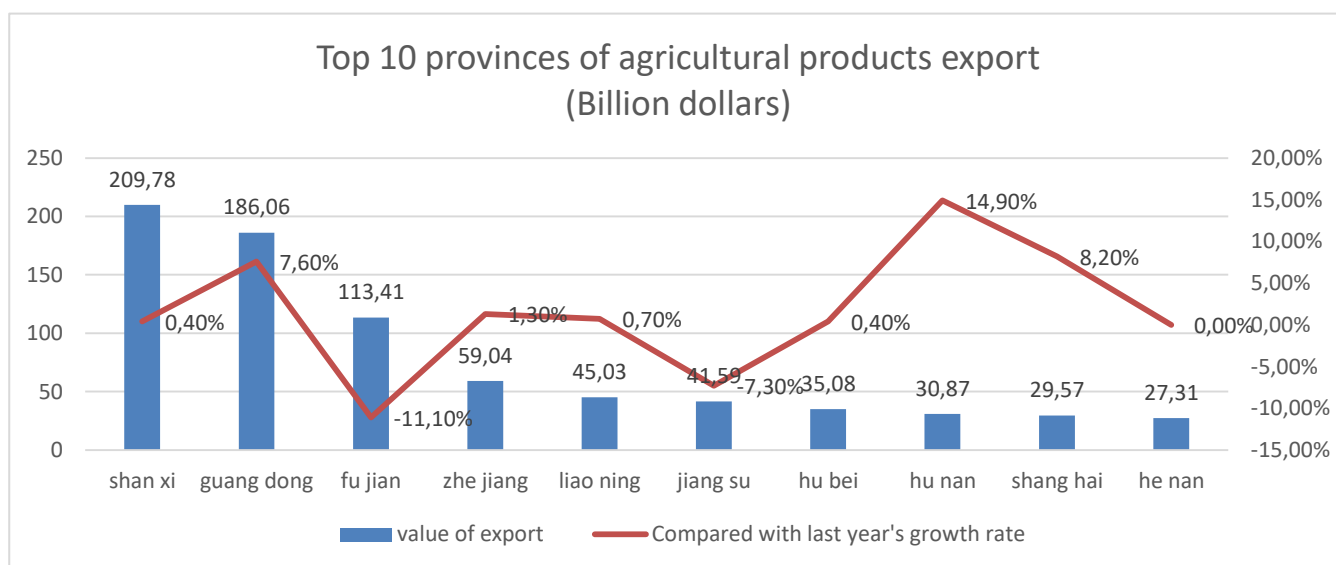


Figure 2.7 – Top 10 provinces of agricultural products export [11]

In 2023, the export volume of China's top ten agricultural export provinces and cities accounted for 78.6 % of the total agricultural exports. Shandong Province is the largest exporter of agricultural products in China, with an export value of US 20.98 billion, an increase of 0.4 % over the same period of last year, accounting for 21.2 % of the total agricultural exports. Guangdong Province ranked second, with an export value of US 18.61 billion, an increase of 7.6 % over the same period of last year, accounting for 18.8 % of the total agricultural exports. Ranked third is Fujian Province, with an export value of US 11.34 billion, down 11.1 % year-on-year, accounting for 11.5 % of the total agricultural exports. The export volume of agricultural products in Hunan Province increased by 14.9 % over the same period of last year, which is the highest among the top ten export provinces and cities.

The top ten import provinces of agricultural products in China. Shanghai, Guangdong and Beijing are the top three import provinces and cities of agricultural products in China (figure 2.8).

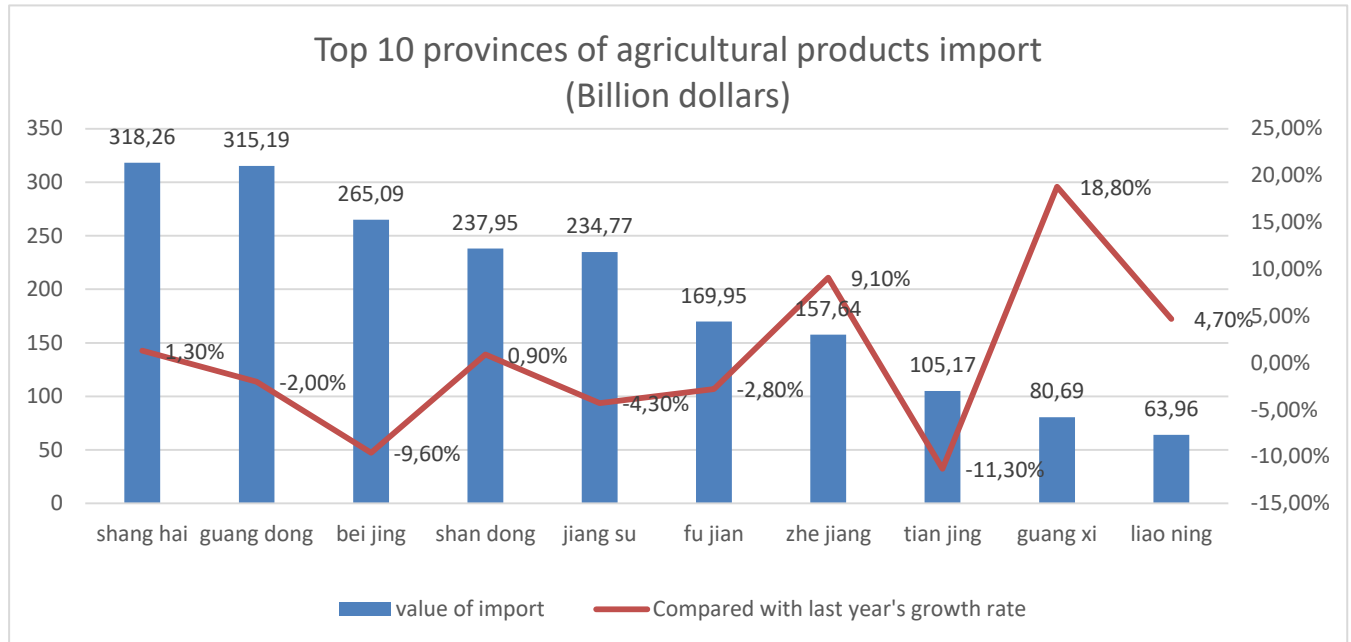


Figure 2.8 – Top 10 provinces of agricultural products import [21]

In 2023, the total import volume of the top ten importing provinces and cities of agricultural products in China accounted for 83.2 % of the total import volume of agricultural products. Shanghai ranks first, with an import volume of 31.83 billion US dollars, up by 1.3 % over the same period of last year, accounting for 13.6 % of the total import of agricultural products. Guangdong Province ranked second, with an import value of US 31.52 billion, down 2 % from the same period of last year, accounting for 513.5 % of the total agricultural imports. Beijing ranked third, with imports of US 26.51 billion, down 9.6 % from the same period of last year, accounting for 11.3 % of the total imports of agricultural products. The import volume of agricultural products in Guangxi Autonomous Region increased by 18.8 % over the same period of last year, which was the highest among the top ten importing provinces and cities.

Import and export trade of agricultural products in China. From January to December, the import and export volume of China's agricultural products was 333.03 billion US dollars, which was basically the same as that of the same period last year.

Among them, exports reached 98.93 billion US dollars, up by 0.9 %. Imports were 234.11 billion, a decrease of 0.3 %. The trade deficit was 135.18 billion, a decrease of 1.2 %.

China's agricultural products import and export trade mode is still dominated by general trade, while processing trade exports decline and imports increase.

Cereals: from January to December, grain imports were 59.095 million tons, up 11.1 % year-on-year, and the import value was 20.80 billion US dollars, up 5.8 %. Exports were 1.921 million tons, down 21.3 %, and the export value was 1.18 billion US dollars, down 1.9 %. The net import was 57.174 million tons, up by 12.6 %.

Cotton: from January to December, imports were 2.03 million tons, up 0.2 % year-on-year. Imports amounted to US 4.20 billion, a decrease of 20.6 %. In addition, the import of cotton yarn, a substitute product of cotton, was 1.687 million tons, an increase of 43.4 %.

Sugar: from January to December, the import was 3.973 million tons, a year-on-year decrease of 24.7 %. Imports amounted to US 2.31 billion, a decrease of 10.0 %.

Edible oil seeds: from January to December, the import was 108.754 million tons, up 15.4 % year-on-year, and the import value was 66.86 billion US dollars, up 3.4 %. Exports were 1.005 million tons, a decrease of 0.3 %, and the export value was 1.89 billion US dollars, an increase of 9.3 %. The trade deficit was 64.97 billion, up by 3.3 %. Among them, soybean imports were 99.409 million tons, an increase of 11.4 %.

Edible vegetable oil: from January to December, the import was 10.215 million tons, up 40.6 % year-on-year, and the import value was 10.66 billion US dollars, up 11.6 %. Exports were 199,000 tons, up by 16.2 %, and the export value was 300 million US dollars, down by 5.8 %. The trade deficit was US 10.36 billion, up by 12.2 %.

Vegetables: from January to December, the export value was US 18.54 billion, up 8.4 % year-on-year. The import value was 990 million US dollars, up by 6.8 %. The trade surplus was US 17.55 billion, up by 8.4 %.

Fruits: from January to December, the export value was US 7.06 billion, up 2.2 % year-on-year. The import value was US 18.34 billion, up by 16.3 %. The trade deficit was US 11.28 billion, up by 27.2 %.

Animal products: from January to December, the import value was US 45.19 billion,

down 12.3 % year-on-year. The export value was US 6.08 billion, a decrease of 5.0%. The trade deficit was 39.11 billion, a decrease of 13.3 %.

Aquatic products: from January to December, the export value was US 20.46 billion, down 11.1 % year-on-year. The import value was US 23.76 billion, up by 0.3 %. The trade deficit was 3.30 billion, up 3.9 times. Main agricultural products exported and imported by China are shown in figure 2.9, 2.10.

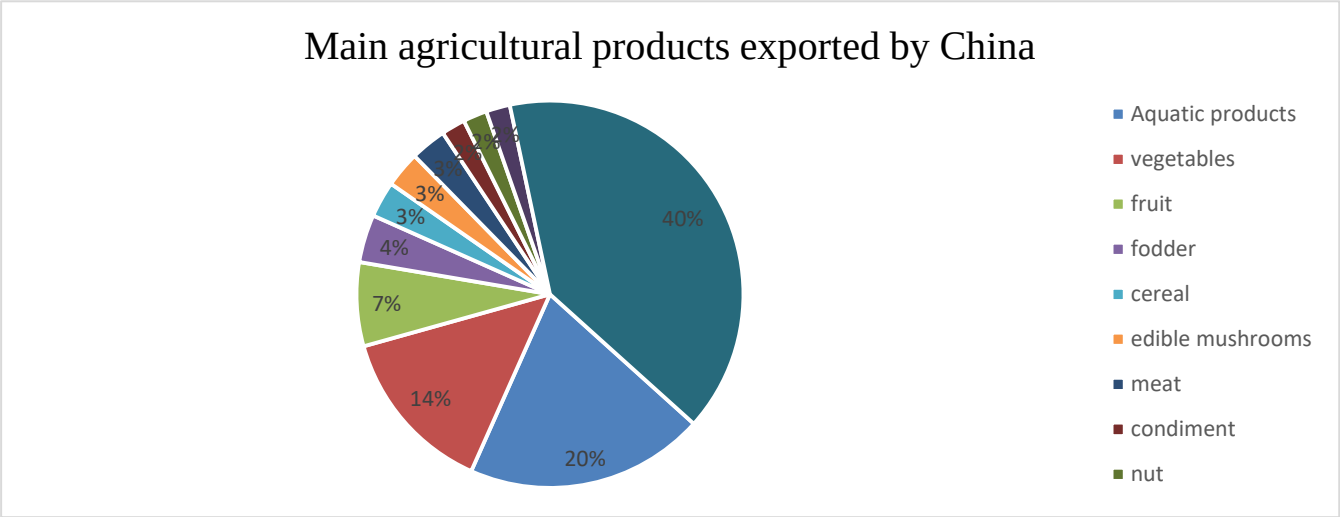


Figure 2.9 – Main agricultural products exported by China [11]

As can be seen from the figure, the export of aquatic products, vegetables, fruits and other agricultural products in China has increased, while the export of edible fungi, meat, tea and other products has declined.

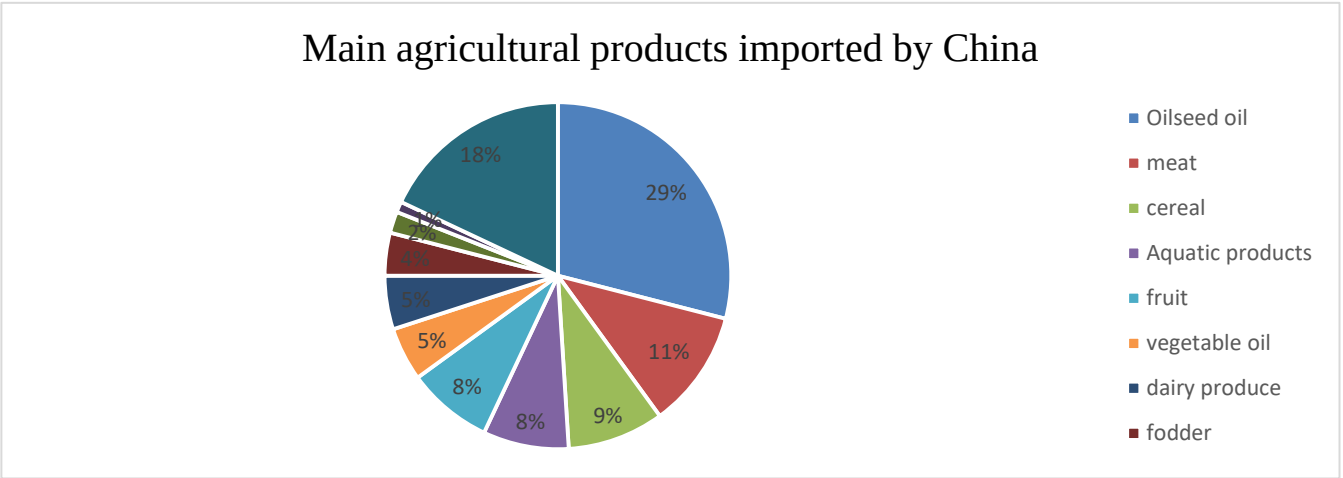


Figure 2.10 – Main agricultural products imported by China [21]

As can be seen from the figure, China's imports of oil, meat, cereals, fruits and other agricultural products have increased, while imports of meat, aquatic products, dairy products, sugar and other products have declined.

Import and export trade of agricultural products between China and various countries. In 2023, the trade volume of agricultural products between China and the United States declined overall.

According to customs statistics, in 2023, the total agricultural trade between China and the United States was US 42.98 billion, down 17.8 % from the same period of last year, accounting for 12.9 % of the total agricultural trade in China. Among them, the export was US 10.09 billion, down by 1.6 % over the same period of last year, which was the first decline in agricultural exports to the United States since 2020, accounting for 10.2 % of China's total agricultural exports. Imports reached US 32.89 billion, down by 21.8 % over the same period of last year, accounting for 14.1 % of the total imports of agricultural products in China. The trade deficit was US 22.8 billion, narrowing by 28.3 % over the same period of last year (figure 2.11).

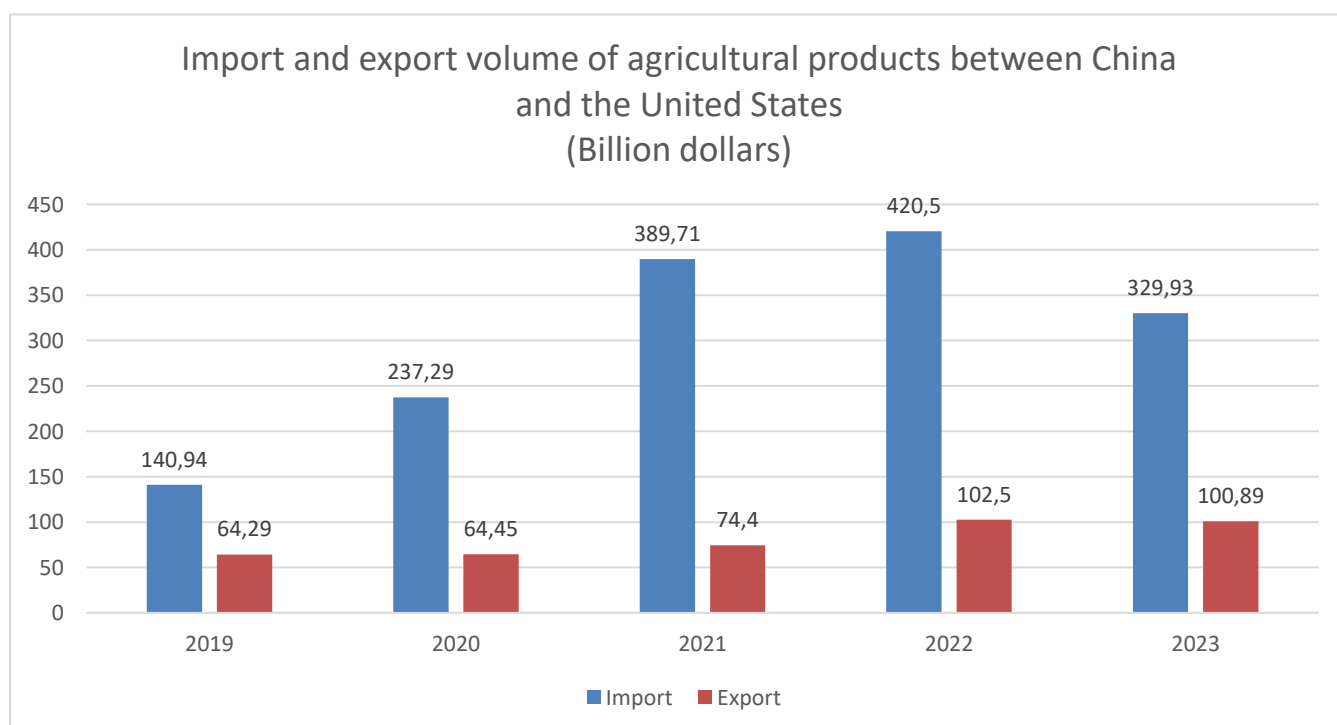


Figure 2.11 – Import and export volume of agricultural products between China and the United States in 2019–2023 [11; 21]

In 2023, the total trade volume of agricultural products between China and Russia exceeded 10 billion for the first time.

According to customs statistics, in 2023, the total agricultural trade between China and Russia was US 11.3 billion, an increase of 33 % over the same period of last year, accounting for 3.4 % of the total agricultural trade in China. Among them, the export was 2.5 billion US dollars, up 4.9 % over the same period of last year, accounting for 2.5 % of China's total agricultural exports. Imports reached US 8.8 billion, up 44 % over the same period of last year, accounting for 3.8 % of China's total imports of agricultural products, and both import and export volume reached an all-time high. The trade deficit was US 6.3 billion, an increase of 69.1 % over the same period of last year (figure 2.12).

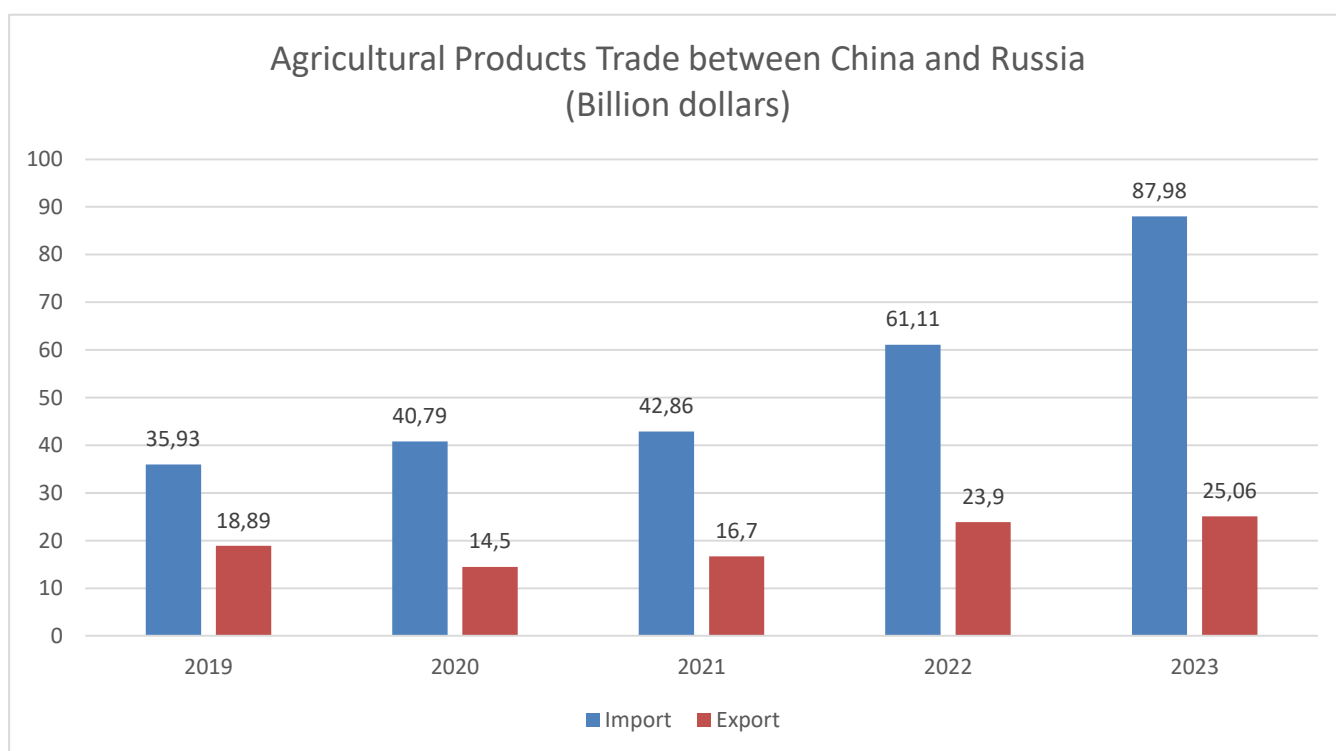


Figure 2.12 – Import and export volume of agricultural products between China and the Russia in 2019–2023 [11; 21]

In 2023, the import and export trade volume of agricultural products between China and Japan fell to the lowest point in nearly three years.

According to customs statistics, in 2023, the total agricultural products trade volume between China and Japan was 11.56 billion US dollars, down 6.2 % from the same period of last year, accounting for 3.5 % of the total agricultural products trade volume in

China. Among them, the export was US 10.16 billion, down 4.2 % from the same period of last year, accounting for 10.3 % of China's total agricultural exports. Imports amounted to US 1.4 billion, down 18.9 % from the same period of last year, accounting for 0.6 % of the total agricultural imports in China. The trade surplus was US 8.76 billion, narrowing by 1.3 % over the same period of last year (figure 2.13).

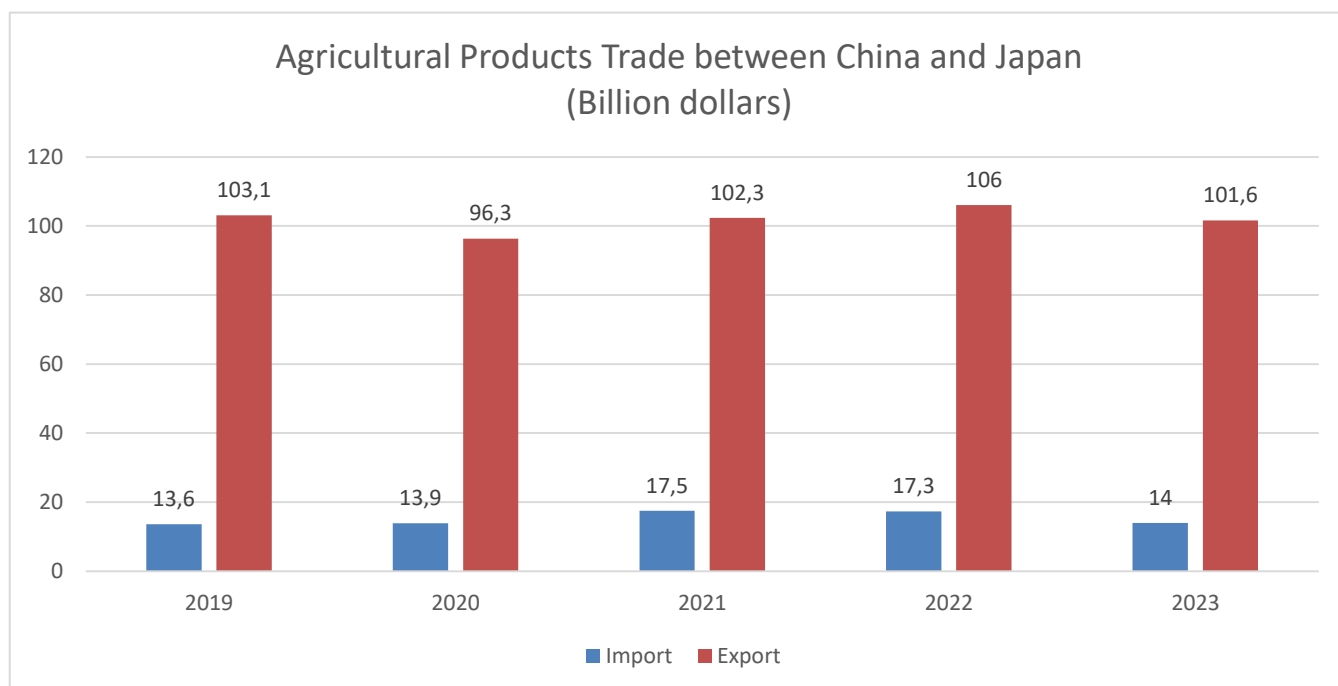


Figure 2.13 – Import and export volume of agricultural products between China and the Japan in 2019–2023 [11; 21]

In 2023, the amount of agricultural products exported by China to India increased by 4.6 %, while the amount of agricultural products imported from India decreased by 8.2 %.

According to customs statistics, from January to November 2023, the total agricultural trade between China and India was US 3.87 billion, down 6.6 % year-on-year, accounting for 1.3 % of China's total agricultural trade. Among them, the export was US 560 million, up 4.6 % year-on-year, accounting for 0.6 % of China's total agricultural exports. Imports were US 3.31 billion, down 8.2 % year-on-year, accounting for 1.6 % of China's total agricultural imports. The trade deficit was US 2.75 billion, narrowing by 10.5 % over the same period of last year (figure 2.14).

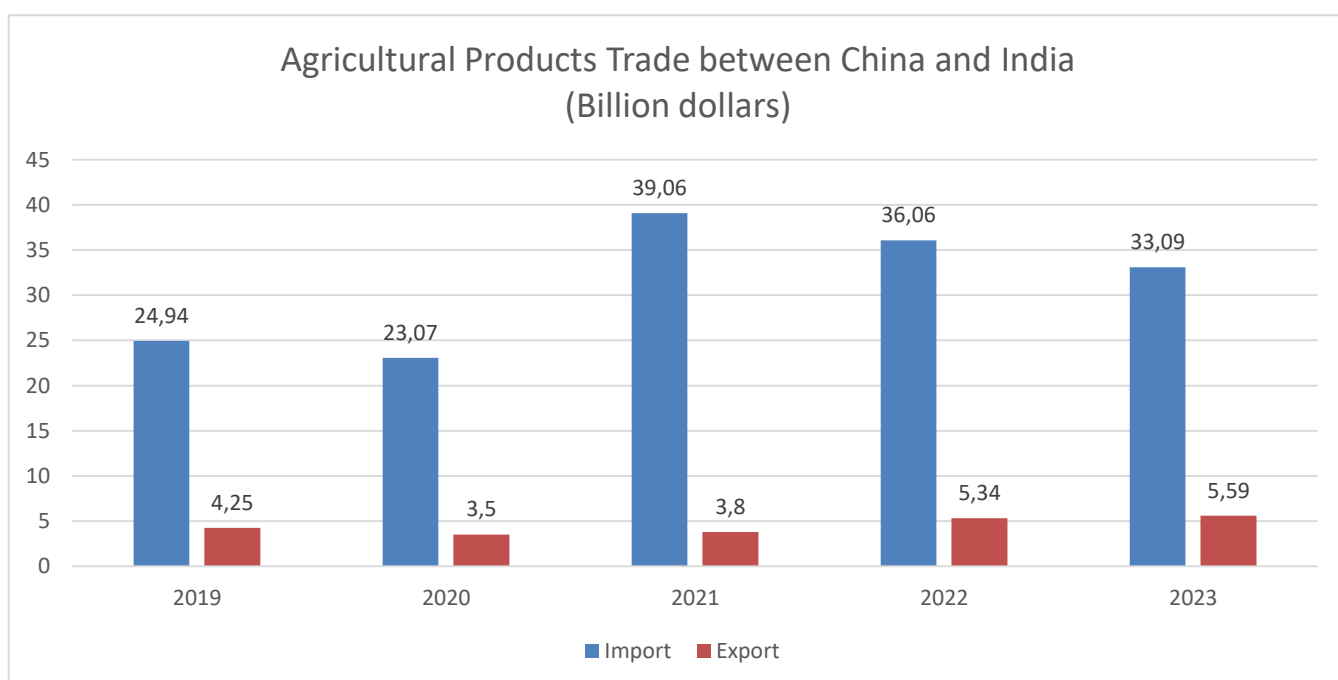


Figure 2.14 – Import and export volume of agricultural products between China and the India in 2019–2023 [11; 21]

2.3 Agricultural products trade between China and Russia

Russia is the country with the largest land area in the world, with a land area of 17,098,200 square kilometers, a population of about 146 million and a arable land area of about 120 million hectares. Russia is rich in resources such as petroleum minerals, forestry products and agricultural products.

In recent years, Russia has been subjected to severe economic sanctions imposed by countries such as the United States and Europe, forcing the focus of Russia's foreign trade to gradually shift to Asia. As a major agricultural trading country, the agricultural trade between Russia and China has developed rapidly. Under the promotion of the strategy of One Belt and One Road and China-Russia-Mongolia Economic Corridor, bilateral agricultural trade has further deepened. China and Russia trade has been showing a sustained and steady upward trend, and with the deep opening of land ports and sea ports, the trade relationship between the two countries has become closer and closer.

However, in recent years, the problems in agricultural trade between China and Russia are mainly reflected in the insufficient complementarity of agricultural products. This problem will affect the agricultural development of the two countries and further affect the economic development of the two countries. Therefore, it is extremely necessary to analyze and solve this problem. After data search and theoretical analysis, the corresponding conclusions are drawn.

By referring to the standard classification method of international trade of the United Nations, agricultural products are divided into food and fresh animals, beverages, tobacco and alcohol, some agricultural products with non-edible raw materials, oils and fats of animals and plants, waxes and so on.

The trade complementarity index reflects the degree of complementarity between the trade and industrial structure of the two countries. In order to further analyze the trade complementarity of Russian agricultural products exported to China, the concept of trade complementarity index (TCI) is introduced here, which was put forward by the famous economist Peter Drysdale in 1967, and its specific formula is as follows [23, p. 92]:

$$TCI_{ij}^c = RCA_{Xi}^c \times RCA_{Mj}^c$$

TCI_{ij}^c represents the trade complementarity index reflected by countries i and j in category c commodities, where i represents the exporting country and j represents the importing country;

RCA_{Xi}^c represents the explicit comparative advantage index of country i in class c commodities, and RCA_{Mj}^c represents the explicit comparative disadvantage of country j in class c commodities.

When $TCI_{ij} > 1$, it shows that the types of goods exported by country i are highly consistent with those imported by country j , indicating that country i and country j have strong trade complementarity, and the greater TCI_{ij} , it shows that the two countries have strong complementarity. On the contrary, the smaller the TCI_{ij} , the lower the complementarity between the two countries. If $TCI_{ij} \leq 1$, the trade complementarity between the two countries is weak.

According to the formula and relevant basic data, the trade complementarity index

of Russian agricultural products exported to China from 2015 to 2023 is obtained (table 2.6).

Table 3.1 – Trade Complementarity Index of Russian Agricultural Products Exported to China from 2015 to 2024 [16, p. 27]

Year	Class 0	Class 1	Class 2	Class 4
2015	1.5223	1.7654	1.9336	0.9232
2016	1.5488	1.8657	1.9662	0.9568
2017	1.6241	1.8777	1.9875	0.9879
2018	1.6357	1.9024	2.0348	1.0335
2019	1.6627	1.9482	2.0675	1.0786
2020	1.6743	2.0873	2.1784	1.0983
2021	1.8745	2.6295	2.1975	1.1372
2022	1.9873	2.7176	2.2673	1.1438
2023	2.0769	2.8283	2.3672	1.1498
2024	2.3896	2.9674	2.4097	1.2075

In order to intuitively reflect the changing trend of the trade complementarity index of Russian agricultural products exported to China, the trade complementarity index of Russian agricultural products exported to China is dynamically displayed by means of a graph, and the details are shown in the graph 2.15.

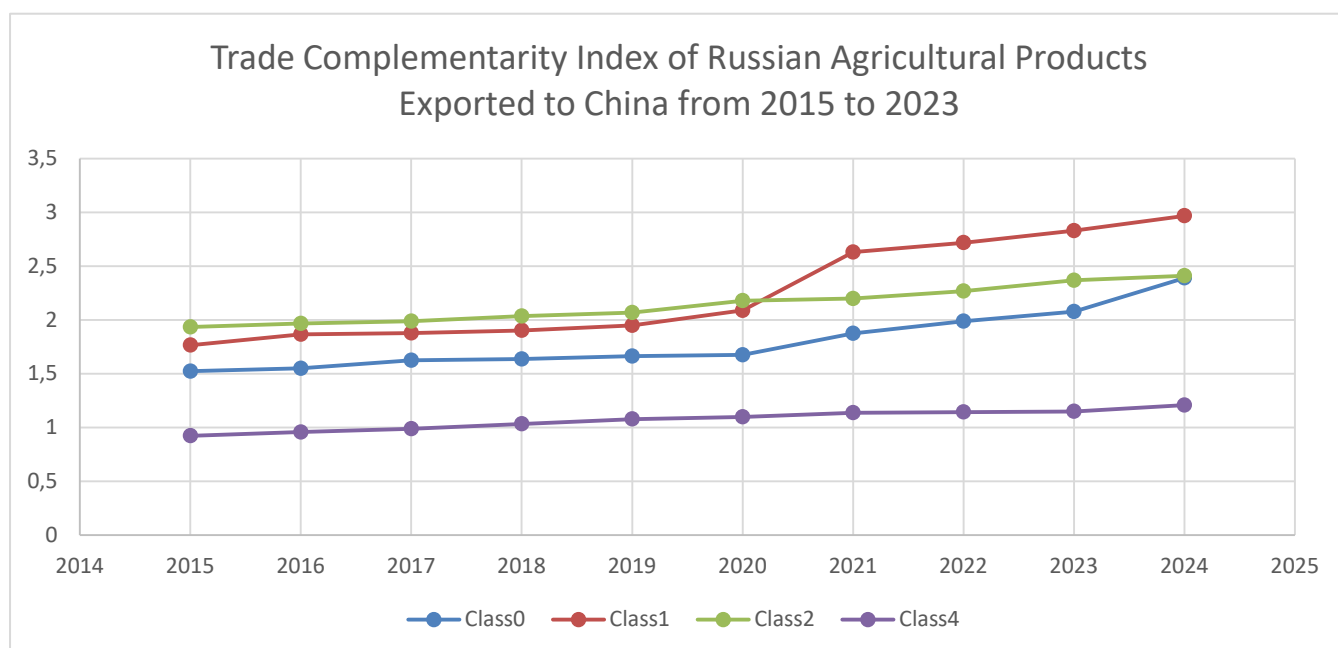


Figure 2.15 – Trade Complementarity Index of Russian Agricultural Products Exported to China from 2015 to 2023 [16]

If Russia is taken as an exporter, the trade complementarity index of four kinds of agricultural products will increase continuously from 2015 to 2023, among which the fastest growth is the first kind of agricultural products, which shows that the trade complementarity advantages of the two countries are gradually highlighted in terms of plant agricultural products, while the trade complementarity index of the second kind of agricultural products is the highest, which shows that the complementary stability of the two countries is relatively strong and the most prominent in terms of animal and vegetable oil decomposition agricultural products trade. Similarly, after 2015, under the advocacy of the One Belt, One Road strategy of China government, the trade cooperation between countries along the route has become closer, and the complementary index of agricultural products trade between the two countries has increased rapidly.

Through the analysis of tables and graphs, it can be seen that the complementarity of Russian agricultural products exported to China is mainly manifested in the first category of agricultural products and the fourth category of agricultural products. Especially for the four types of agricultural products, from 2015 to 2023, agricultural products trade has never been complementary. This mainly shows that the four types of Russian agricultural products exported to China are not complementary, the trade space needs to be expanded, and the level of trade facilitation is not high.

In order to better avoid this problem, the following solutions will be put forward:

Improve the trade efficiency of agricultural products between China and Russia. The governments of China and Russia should communicate in time, imitate the successful cases of agricultural trade in other countries, and build the Sino-Russian agricultural trade information platform. At the same time, the two countries should also establish corresponding management systems in order to collect more useful information. Through the useful information collected, we can analyze the trade situation between the two countries, find out the problems and advantages, constantly improve the trade between the two countries, constantly optimize the transportation and supervision of agricultural products between the two countries, and further promote the construction of related cooperation facilities. The border area between China and Russia is undoubtedly the best choice for both sides. We can build an information platform to optimize the agricultural

trade between the two countries in the border area of the two countries and use this platform to continuously optimize the agricultural trade between the two countries. In the subsequent Sino-Russian agricultural trade, the two countries can also choose suitable places to invest in the construction of production, storage and logistics bases, and constantly improve the quality and added value of agricultural products to promote the development of Sino-Russian agricultural trade [26, p. 142].

Strengthen infrastructure construction. In order to further strengthen the transportation efficiency of agricultural products trade and reduce the losses caused by transportation, Russia must strengthen its infrastructure construction. The Russian authorities have realized that the backward transportation facilities in China have hindered the development of the national economy, and they have also invested funds to repair their domestic infrastructure. So far, however, Russia still lacks in infrastructure construction. Russia must focus on the maintenance after highway construction and ensure the implementation of highway, railway and port construction. Strengthen the quality supervision of the construction process of infrastructure such as roads. In addition, the government should not only focus on the construction of technical facilities in large cities such as St. Petersburg and Moscow, but also point out that financial input should be appropriately increased in some major traffic routes. In the border areas, Russia can increase communication and cooperation with neighboring countries to jointly build infrastructure in border areas.

Chapter 3 Development environment, existing problems and countermeasures of international trade of agricultural products in China

3.1 The development environment of international trade of agricultural products in China

At present, the changes of international trade in agricultural products show diversified characteristics, mainly from the following aspects. First, the international trade deficit of agricultural products has formed and is showing an expanding trend. In recent years, although China's agricultural trade has shown a good development trend, there is also a large trade deficit, which has a great impact on the development of international trade in agricultural products to a great extent. Before 2004, the development level of agricultural products in China was relatively backward, and the export volume was much higher than the import volume. However, this situation was greatly alleviated after 2005, and the export volume was lower than the import volume. Under the background of the continuous development of national agricultural productivity, the related differences between import volume and export volume are also increasing. The reason for this situation is that the domestic consumption capacity is increasing and the import volume is increasing, and the scale of agricultural production is expanding. Therefore, the export volume has also been continuously increased [19, p. 16].

In this regard, after 2005, the country has paid more attention to the trade deficit and fully responded to the growing trade deficit. At the same time, we should also have a certain understanding of the changes in China's domestic consumption level, especially the impact of changes in domestic consumption level on the import of agricultural products. Secondly, in the international trade of agricultural products, the import of important deficit products is very concentrated. After in-depth analysis of China's international trade in agricultural products, we can know that although China's agricultural development level has improved significantly, it has achieved great development results. However, in the international market, it still fails to achieve good development and occupy a larger dominant position, and the related trade deficit products are very concentrated. Through

the analysis of some data, it is found that although China's agriculture has developed well compared with neighboring countries such as South Korea and Japan, and has certain competitiveness of agricultural products, compared with countries with good agricultural production systems such as the United States, China's competitiveness of agricultural products needs to be improved. Due to the influence of production scale and the restriction of climate factors, China needs to import some agricultural products when facing some large agricultural countries. In addition, China's international trade deficit in agricultural products is very concentrated, usually imported from the United States and Brazil. Therefore, in the total deficit, the deficit formed by these two countries also occupies a large proportion and part. Finally, the total deficit is determined by the trade imbalance of bulk agricultural products. Through the analysis of relevant data, it is found that the trade deficit of agricultural products in China is also concentrated in some agricultural products, not just in a few countries. The products with a large export volume are usually oil, grain, sugar and so on. In the process of sustained economic development, China's consumption capacity is also constantly improving. Although the export volume of China's agricultural products is increasing, because the relevant production technology of agricultural products has not been significantly improved, the export of agricultural products is only concentrated on certain agricultural products. Then it will easily lead to the situation of agricultural trade deficit, which will be concentrated in bulk agricultural products and have a great impact on the development of international trade of agricultural products in China.

The influence of international trade in agricultural products. On the one hand, it has an impact on the speed of economic growth. At present, the massive import of agricultural products is an important driving force to promote China's agricultural development. At the same time, the interaction between export and import of agricultural products has also promoted China's agricultural development to a great extent. After analyzing the relationship between agricultural trade and economic development, we can draw the following conclusions. First, from the development of agricultural products in the international market and the domestic market, there is a great connection between them, and they have the status quo of mutual influence and containment. Second, in terms of economic analysis, a large number of imports and exports of agricultural products belong

to a mode of capital operation. Generally speaking, there is a great relationship between capital investment and import and export. Therefore, in the process of exploring China's agricultural development mode, it is necessary to pay attention to the actual sales price and cost in the trade process and have an objective understanding of the massive import of international agricultural products, so as to improve the actual development effect [25].

On the other hand, it has an impact on China's industrial structure. Compared with other industries, agriculture can not only bring some impetus to the development of the economic field, but also provide a good guarantee for the stable development of the country, which is an important cornerstone for maintaining the effective development of the country. In international trade, China's agricultural products show a large trade deficit, which is mainly concentrated in some agricultural products. In the specific development, we need to pay attention to this objective fact. Moreover, in the environment of increasing trade deficit, many foreign high-quality agricultural products flood into China. In this case, the local agricultural development in China has been affected to some extent. Moreover, some enterprises will also be less competitive in agricultural development, resulting in unsatisfactory industrial development results, and enterprises will begin to turn to the secondary industry and the tertiary industry for development. Under such circumstances, agricultural trade will greatly change China's industrial structure, and then affect China's industrial development.

Formation mechanism of international trade pattern of agricultural products. International trade is an arbitrage behavior between importers and exporters based on the international price difference of commodities. As long as there is a difference in the price of the same commodity between the exporting country and the importing country, trade may occur. Because the international price of agricultural products is jointly determined by the export supply of exporting countries and the import demand of importing countries, the international trade pattern of agricultural products may change as long as the factors affecting either export supply or import demand change [19, p. 34].

Export supply of agricultural products. The export supply of agricultural products depends on the marginal cost of exporting agricultural products. The cost of export agricultural products consists of the production cost of export agricultural products and the

transaction cost of export links. The production cost of export agricultural products includes labor cost, land cost and material and service cost in the production process of agricultural products. As a typical resource-intensive product, the production cost of exported agricultural products mainly depends on the factor endowment and economic development level of exporting countries. Countries with abundant land have significant comparative advantages in producing land-intensive agricultural products, while countries with abundant labor have significant comparative advantages in producing labor-intensive agricultural products. From a dynamic point of view, with the rapid economic development, a country will gradually change from a labor-rich structure to a capital-rich structure, and gradually lose the comparative advantage of labor-intensive agricultural products, while the comparative disadvantage of capital-intensive agricultural products will be alleviated accordingly. Therefore, the faster a country's economic development, the faster its agricultural export pattern changes. However, because the amount of land is fixed and the change of land scarcity is extremely slow, the land-intensive agricultural products produced by land-rich countries have significant comparative advantages regardless of their development level. Similarly, countries with scarce land can hardly get rid of the comparative disadvantage in the trade of land-intensive agricultural products for a long time.

The transaction costs of agricultural products export include logistics costs, inspection and quarantine costs, and possible export taxes. With the advancement of agricultural products storage and transportation technology and the promotion of agricultural products trade liberalization, the export cost of agricultural products is bound to drop sharply [47, p. 29].

In the case of other factors unchanged, the factor endowment base of agricultural products exporting countries, the upgrading of factor structure caused by economic growth, the factor saving caused by technological progress, and the substitution ability between factors may all affect the export mode of agricultural products, which in turn will have a greater impact on their foreign trade pattern of agricultural products.

Import demand of agricultural products. The import demand of agricultural products in a country is mainly restricted by its import will and ability. Under free trade, if there is a

high substitution between domestic agricultural products and imported agricultural products, the greater the production cost of domestic agricultural products is higher than the price of imported agricultural products, the stronger the willingness to import agricultural products, the weaker the willingness to import agricultural products. If the country has the foreign exchange needed to pay for imported agricultural products, the stronger the import will, the greater the import capacity. Therefore, with the intensification of agricultural trade liberalization, the greater the production cost of agricultural products in importing countries is higher than that in the international market, the more abundant foreign exchange can be used to import agricultural products, and the greater the import scale of agricultural products.

The economic development of the importing countries of agricultural products means the upgrading of their factor endowment structure, which leads to the gradual loss of the original export advantages of labor-intensive agricultural products and the weakening of the comparative disadvantages of imported capital-intensive agricultural products substitutes. In addition, the increase of per capita income level after economic development will promote the upgrading of demand structure of agricultural products and the change of preferences. Therefore, the demand for imported agricultural products will inevitably show a trend of high quality and diversification in the process of economic development. Accordingly, the more the economy develops, the faster the land cost will rise, and the more land-intensive agricultural products will be imported by countries with scarce land. It can be inferred that the economic rise of a big country importing agricultural products will inevitably lead to the rapid growth of agricultural products import scale, and will greatly affect the existing international trade pattern of agricultural products [19, p. 56].

The economic development of importing countries of agricultural products will also affect the export of agricultural products through the upgrading of factor endowment structure, which in turn will affect the import of agricultural products. If the importing country lacks capital-intensive technology to replace labor, it means that its only export potential of agricultural products will be weakened, which means that its potential trading partners will gain greater competitive advantage in the export of land-intensive

agricultural products, thus affecting the reshaping of the international trade pattern of agricultural products.

Transaction cost rate of international trade of agricultural products. The reduction of transaction costs in international trade of agricultural products is not only conducive to expanding the scale of international trade of agricultural products, but also changes in the composition of transaction costs, especially the relative differences in the reduction of transaction costs between importing countries and exporting countries, and also changes the flow of tradable agricultural products. If the transaction cost of goods trade is defined as the difference between the price paid by the importer and the price obtained by the exporter, then the transaction cost of international trade of agricultural products can be expressed as the difference between the CIF price of the importing country and the FOB price of the exporting country. Accordingly, the transaction cost rate of international trade in agricultural products can be defined as the percentage of the transaction cost of international trade in agricultural products equivalent to the CIF price of agricultural products, as shown in formula [25, p. 74]

$$COST = \frac{GIF - FOB}{GIF} \times 100\%$$

The more convenient the trade of agricultural products, the lower the transaction cost rate. Conversely, the higher the transaction cost rate. With the improvement of agricultural products storage and transportation technology and the liberalization of trade, especially the gradual elimination of tariff and non-tariff restrictions on agricultural products, the transaction cost rate of international trade of agricultural products will be greatly reduced. Some originally non-tradable agricultural products will be transformed into tradable products, thus expanding the types of tradable agricultural products. The greater the decline in the transaction cost rate of international trade in agricultural products, the more types of tradable agricultural products and the greater the geographical radius of trade, so the greater the change in the trade pattern of agricultural products.

Short-term influence of international relations on international trade pattern of agricultural products

Agriculture is an important foundation of a country's politics and economy. When the relationship between the two countries is normal, the bilateral agricultural trade relationship between them is also normal. However, when the relationship between the two countries has twists and turns, agricultural trade may become a weapon of bilateral trade war. Imposing punitive tariffs on the export of specific agricultural products by importing countries or imposing export embargoes on specific agricultural products by exporting countries can bring short-term impact on the international trade pattern of agricultural products. In 2018, the bilateral trade friction between China and the United States changed the short-term pattern of international trade in agricultural products. The main source of China's agricultural products imports shifted from North America to South America, and Brazil replaced the United States as the largest source of China's agricultural products imports.

Describe the international trade pattern of agricultural products: product concentration and market concentration. There are many varieties of tradeable agricultural products. According to the scale of trade, it can be divided into bulk agricultural products trade and small agricultural products trade; According to the degree of processing, it can be divided into primary agricultural products trade and processed agricultural products trade. To measure the product structure of agricultural products trade, we can choose bulk agricultural products to sum up, treat small agricultural products as others, and measure them by the share of export or import of various major agricultural products in the total export or import of agricultural products in the world [25, p. 75].

$$S_n^X = \sum_{i=1}^n X_i \div \sum_{i=1}^N X_i$$

If X_i is used to represent the export volume of i products, N is the total number of types of export products, and the total export volume of the top n agricultural products is recorded as $\sum_{i=1}^n X_i$, then, the product concentration of export agricultural products S_n^X can be calculated by equation.

According to formula, S_n^x is the ratio of the export value of n type agricultural products with the largest export volume to the total agricultural products. The greater the value, the higher the export concentration of agricultural products; The smaller the value, the more dispersed the export products are.

Similarly, the concentration of imported agricultural products S_n^M can be defined to reflect the product concentration of imported agricultural products.

There are nearly 200 countries or regions participating in the foreign trade of agricultural products in the world, and the geographical market concentration of agricultural products export and import can also be defined similarly with the product market concentration. The basic idea is: select the n agricultural products exporting countries or importing countries with the highest trade volume in the world, and measure the market concentration of the international trade of world agricultural products by the share of their total exports or imports in the total exports or imports of world agricultural products.

3.2 Problems and countermeasures in international trade of agricultural products

The export competitiveness of agricultural products needs to be improved. In the development of international trade of agricultural products in China, there are still problems to be improved in the export competitiveness of agricultural products. Specifically, the export of agricultural products in China presents a phenomenon of low added value. Although our government combined with the actual situation of agricultural and rural development, it introduced many support policies to improve the irrational supply structure of agricultural products to the greatest extent. However, in the process of agricultural products export, the related agricultural products are relatively simple, and raw materials and primary processed agricultural products are usually regarded as the main export targets, which fails to effectively carry out deep processing of products. And in the overall proportion of agricultural exports, the proportion of organic agricultural products and brand agricultural products is still low [32, p. 164].

There are two main reasons for this problem: first, many young laborers in rural areas in China have chosen to work in cities instead of staying in rural areas for development, and basically the elderly and children stay in rural areas, thus making agriculture lack of young laborers for development. In addition, some people engaged in agricultural production lack sufficient knowledge and technical ability, and usually combine their years of labor habits to carry out agricultural development and produce corresponding agricultural products. As a result, agricultural products are not scientific enough and lack good production efficiency. Second, the current state's investment in agricultural science and technology needs to be improved, and some agricultural products cannot meet the high-quality requirements of the international market, which ultimately leads to insufficient export competitiveness of agricultural products.

The import dependence of agricultural products is relatively high.

At present, people's living standards have been continuously improved, middle-income groups are expanding, and there are more and more people who need high-quality ingredients, which puts higher demands on agricultural products and ingredients. The supply of some agricultural products in China has been difficult to meet the needs of all domestic consumer groups. Therefore, many consumer groups began to rely more and more on imports, and foreign agricultural products were favored by domestic consumers, such as Chilean cherries and Argentine red shrimp. Although the shortage of some agricultural products in China can be alleviated through the import of agricultural products, there are also great problems and risks. Because in the process of importing agricultural products, China usually relies on the United States, Brazil and other countries. When natural disasters occur in these countries, China will face greater impact and losses. For example, in a special period, many countries reduced the export of their agricultural products, which led to the rising prices of agricultural products exported to China, and finally led to the increasing difficulty in importing agricultural products in China.

Faced with restrictions on non-tariff barriers. In the process of bilateral trade, some importing countries restrict imports by setting relevant authorities, which is trade barriers. At present, China's international trade in agricultural products is facing this problem, which leads to the adverse impact on trade. On the one hand, there are barriers to green

trade. In the process of planting related crops in China, in order to increase the yield, we will choose to use chemical fertilizers and other methods to obtain the ideal crop yield per mu. But in this case, it is easy to ignore the safety of agricultural products, which leads to the situation that agricultural products in China are often returned when they are exported. At the same time, at present, not only traditional crops in China are subject to trade barriers, but also many diversified agricultural products such as seafood are subject to great trade barriers. On the other hand, there are some barriers in the field of technology trade. In the process of protecting the interests of their agricultural products enterprises, many countries will use very strict health inspection and quarantine standards to raise the export threshold of agricultural products in developing countries, and the standards in this regard will usually be higher than international standards. In addition, some countries began to adopt the way of formulating trade barrier system, which affected the export of agricultural products in China through the corresponding system, which led to the extremely adverse impact on the export of agricultural products [27, p. 42].

Anti-dumping has become the core obstacle to the development of agricultural trade industry. Anti-dumping measures are an important obstacle to the sales of domestic agricultural products in individual regions and countries, usually by increasing additional taxes or import taxes. Especially after the financial crisis, all countries in the world are facing the competitive pressure to compete for the market. In order to protect their own economic development, countries have adopted anti-dumping measures, which has greatly restricted and affected the export of agricultural products in China. By the end of 2023, there were more than 50 anti-dumping cases of domestic agricultural products in the export link, among which the United States, Australia and European countries accounted for a relatively large proportion, which made China's agricultural products export suffer serious losses in international trade activities. Especially in the new era, China, as a big exporter of agricultural products, will become the core object of international trade friction.

Existing problems in agricultural products export. The export proportion of branded agricultural products is relatively low. Although the structure of agricultural products in China has been optimized and the proportion of green agricultural products has increased in recent years, low-end products still occupy a large proportion. At the same time, there is

a lack of advantages in the fine processing of agricultural products and the extension of industrial chain, and the export products are still mainly raw materials. Although the export volume is large, the problem of lacking its own characteristics and being more than excellent still exists [48, p. 95].

In the transformation of agricultural production mode, the ultimate goal is still to increase production, and the accumulated experience and methods are mostly related to increasing production, but there are relatively few experiences and methods in quality improvement and energy conservation.

The domestic agricultural development deliberately pursues high yield, and the pesticide input in many areas exceeds the standard, which not only seriously affects the quality of agricultural products, but also increases the hidden dangers of international trade, making the current domestic agricultural products export problems.

The frequent occurrence of international trade frictions has brought great impact to the agricultural trade industry. At present, many countries have improved the safety inspection standards for exported agricultural products and introduced policies of high subsidies and high tariffs. At the same time, influenced by political factors, trade protectionism is constantly strengthening, and the risks and hidden dangers faced by agricultural products exports are also increasing year by year.

Excessive dependence on import and export of agricultural products. According to relevant data, at present, domestic agricultural products account for 10 % of the global agricultural trade, among which domestic dairy products and grain and oil products have begun to flood into the international market. However, the disadvantage is that the import and export of agricultural products mainly depend on a few countries, mainly the United States, European Union countries, Brazil, Australia and other countries and regions, and they lack control and initiative in the international trade of agricultural products. Once there is trade friction with cooperative countries, it will seriously affect the development of international trade of domestic agricultural products and bring adverse effects to the domestic economy.

There are possible ways to solve problems.

Enhance the export competitiveness of agricultural products. First of all, in the new era, China has put forward new requirements to rapidly promote the development of characteristic industries in rural areas. In particular, we should attach importance to the development of characteristic breeding industry, strengthen the effective design and layout of rough and deep processing of characteristic agricultural products, and build a modern agricultural industrial park that is more in line with the social development trend. Strengthen the development of advantageous industrial clusters, maximize the quality of agricultural products processing, change the situation of low-level rough processing of agricultural products, and increase and enhance the technical content and added value of agricultural products. Therefore, in the specific development of international trade in agricultural products, it is necessary to comprehensively optimize the methods and technologies of production and processing of agricultural products, improve the quality of related products, and then enhance the export competitiveness of agricultural products to a certain extent. Secondly, the storage and packaging technology of agricultural products have a greater impact on the promotion of export competitiveness. Therefore, in solving the international trade problem of agricultural products, it is necessary to quickly optimize and innovate the preservation technology of fruits and vegetables, and improve and update the export packaging of agricultural products [48, p. 112]. At the same time, at present, there are still insufficient brand guarantee and quality guarantee in the export of agricultural products in China. In order to cope with this situation, it is necessary to strengthen the quality guarantee and brand guarantee of agricultural products, form a good brand, and then continuously improve the overall development level and competitiveness of agricultural products in the international trade market. Finally, in the promotion of the export competitiveness of agricultural products, it is necessary to improve the competitiveness of China's export enterprises in all directions. Nowadays, in the export of agricultural products, there are still few excellent export enterprises in China, and there is a lack of large-scale agricultural enterprises integrating production, processing, storage and sales, which makes the actual competitiveness of agricultural products relatively small. In such an environment, it is necessary to actively strengthen the development ability and

competitiveness of some small enterprises, and also to support and encourage large-scale enterprises to participate in agricultural development and agricultural product production.

Reduce the import dependence of agricultural products. At present, in the development of international trade, China's agricultural products need to reduce their import dependence. In practical work, we can improve the quality of domestic agricultural products to reduce the actual import dependence. First, in the development of domestic agriculture, it is necessary to adopt scientific planting and breeding methods to continuously improve the quality of agricultural products. At the same time, it is necessary to promote the effective processing and production of agricultural products through intensive processing methods. However, it should be noted that both scientific planting and breeding and good processing of agricultural products need the help and support of agricultural science and technology talents. Therefore, in order to reduce the dependence on imports, we can choose the way of cultivating agricultural scientific and technological talents, so that more talents can participate in the production and processing of agricultural products and agricultural planting and development. It is also necessary to actively cultivate new professional farmers so that these farmers can better understand agricultural technology and management. During the actual training period, we can build a training and education base, regularly invite relevant experts to carry out training for rural talents, or effectively train existing farmers, so as to provide more talents to the countryside and promote the rational development of rural areas and agriculture, improve the production and processing effect of agricultural products [45, p. 167].

Second, in order to reduce import dependence, we can increase the supply mode of domestic agricultural products. On the one hand, it provides practical guarantee for the supply of grain. In actual development, it can effectively reward large grain-producing counties, provide good support and guarantee for the construction of high-standard farmland in relevant areas, and strengthen the construction of national grain reserve system. On the other hand, enhance the support for agriculture. We can promote the effective development of different farming and animal husbandry through the introduction of relevant preferential policies, and improve the support for agricultural business entities such as farmers' cooperatives. In addition, in order to enhance the circulation effect of

agricultural products, we can show the advantages of webcasting software and use major platforms to effectively promote and sell related agricultural products. In addition, it is necessary to expand the coverage of logistics express delivery in rural areas and improve the actual circulation effect and speed of agricultural products.

Actively resolve non-tariff barriers. In order to improve the international trade level of agricultural products and constantly deal with various trade barriers, it is necessary to actively resolve non-tariff barriers. Generally speaking, during the period of responding to the restrictions of green trade barriers, the government can improve the green production initiative of relevant producers and continuously reduce the use of related pesticides and fertilizers in the growth of agricultural products by formulating agricultural green subsidy policies. Moreover, the government needs to build a more perfect early warning mechanism for green trade barriers, collect and sort out the relevant data of green barriers in different countries, systematically analyze the relevant data, and provide them to the relevant enterprises that produce and export agricultural products in China at the first time. In response to technical barriers to trade restrictions, it is necessary to introduce internationally recognized testing equipment and technology into China in combination with international agricultural products trade testing standards. It is also necessary to strengthen communication and exchanges with major agricultural products exporting countries and learn from the local access standards of other countries, so as to improve China's agricultural products export standards and further improve the access rate of China's agricultural products in other countries. Moreover, it is necessary to expand new export markets for agricultural products and build trade cooperation relations with other countries [27, p. 48; 28, p. 90].

Adjust the agricultural industry and trade structure. In order to deal with the international trade of agricultural products, it is necessary to adjust the agricultural industry and trade structure, and then promote the optimal development of international trade of agricultural products and agricultural industry on the basis of the adjustment of industrial and trade structure. Compared with some developed countries, the international trade level of agricultural products in China needs to be improved, especially the problems of scattered agricultural production methods and unreasonable agricultural trade structure,

which have caused the weak market risk resistance of agricultural products in China and brought adverse effects on actual development. On the one hand, it is necessary to encourage and guide the construction of agricultural cooperatives in various regions, adopt centralized production methods, and improve the level of marketization. In addition, increase the support of modern agricultural leading enterprises, and promote enterprises to continuously expand the scale of development and enhance technology. It is also necessary to guide the relevant production enterprises to plant cash crops with higher added value, so as to optimize and improve the situation in which China mainly exports primary agricultural products and promote the optimization of the export trade structure of agricultural products. On the other hand, the government needs to effectively reduce the production costs of related agricultural industries through fiscal and financial means. Actively learn from the practical methods of subsidizing agricultural products in developed countries and enhance the subsidies for agricultural products. In particular, increase subsidies for agricultural products with great export potential, and regard producers and production links as important subsidies. In addition, the government also needs to improve the standardization of agricultural products, promote the integration and convergence between domestic and international standards, further improve the technical standards of agricultural products, encourage agricultural export enterprises to actively certify, promote the continuous improvement of domestic standards, and increase the access rate of Chinese agricultural products in the international market. At the same time, the government also needs to combine the actual situation and problems in the development of international trade in agricultural products, increase the investment in agricultural products research, strengthen brand building through new technologies and new management methods in time, and then promote the continuous improvement of brand competitiveness of China's export agricultural products to achieve the goal of international trade and development of agricultural products. It should be noted that in the adjustment of agricultural industry and trade structure, it is necessary to deepen the international interaction and cooperation of agricultural trade and investment. Generally speaking, it is to build a more perfect trade policy to safeguard agricultural products trade and food security according to the changes in the international market environment in

actual development. Moreover, it is necessary to strengthen the international trade level of China's agricultural products through international cooperation, and further provide protection for the interests of the country, so as to continuously achieve more ideal development goals of international trade of agricultural products and achieve high-level cooperation among agricultural product supply chains under the development environment of cooperation and joint construction [36, p. 134–135].

Actively respond to anti-dumping measures and create a good international trade environment. In view of the international anti-dumping policy, China should constantly improve relevant laws and regulations, actively participate in the formulation of international trade rules for agricultural products, and ensure that competition is in a fair and reasonable state. In order to achieve this goal, the government needs to build a perfect information service system and counter-marketing mechanism, and speed up the formulation of relevant laws and regulations to cope with international anti-dumping policies and means. At the same time, it is necessary to strengthen publicity and communication around the world and actively establish the image of a big exporter of agricultural products. In addition, agricultural products trade associations should also give full play to their own advantages and functions, strengthen effective communication and coordination with countries around the world, and conduct analysis and research on domestic anti-dumping cases of agricultural products, so as to reduce the possibility of friction of agricultural products in international trade industries, thus promoting the effective development of international trade of agricultural products in China and making contributions to the construction of perfect agricultural products trade development [28].

Adjust the supply structure of agricultural products and reverse the unfavorable situation of single agricultural products. Adjust the market structure of export agricultural products, take advantage of the development opportunities in the new period, continuously expand the export market, expand the market export volume to European countries, North American countries and other regions, improve the development efficiency of agricultural products industry, strive to adapt to the international development trend, actively explore the export markets of agricultural products in countries along the route, and optimize the overall layout of agricultural products.

Adjust the overall export structure of agricultural products, speed up the development of domestic agricultural products industry, actively carry out deep processing of agricultural products, cultivate large and medium-sized agricultural products producers to meet the specific needs of international trade, and ensure the stability and diversification of agricultural products exports.

Ensure that the overall development law of agricultural products is scientific, adopt necessary scientific preventive measures to reduce the possibility of trade friction, and take corresponding countermeasures in time after trade friction occurs, so as to form a good export pattern of agricultural products, build a more fair, reasonable, scientific and stable sustainable development supply chain, and provide assistance and support for the development of domestic agricultural products trade and economic globalization.

Government departments can increase investment in capital, policies, talents and technology to promote the adjustment of agricultural product supply structure.

Strengthen diversified cooperation with other countries to achieve mutual benefit and win-win results. Under the background of economic globalization, in order to build a perfect development pattern, China should actively build an open policy for the agricultural industry, not limit its eyes to the import and export of domestic agricultural products, but also strengthen diversified cooperation with other countries [45, p. 168].

We should ensure the quality and safety of agricultural products. On the one hand, we should constantly provide security for agricultural products, build a perfect consultation system and exchange system, and enhance trust and understanding with other countries in the world. On the other hand, it is necessary to build a perfect information sharing platform, strengthen personnel training, formulate emergency plans and measures based on past experience, strengthen cooperation and cooperation among all parties, carry out scientific and technological research, and strengthen risk early warning, risk management and product quality traceability, so as to enhance the prevention and control ability of agricultural products export. In addition, we should strengthen the depth of cooperation with all parties, constantly promote the inspection and quarantine of agricultural products, and build a sound cross-border supervision system.

Strengthen the complementary relationship between various industries. Domestic agricultural resources are abundant, with large areas of cultivated land resources, which meet the necessary conditions for large-scale production and can introduce a large number of high-tech agricultural equipment, so that domestic agricultural development has broad space and prospects. On the one hand, we should actively encourage the introduction of advanced agricultural technology to improve the production quality of agricultural products, and then enhance the competitiveness of domestic agricultural products in the overall industry chain. On the other hand, in the environmental protection of agricultural products, on the basis of promoting the development of agricultural field, the health of agricultural international trade is the premise of development [32, p. 175].

Seek a breakthrough in foreign trade and seize the opportunity of e-commerce development. Facing the problem of international trade barriers of agricultural products, the government should take a positive attitude, take effective optimization measures and actively explore the breakthrough of foreign trade barriers. In view of the existing problems in foreign trade of agricultural products, we should actively construct corresponding management mechanisms, conduct in-depth analysis and exploration on trade measures of countries around the world, and pay close attention to changes in international trade barrier policies in a timely manner. In particular, some technical barriers to trade need more in-depth analysis by government departments, so as to build a sound early warning mechanism, so that China's international trade in agricultural products can take more effective measures in the face of technical barriers, so as to improve the international recognition and trust of domestic agricultural products and significantly enhance their international trade status and international influence. At the same time, China should also actively participate in the formulation of relevant standards for international trade in agricultural products. In addition, domestic agricultural products enterprises should actively update the concept of agricultural products production and product innovation, and always adhere to the principle of quality first to ensure the stable development of domestic agricultural products export trade.

At the same time, in order to broaden the import and export trade channels of agricultural products, we should seize the opportunity of e-commerce development,

actively explore the field of e-commerce of agricultural products and broaden the cross-border sales channels of agricultural products. According to the analysis of the current situation, the innovation and development of domestic agricultural products are still influenced and restricted by the traditional trade model, such as the problems that market demand and market supply cannot be symmetrical, the capital turnover speed is slow and the operating cost is high, which seriously restricts the development of domestic agricultural products, while e-commerce technology can effectively solve the above problems and realize cross-border transactions of agricultural products. In a sense, e-commerce technology can significantly improve the efficiency of information transmission, ensure the integrity and authenticity of information, speed up the capital turnover of agricultural products production enterprises, make the transaction process of agricultural products simpler and more convenient, effectively reduce the international transaction cost of agricultural products, and improve the international transaction opportunities of agricultural products, and finally provide a solid technical foundation and financial support for agricultural products producers to expand their scale. Not only that, e-commerce technology has the characteristics of fast and extensive, and it also promotes agricultural products production enterprises to further expand production and sales channels. The development of economic globalization is highly compatible with the field of e-commerce, which brings new opportunities for the development of cross-border e-commerce. The foreign trade of agricultural products should seize this development opportunity and break through the barriers of traditional sales channels.

Conclusion

Master thesis studies the characteristics of international agricultural trade in China. To this end, this paper explores the trade characteristics of agriculture in China from three aspects. This paper adopts a series of methods of literature research, data demonstration and data calculation to demonstrate the competitiveness and complementarity of agricultural trade, and draws the following conclusions.

Firstly, based on the study of agricultural products trade in China, this paper explains what international trade of agricultural products is, and then distinguishes the current international division standards of agricultural products. At the same time, it studies the mode and characteristics of agricultural products trade respectively, in order to put forward what is the international competitiveness of agricultural products and what are the factors that affect the international competitiveness of agricultural products, thus paving the way for the following.

Secondly, the text mainly analyzes the current situation of agricultural trade in China. Distinguish the current situation of domestic trade and foreign trade. Domestically, agriculture is the foundation of people's livelihood, and economically, agriculture is the foundation of national economy and economic development. Socially speaking, agriculture is the foundation of social stability and the industry that stabilizes the world. Politically speaking, agriculture is the foundation of the country's self-reliance, and China's self-reliance depends largely on the development of agriculture. Agriculture is of great significance to China's economic development. In terms of import and export trade, this paper will analyze the import and export situation of agricultural products in 2023, and compare it with the import and export situation in previous years. From the overall trend, the total international trade of agricultural products is on the rise. From 2019 to 2023, China's agricultural products imports showed an increasing trend, while agricultural products exports were relatively flat. The top three export markets of agricultural products in China are China, Hongkong, Japan and the United States. The top three import sources of agricultural products in China are Brazil, the United States and Thailand. Shandong, Guangdong and Fujian are the top three agricultural products exporting provinces in China,

while Shanghai, Guangdong and Beijing are the top three agricultural products importing provinces and cities in China.

Thirdly, through the current situation of agricultural products trade, the existing problems, countermeasures and future development analysis of agricultural products trade in China are obtained. Firstly, the characteristics of international trade of agricultural products in China are pointed out. At present, the changes of international trade of agricultural products are diversified, mainly in the following aspects: First, the international trade deficit of agricultural products has been formed and is expanding. Secondly, in the international trade of agricultural products, the import of important deficit products is very concentrated. After an in-depth analysis of the international trade of agricultural products in China, we can know that although the level of agricultural development in China has been significantly improved, it has achieved great development results. However, in the international market, it has still failed to achieve good development and occupy a relatively dominant position, and the related trade deficit products are very concentrated. In addition, the international trade deficit of agricultural products in China is very concentrated. Finally, the total deficit is determined by the imbalance of trade in bulk agricultural products. After analyzing the relationship between agricultural trade and economic development, we can draw the following conclusions: First, from the perspective of the development of agricultural products in the international market and the domestic market, there is a great connection between them, and there is a current situation of mutual influence and containment between them. Second, in terms of economic analysis, a large number of imports and exports of agricultural products belong to a way of capital operation. Generally speaking, there is a great relationship between capital investment and import and export. In analyzing the formation mechanism of international trade pattern of agricultural products, the factors are export supply of agricultural products, import demand of agricultural products, transaction cost rate of international trade of agricultural products and short-term influence of international relations on international trade pattern of agricultural products. The second part analyzes the problems existing in the international trade of agricultural products in China and the corresponding solutions. Among them, there are the following problems: the export

competitiveness of agricultural products needs to be improved; the import dependence of agricultural products is high; facing the restriction of non-tariff barriers; anti-dumping has become the core obstacle to the development of agricultural trade; problems in the export of agricultural products; Excessive dependence on the import and export of agricultural products. In view of these problems, the following solutions are put forward: improve the export competitiveness of agricultural products; reduce the import dependence of agricultural products; actively resolve non-tariff barriers; adjust the agricultural industry and trade structure; actively respond to anti-dumping measures and create a good international trade environment; adjust the supply structure of agricultural products to reverse the unfavorable situation of single agricultural products; strengthen diversified cooperation with other countries to achieve mutual benefit and win-win; seek breakthroughs in foreign trade and seize opportunities for e-commerce development.

Finally, it is concluded that the international trade of agricultural products in China is the top priority of China's economic development, and the international trade of agriculture has a significant role in promoting the development of people's livelihood, and at the same time determines China's position in international agricultural trade.

Reference list

- 1 Albersen P. J., Fischer M. A., Keyzer S. L. Towards estimating agricultural production relations for China // Dilemmas of China's growth in the twenty-first century. 2019. № 3. P. 135–175.
- 2 Andreyeva Y. Analysis of Sino-Russian agricultural trade potential under the background of Belt and Road Initiative. Jiangxi University of Finance and Economics, 2022. 155 p.
- 3 Chen Fang, Yang Meijun Influence of international trade in agricultural products on agricultural green total factor productivity in China // Journal of South China Agricultural University. 2023. № 20. P. 94–104.
- 4 Chen Y. F. Food supply demand and projection in China // China agriculture press. 2019. № 202. P. 68–76.
- 5 Cheng G. Chinese agricultural export. Management world. 2023. 688 p.
- 6 China's agricultural import and export. URL: <http://data.world-bank.org/indicator/tm.val.agri.zs.un/locations=CN> (access date: 15.05.2024).
- 7 Deng Ming, Yang Jingchun, Zheng Xuyuan New opportunities, practical bottlenecks and countermeasures for the development of agricultural service trade in China // Journal of Yunnan Agricultural University. 2023. № 2. P. 4–10.
- 8 Description of Classification and Statistical Dimensions of Agricultural Products in China Agricultural Products Trade Development Report. URL: <https://www.statista.com/topics/9277/agricultural-trade-in-china/#topicOverview> (access date: 15.01.2024).
- 9 Du Jiang Study on Opportunities and Long-term Benefits of Sino-Russian Agricultural Trade Cooperation // Price Monthly. 2022. № 4. P. 70–76.
- 10 Export of agricultural trade in China. URL: <http://databank.world-bank.org/data/databases.aspx?Qterm=china%20export&pagenumber=1> (access date: 15.04.2024).

- 11 Export value of agricultural products from China from 2005 to 2023. URL: <https://www.statista.com/statistics/1200541/chinas-export-value-of-agricultural-products/> (access date: 15.04.2024).
- 12 Export value of agricultural products from China in 2023, by major country or region. URL: <https://www.statista.com/statistics/1202129/china-export-value-of-agricultural-products-by-region/> (access date: 15.04.2024).
- 13 Feng Zhuo Analysis of the influence of new CPTPP international economic and trade regulations on China's agricultural products trade. Liaoning University, 2021. 121 p.
- 14 Feng Zixuan Study on the trade potential and trade policy of agricultural products between China and RCEP countries. Jilin University, 2023. 221 p.
- 15 Gao Liting Study on the Impact of Trade Opening on Agricultural Production Efficiency in China. China University of Mining and Technology, 2023. 167 p.
- 16 Gao Zhongpo Research on Sino-Russian Agricultural Cooperation Situation and Promotion Strategy // Heilongjiang Grain. 2024. № 12. P. 26–29.
- 17 He X, Th.Whal. China's agricultural trade: recent changes in 20 years // China's rural economy. 2022. № 12. P. 11–19.
- 18 Huang J. K, Liu Y. Changes in trade and domestic distortions affecting China's agriculture // Food policy. 2023. № 45. P. 187–190.
- 19 Huang Shuiling Study on the Economic Effect of Reducing the Import Trade Barriers of Agricultural Products in China. Zhongnan University of Economics and Law. 2022. 149 p.
- 20 Import of agricultural trade in China. URL : <http://databank.world-bank.org/data/databases.aspx?Qterm=china%20import&pagenumber=1> (access date: 15.04.2024).
- 21 Import value of agricultural products to China from 2005 to 2023. URL: <https://www.statista.com/statistics/749961/chinas-import-value-of-agricultural-products/> (access date: 15.04.2024).
- 22 Jiang S. Analysis of agricultural trade structure and competitiveness between China and EU cumulatively // Agricultural Economics. 2021. № 684. P. 270–275.

- 23 Jin Y. The comparative advantage and trade complementarity of China with main countries and areas east Asian. *World Economy*, 2022. 358 p.
- 24 Li G. Q. Analysis and study on China's agricultural product international competitiveness // *Shandong university of finance and economics*. 2022. № 5. P. 44–68.
- 25 Li Xiuxiang, Huang Weifeng Embedding of agricultural global value chain, trade cost and value-added trade // *International trade*. 2024. № 2. P. 72–85.
- 26 Li Yue Research on Sino-Russian Agricultural Trade under the Belt and Road Initiative. *Northeast Forestry University*. 2022. 452 p.
- 27 Linda A., Hugh M. Estimating Tariff Equivalents of Non-Tariff Barriers // *Office of Economics*. 2023. № 16. P. 33–65.
- 28 Linkins A. Estimating Tariff Equivalents of Non-Tariff Barriers // *Economics Working*. 2023. № 42. P. 87–93.
- 29 Liu Guobin China's agricultural opening to the outside world and the Belt and Road construction // *Economic research in Northeast Asia*. 2020. № 4. P. 2–8.
- 30 Liu H., Zhou A., Sun D. China's agricultural trade structure and prospects. 2023. 122 p.
- 31 Liu Qichao, Xu Da Research on Agricultural Cooperation between China and Central and Eastern European Countries under the Background of Belt and Road // *Continental Bridge Perspective*. 2023. № 11. P. 36–38.
- 32 Liu S. H. Research on International Competitiveness of Chinese Agricultural Product Based on Agricultural Industrialization // *Wuhan University of Technology*. 2019. № 16. P. 163–183.
- 33 Liu Yang, Cheng Jing, Zhao Wanqin Promoting effect of agricultural products trade on green food industry // *Journal of Yunnan Agricultural University (Social Sciences)*. 2024. № 18. P. 53–61.
- 34 Liu Yizhuo, Yang Haicheng, Yin Wen yuan Agricultural trade adjustment assistance: international experience and China path // *International trade*. 2023. № 05. P. 14–20.
- 35 Lv J. Chinese Agricultural Product. *Commercial Economy*. 2017. 158 p.

36 Narayanan B., Walmsley T. Assistance and Production // Center for Global Trade Analysis. 2022. № 28. P. 133–165.

37 Narayanan B., Walmsley T. Global Trade // Center for Global Trade Analysis. 2022. № 21. P. 66–69.

38 Peng Xiaoya Study on the Coupling and Efficiency of Agricultural Trade between China and the Belt and Road Countries. North China Electric Power University, 2021. 234 p.

39 Qiang G. Competitiveness of Chinese Agricultural Product // Securities and Futures. 2022. № 7. P. 194–258.

40 Qiao Zhen, Zheng Yan Study on the facilitation of agricultural trade and agricultural cooperation between China and Russia // Academic exchange. 2021. № 4. P. 110–115.

41 Roebiano M., Danilo C. Enhancing Supply Chain Connectivity and Competitiveness of ASEAN Agricultural Products // Identifying Chokepoints and Opportunities for Improvements. 2022. № 8. P. 15–25.

42 Roop J. M, Zeitner R. H. Agricultural activity and the general economy // American Journal of Agricultural Economics. 2021. № 31. P. 223–228.

43 Steven Yang, Liu Yifei, He Licheng Outstanding problems and countermeasures in Sino-Russian agricultural cooperation // Eurasian economy. 2021. № 3. P. 10–24.

44 Sun C. The international competitiveness research of China's agricultural products // World economy and trade. 2017. № 12. P. 1–5.

45 Tang Longjiao Research on China agriculture seizing the new opportunities of trade facilitation from the perspective // China management informationization. 2023. № 26. P. 165–169.

46 Tao Dengfeng Research on the development strategy of agricultural international trade // Trade exhibition economy. 2023. № 11. P. 71–74.

47 Wang Mengxing. An Empirical Study on the Impact of Trade Facilitation Level on China's Trade Cost // Journal of Beijing Vocational College of Finance and Trade. 2023. № 39. P. 26–33.

- 48 Wang Y. International Competitiveness of Chinese Agricultural Product. China Agricultural, 2021. 158 p.
- 49 Wayne M. Morrison. China-U.S trade issues // Congressional Research Service. 2022. № 7. P. 8–20.
- 50 Wen Jing Influence of international trade in agricultural products on China's agricultural economic growth // Today's Fortune (China Intellectual Property). 2023. № 5. P. 14–16.
- 51 Weng M. An Analysis on International Competitiveness of Chinese Agricultural Product // Agricultural Outlook. 2022. № 16. P. 116–123.
- 52 Xianli X., Xueli W. Research on the Changes of Chinese Agricultural Products Export Trade since China Entered into WTO // Huazhong Agricultural University. 2023. № 3. P. 55–65.
- 53 Xiao Y. Current situation and prospects of agricultural trade between China and India // China's rural economy. 2024. № 2. P. 2–4.
- 54 Xiong Qiquan, Yu Meici The China factor in the formation of a new pattern of international trade in agricultural products // Journal of South China Agricultural University (Social Science Edition). 2024. № 23. P. 78–93.
- 55 Xu Ming Impact of changes in international trade in agricultural products and countermeasures // Economic Outlook around Bohai Sea. 2023. № 7. P. 39–42.
- 56 Xu S. W. Agricultural Information Analytics // World Population Prospect. 2021. № 23. P. 75–80.
- 57 Xu S. W. Study on China's food safety development strategy in the new period // Shandong Science and Technology Press. 2023. № 88. P. 143–150.
- 58 Xu Z. The belt and the road under the strategy of China and analysis of Russian agricultural cooperation // World economy and trade. 2022. № 10. P. 3–9.
- 59 Yang J, Huang J. Changing food consumption pattern and demand for Agri-based industrial products in China // Implications for Southeast Asia's Agricultural Trade. 2022. № 7. P. 10–18.
- 60 Yang J, Liu B, Shang M. L. Forecast of Soybean Import in China // Systems Engineering–Theory. 2021. № 131. P. 102–110.

61 Zhang H. Analysis on International Competitiveness of Chinese Export Agricultural Product // Enterprise Economy. 2021. № 19. P. 111–123.

62 Zhang J. An Analysis on International Competitiveness of Chinese Agricultural Product. M. : International Trade, 2019. 388 p.

63 Zhang X. Review and forecast of agricultural products trade between China and ASEAN // World economy and trade. 2024. №1. P. 3–5.

64 Zhao Y. F., Tian Z., Qiao Z. Analysis on Characteristics of the Structure of Foreign Trade Agricultural Product in China // Journal of Agrotechnical Economics. 2021. № 106. P. 18–24.