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Coupling Relationship between the Changes of Citrus Planting Structure and the Development of Regional Agricultural Economy in South China

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Abstract: The purpose of this article is to explore the coupling relationship between the change of planting structure of the citrus industry and the development of regional agricultural economy under the research of the continuous development of planting technology and industrial form, update the concepts and concepts, and promote the continuous development of the citrus industry chain with a cluster development model. Rich and perfect. This article will use specific research methods to analyze specific problems, compare data and draw conclusions. Through theoretical innovation, farewell to the extensive planting model, combined with regional economic characteristics, cultivate new planting methods. The results of the study show that the output of citrus in 2018 increased by 13.76 million tons from 2012, from 26.45 million tons in 2012 to 40.21 million tons in 2018. Among the many fruit productions, it is still relatively large. Therefore, according to the analysis of different planting structures, the model is used to determine the impact of the impact of crop yield changes on the crop planting structure, crop industry, other industries, and even the economic society, providing valuable experience for the research and application of citrus cultivation and regional agricultural economy.

1. Introduction

The research on the modernization of the citrus industry started in Europe in the 19th century. Mendel's genetic laws and Darwin's theory of evolution provided a theoretical basis for the improvement of citrus varieties. With the rapid development of modern agriculture, farewell to the traditional planting model and get rid of climate, soil and other natural The restrictive factors,

combined with the promotion of social factors, use the scale effect of the regional agricultural economy to increase production, and affect the demand for products and planting behavior through the market and other channels, which will further have a significant impact on the citrus planting structure.

As a large citrus producing country, China's share in the world's export market is very small, and it has not exerted the economic benefits and influence that China's citrus industry should have. The main reason is that China's citrus industry lacks cluster development and is not competitive. Therefore, how to promote cluster development and enhance the competitiveness of the citrus industry is the core issue of China's citrus industry [1-2]. South China, as the main production area of the citrus industry, has long pursued market expansion and sales volume without digging into the industry potential. Although China's citrus industry has the largest area and output in the world, its output value and export value lag behind most citrus producing countries. Under the current background of the country's full implementation of supply-side structural reforms, industrial innovation is in full swing. If the citrus industry can also undergo rational industrial transformation, systematic and clustered unified layout and planning, and increase industrial investment and development efforts Creating industrial giants and industrial clusters with international influence can effectively push the citrus industry to a new growth point [3-4]. Comparatively speaking, the industrialization level of citrus abroad is very high, and many industrialists apply advanced theoretical research results to the cultivation and cultivation of citrus, and have formulated corresponding strategies or regulations for the development of citrus industry organizations. The results have not been updated much [5]. Domestic experts and scholars mainly analyze and believe that climate change has always been the most important factor affecting crops and their planting structure. The changes in climate conditions are complicated. Different scholars have different perspectives on this issue. Different scholars have different research results on different regions and different types of crops. Most researchers have used corresponding models to carry out model regression analysis on historical data, and there are also studies using CGE models for simulation analysis [6-7]. Most of the existing research belongs to the category of natural sciences. Therefore, to understand the research on the response of the planting structure to natural conditions through the economic level, and to learn from the regional agricultural economic development model, establish the coupling between the two, for the bright prospect of citrus planting Make bedding.

This article starts with the meaning and characteristics of citrus planting structure and regional agricultural economy, explores the research factors based on improving the changes in planting structure to better be used in the research of cluster scale development, and mainly analyzes the characteristics of citrus growth in the change of planting conditions The dilemma and the method to solve the problem, find a reasonable solution and a balance point that is consistent with the regional economic structure, and combine the two organically. Provide valuable technical experience for the agricultural planting field in the future. And made an objective outlook on the future development direction. In view of the differences in the order of technology research, it is necessary to obtain the similarities and differences of research directions through comparative advantage analysis, learn advanced experience, propose improved methods and paths, and combine new development methods, hoping to provide a theoretical basis for the field of agricultural planting.

2. Planting Structure and Regional Influence of Citrus

2.1. The Planting Structure of Citrus

(1) Planting structure

The agricultural planting structure refers to the types, varieties and area ratio of crops planted in a region or production unit. The agricultural planting structure and its changes are the result of a

combination of various factors such as a certain socio-economic structure, natural geographical environment, production technology conditions, and farmers 'traditional habits [8-9]. Compared with before, the natural geographical environment has not changed much since modern times, but huge changes have taken place in the social economic environment and production technology. Or directly or indirectly promote the change of agricultural planting structure. Among them, the commercialization of agriculture, the rapid development of modern transportation, and the demand for raw materials in modern handicrafts and industries are all important factors that lead to changes in agricultural planting structure. Among them, the promotion of agricultural commodification, the development of modern transportation and the demand for agricultural raw materials by modern handicrafts and industries are all important factors that promote the transformation of the planting structure. It can make use of the superior resources and special planting in various regions, and optimize the planting structure is conducive to the implementation of the national or regional economic planting strategy. It has a reasonable demand for the people's livelihood and prevents local overpopulation. The growers have higher economic benefits and match modernization. Construction has very important significance.

(2) Regional economic theory

Regional economy refers to the production complex formed by the interaction and interaction of internal and external factors in the regional economy. The regional economic development model is a comprehensive analysis of the internal and external factors and characteristics, development stages and internal operating mechanisms of economic development in specific regions and specific historical conditions [10-11]. Regional economic theory is a theory that studies how to optimize the allocation of production resources in a specific space (specific area) in order to maximize economic benefits. Since production resources are fixed and limited, regional economics requires us to obtain as much economic output as possible by optimizing resource allocation and matching different combinations. Economic geography is similar. Based on the rational allocation of production resources in space, regional economics has gradually formed increasingly sophisticated spatial analysis economic standards [12]. The initial form of this theory was the location theory in the early 19th century, and its main research point was to help enterprises find the best location for production and management. With the increasingly active regional economy in Western developed countries after the war, the location theory based on a single enterprise has been unable to meet the overall development strategy of the country and region. Therefore, the modern regional economic theory was born after 1950. At present, the main purpose of regional economics is to promote regional innovation and regional competitive advantage. It mainly targets some regions with economic problems and conducts regional economic research in a targeted manner.

(3) Industrial cluster theory

Industrial clusters are formed for specific industrial fields in a certain area. Some companies, factories and suppliers related to the industry have accumulated in space. These industrial organizations rely on the integration of relevant industrial management systems and management associations to form upstream and downstream supporting cost advantages and efficient allocation of production resources through industrial clusters, thereby quickly forming a larger industrial scale and facing industrial brands. From the perspective of the industrial chain and products, the industrial cluster is the entire upstream and downstream support of a product. From the perspective of organizational scale, industrial clusters are often the upstream and downstream support for the development of well-known enterprises or large companies and large groups. The core of the industrial cluster is that industries should not be repeatedly and densely distributed in a certain space, which can avoid homogeneous competition and reduce industrial development costs. Based on in-depth research on the competitiveness of some typical countries and industries, Michael Porter of the Harvard Business School in the United States proposed that industrial competitiveness

is mainly determined by four major factors, namely production factors, demand conditions, industrial structure and industrial structure, and the scale of related industry development., Corporate strategy, etc. At the same time, it is also interfered by external factors such as government behavior and industrial opportunities. This kind of theory is called industrial competitive advantage theory, also known as diamond model.

2.2. Regional Agricultural Development

(1) Regional division of labor in agriculture

The division of labor has long been regarded as the source of economic growth. Plato discussed the significance of division of labor and specialization in promoting social welfare as early as 380 BC. At the end of the 17th century, William Petty recognized the significance of division of labor and specialization for the improvement of productivity, and pointed out that the reason why the Dutch people have higher commercial efficiency is because they use special merchant ships to transport different goods. Geographical division of labor is the specialization of regional production under the effect of the "optimized distribution" of productivity. Agricultural regional division refers to the use of unique conditions in different regions to carry out regional agricultural specialization production and exchange of commodities in the region. It is an empty form of agricultural division of labor; it is based on the regional differentiation of Bairan and is a regional The result of the division of labor and the division of labor in the region of labor; this is also the essential difference between the regional division of labor in the agricultural bio-industry and that in the non-biological industry. Bertir Olin put forward the theory of comparative advantage of resource votes, focusing on the analysis of the differences in "factorial factor votes", arguing that a country or region should concentrate on producing products with advantageous resources and obtain comparative benefits through trade.

(2) Unbalanced development

A.D. Hirschman-Perrux is the representative of the unbalanced development strategy theory of different industries and regions. The theory of unbalanced development strategy emphasizes that underdeveloped regions cannot achieve balanced development without capital and other resources for comprehensive industrial and regional growth. Investment can only be made in some departments and regions. Other sectors and regions use the "forward, backward, and lateral" effects of industry and the diffusion effect of regional growth poles to gradually develop, and the economic development will be faster than the adoption of a balanced development strategy. This slanted development strategy is conducive to the development of key departments and regions, and is also of great significance to the rapid improvement of regional comprehensive economic strength. With the development and practice of the theory of non-equilibrium development, scholars also proposed to avoid neglecting the coordinated development of industrial and regional problems due to the inclined development strategy, resulting in "industry dual structure" and "empty dual structure" , Bringing too many pillar industries, the great contrast between the city and the hinterland, and other issues. For the development of regional agriculture, the agricultural resources, market management, and comparative advantages faced by agricultural production in different regions vary greatly, and they need to be adapted to local conditions, time, and circumstances, and at the same time take balance.

(3) Resource regional factors

The above theories emphasize that in economic development, especially in regional agricultural economic development, the Bairan environment is one of the most important elements, which cannot be copied and moved. It is the so-called "Oranges in Huainan are oranges, and Oranges in Huaibei are products". Natural resources, human resources, and capital resources in different

regions differ greatly in terms of natural conditions, scarcity, distribution, and combination characteristics. They show the characteristics of coexistence of advantages and disadvantages, mutual understanding of advantages and disadvantages, and mutual requirements. Geographical indication agricultural products have the uniqueness of this natural environment. In addition to the advantages of long-term local production and production technology, natural factors and human factors, geographical indication agricultural products also have the advantage of regional monopoly of resource elements, which leads to the irreplaceability of geographical indication agricultural products, that is, other regions cannot Produce products with the same quality and characteristics. According to different factors of production and the principle of comparative interest, each region should give priority to the development of industries with resource advantages, abandon industries without advantages, and raise the level of agricultural specialization in the region. One of the essences of agricultural product geographical indications is to clarify the advantages of agricultural production resources in the marked areas and send signals to the agricultural production operators in the marked areas to attract operators capable of producing marked agricultural products to concentrate various production factors on the geographical indications. Industry to realize the industrial development of regionally superior agriculture.

(4) Choice of leading industries

Leading industries generally refer to specialized industries or industrial clusters that are in a dominant or dominant position at various stages of regional economic development. Such leading industries have the dual functions of participating in the interregional service division and driving the development of other industries in the region. There are usually the following selection criteria: First, the relative comparative advantage in the region, that is, the proportion of added value in the region, comparative labor productivity in the region, labor specialization rate, and comparative capital output rate in the region are high; Comparative advantage, that is, under the condition of the previous advantage, should have a certain degree of advantage outside the zone. Of course, this degree of advantage is relative to a certain range of areas, and it is by no means a particularly large or all area; the third is a greater degree of industrial relevance, that is, the coefficient of industrial influence calculated from the input-output table data. The industry induction coefficient is relatively large; the fourth is the higher potential market demand rate, that is, the industry ’s product demand elasticity coefficient, market share, and product net transfer capacity are relatively large or are increasing rapidly. The characteristics of its industry development are usually in line with the above-mentioned leading industry selection criteria, which can effectively drive the development of regional agricultural economy.

3. Experiment

3.1. Data Sources

Table 1. Output of major citrus producing areas in South China

Region	Particular Year					
	2013	2014	2015	2016	2017	2018
Guangdong Province	280.49	322.05	350.04	378.68	414.55	472.34
Guangxi Zhuang Autonomous Region	289.23	313.21	354.98	384.05	423.04	472.18
Fujian Province	266.83	272.3	300.41	303.41	323.47	346
Hunan Province	338.47	388.92	420.42	483.49	417.32	438.52
Yunnan Province	197.54	190.78	194.44	193.56	193.03	200.93
Jiangxi Province	299.37	268.6	356.71	336.46	407.24	382.46
Guizhou Province	126.33	139.02	153.33	171.52	193.19	207.24
Zhejiang Province	277.35	292.94	319.4	340.8	343.62	360.41

The analysis and research on the changes in the planting structure of citrus show that many factors will affect the selection of planting factors and regional coordinated development. Among them, the degree of influence of natural factors has gradually decreased with the upgrading of science and technology, while the importance of social and economic factors continues Enhanced. The yield of citrus is the most important one among many social factors. Through the search and analysis of the yield of citrus in various provinces and cities in southern China, as shown in Table 1, the annual yield of citrus from eight provinces, municipalities and autonomous regions from 2013 to 2018 was collected in six years. Combine with the analysis of location advantages to explore new driving forces for development and promote the overall development of the agricultural economy. The author also selects provinces and cities in southern China to conduct in-depth research and analyzes the current state of the coupling relationship at the planting structure level. Clarify the in-depth impact of the regional economic structure on the citrus planting structure, and explore the important influence of social factors. On the other hand, gain perceptual knowledge from departmental discussions or government reports, and make full use of statistical yearbook data, using relevant theories and empirical analysis to analyze the evolution of the coupling relationship at the county level and the coupling situation at the main point in time.

3.2. Experimental Method

This article mainly uses qualitative analysis, quantitative analysis, empirical analysis, SWOT analysis and other methods. Qualitative analysis is mainly through the analysis of southern citrus production and scientific and technological factors, summing up the factors that restrict the development of southern citrus industry, and drawing on advanced experience and methods at home and abroad, to come up with solutions to the development of southern citrus industry. According to China's citrus production and scientific and technological status, quantitative analysis methods are used to analyze the data to find out the problems in southern China's citrus production. Through comparative analysis of citrus production technologies in different regions at home and abroad, we can gain a deeper understanding of the disadvantages and deficiencies in the development of citrus industry in southern China. Finally, the SWOT analysis method is used to analyze the advantages, disadvantages, opportunities and challenges of the development of citrus industry in southern China.

3.3. Experimental Significance

The traditional planting industry development model is increasingly stretched under the prominent human-land conflicts and environmental dilemmas in China. It is imperative to develop a new agricultural management system and build a regional agricultural economy. With the development of the market economy, the production and operation of agricultural products must be industrialized and scaled in order to effectively transform the comparative advantage of resources into competitive advantage and economic advantage. The Eighteenth National Congress of the Communist Party of China proposed to "build a new agricultural management system that combines intensive, specialized, organized, and socialized." Therefore, how to adapt the unique advantages of green ecological resources to the development advantages of green rise and modern construction according to local conditions and promote the transformation and upgrading of traditional agriculture to modern agriculture is the direction and goal of the future development of fruit planting industry. Under the guidance and standardization of the new agricultural management system, the new regional agricultural economy can make full use of local agricultural resources through scientific methods of ecological engineering, biology and other disciplines, through resource conservation, waste recycling, and harmless production. Solve the problems of

environmental pollution, resource depletion, and ecological degradation caused by the "high input, high consumption, high emissions, and low utilization rate" of traditional agriculture. The development of a regional agricultural management system and the improvement of the agricultural circular economy will promote the development of the elements of the new agricultural management system and the local agricultural production link. Inner circulation. Break through the single-line flow of material in a single production process, achieve complementary resource advantages through seamless links in production links, use the power of science and technology to achieve the limitation of natural conditions, improve resource utilization efficiency, and help achieve the coordinated development of economic, social and environmental carrying capacity.

4. Discussion

4.1. Data Analysis

With the development of the citrus planting industry, the influence of citrus planting on the structural changes of the local agricultural industry is increasing. According to the planting area data of rice, vegetables, legumes, oil crops, watermelon and citrus from 2008 to 2018, the change trend graph is obtained. As shown in Figure 1, from 2008 to 2018, the rice planting area showed a trend of decreasing first and then increasing, from 22,300 mu in 2008 to 14,500 mu in 2016, and then to 20,200 mu in 2018; vegetable cultivation The area showed a trend of increasing first and then decreasing, from 0.22 million mu in 2008 to 0.65 million mu in 2012, and then down to 0.30 million mu in 2018; the planting area of beans dropped from 0.21 million mu in 2008 to 2018 0.06 million acres; the planting area of oil crops decreased from 0.13 million acres in 2008 to 0.008 million acres in 2018. The watermelon planting area first showed a substantial increase and then a downward trend, from 0.02 million acres in 2008 to 2015 0.25 million mu, and then fell to 0.05 million mu in 2018; the citrus planting area increased from 0.17 million mu in 2008 to 22,500 mu in 2018, an increase of 13.24 times. Among the six main crops, except for the citrus planting area, which has increased substantially, the rice planting area has remained unchanged, and the planting area ofthe other four types of crops has declined. The increased concentration of citrus yield area affected the planting structure of the entire region.

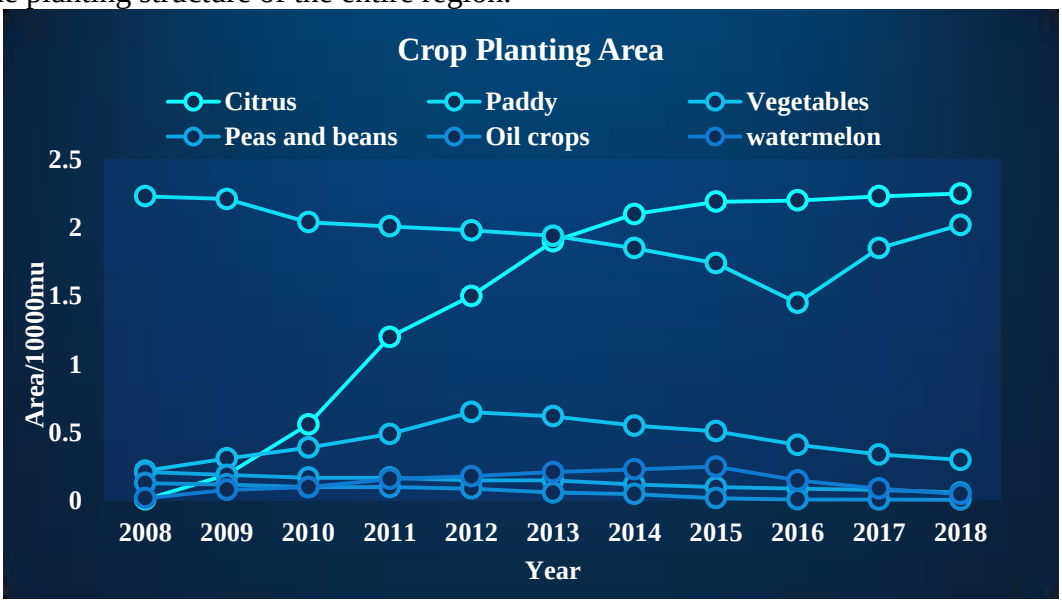

Figure 1. Planting area of citrus and crops

As shown in Figure 2, because the climate in southern China is suitable for citrus cultivation, coupled with the rapid development of the citrus industry in recent years, efforts have been made to introduce and promote new varieties. In recent years, the introduced citrus varieties are very diverse, mainly divided into wide-skinned citrus, accounting for 50%, mainly seedless citrus, tribute citrus, mashui citrus, spring sweet citrus, Kansai mandarin orange, red meat Tangerines, Maogu oranges, He oranges, red meat navel oranges, Amakusa oranges, Qingjian oranges and other oranges, especially early-ripening Wenzhou oranges, etc., with oranges accounting for 25% and grapefruit 21%. Some of these introduced varieties have been widely promoted. In recent years, Maogu and Mulcote have developed rapidly. Some of the introduced varieties are still in the experimental demonstration stage and have not yet been widely promoted, such as red meat navel orange and Wakan. The proportion of gold knots is very small, only 3%. In addition to these varieties, there are other varieties that only account for the total output of citrus in the region.

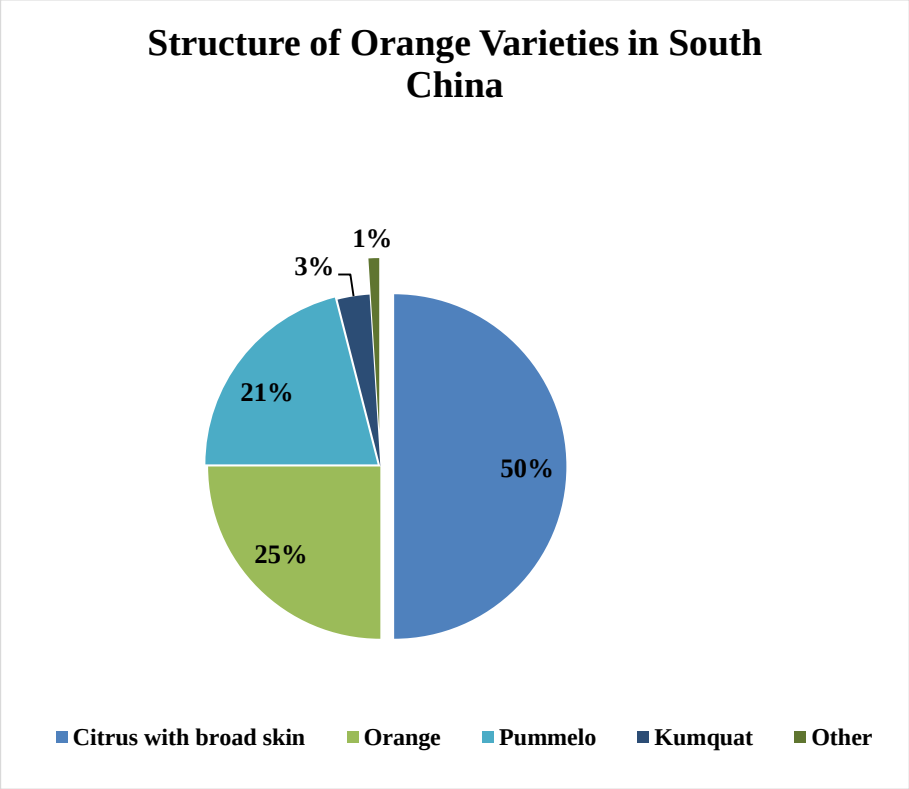

Figure2. Structure map of tangerine varieties in South China

As can be seen from Figure 3, citrus production still occupies an important part of fruit production. With the further development of the citrus industry, the proportion of citrus production in fruit production in South China has increased year by year. Has increased by 13%. The output of citrus in 2018 increased by 13.76 million tons from 2012, from 26.45 million tons in 2012 to 40.21 million tons in 2018. Among the many fruit productions, it is still relatively large. The overall fruit output increased from 214.01 million tons in 2012 to 271.59 million tons in 2018. In 2018, it accounted for 14.8% of the total fruit production. It illustrates the importance of citrus in southern China, and embodies the important outstanding contribution to the agricultural economy in this area. In order to make better use of intensive advantages, adjust the planting structure, and better integrate the economies of scale of the regional economy.

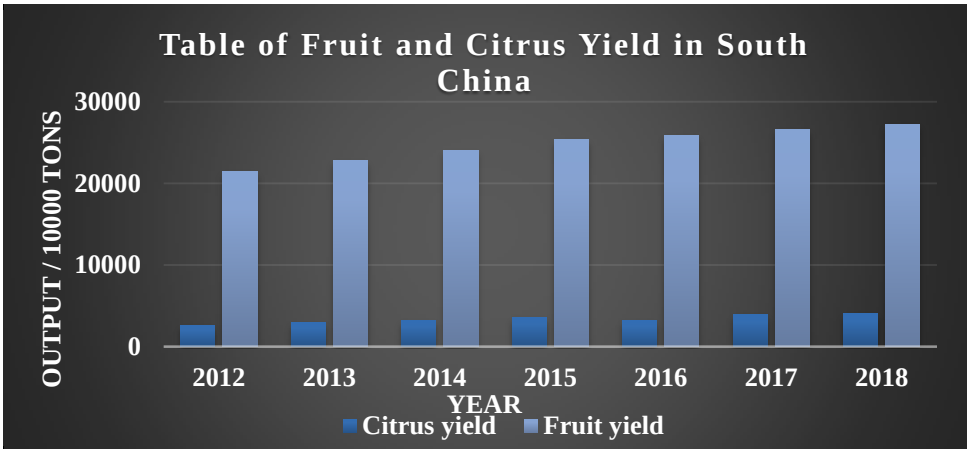

Figure 3. Table of fruit and citrus production in South China

From the average value of comprehensive evaluation indicators of regional economic development in Figure 4, the economic development level of the eastern region is far ahead, and there is a trend of continuous growth. During the study period, the average economic development levels of the eastern, central, western, and northeastern regions were 0.469, 0.231, 0.166, and 0.229 respectively. The economic development rate of the eastern region was twice that of other regions. In addition, the regional economic development curves of the east, middle, west and the whole country have maintained the same changes. South China has used the regional economy to grow steadily for more than a decade. From 0.48 in 2002 to 0.56 in 2012, it has maintained the full development of the regional economy for ten consecutive years. Although it fell back in 2017, it is still far higher than other regions. Therefore, integrate the advantages of agricultural resources, adjust natural and social factors, give full play to the location advantages of southern China, and ensure adequate financial support. The financial capacity of the central and western regions of China is not sufficient to allow the government to provide technological innovations, which limits the speed and degree of technological progress in these regions, and scientific and technological finance has failed to effectively promote its regional economic development.

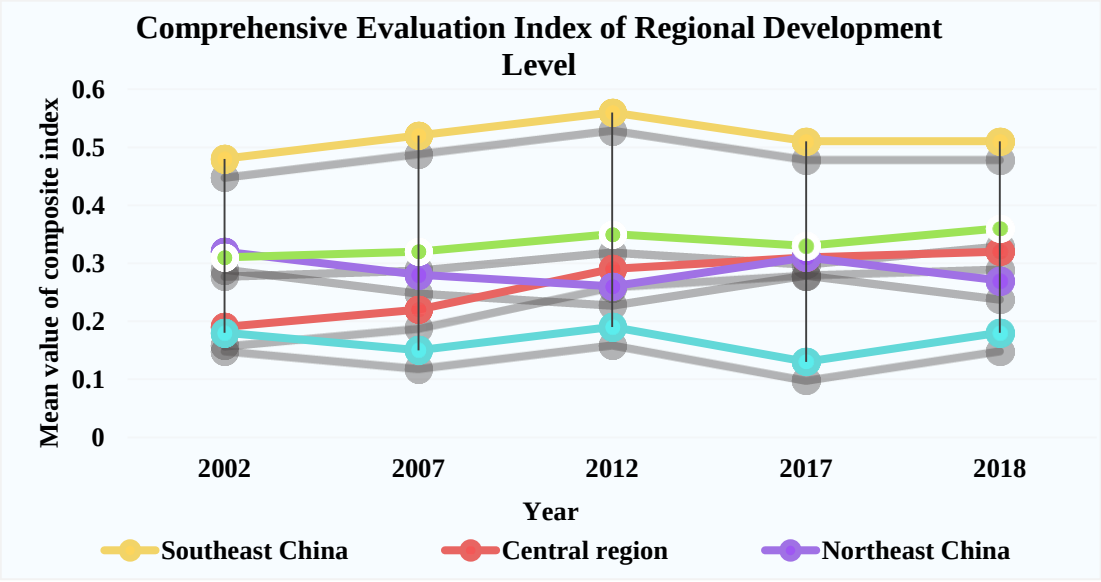

Figure 4. Time series changes of comprehensive evaluation indicators of regional economic development level

4.2. Concentrated Countermeasures

In recent years, the main citrus producing areas in China, especially the agricultural, scientific and technological departments at all levels in southern China, and colleges and universities have paid close attention to the sustainable development level of the citrus industry and analyzed the impact of changes in planting structure on the characteristics of the regional economy. The agricultural industry as a basic component of the economic system, the changes in agriculture will have a significant impact on the related industries in the economic system, and the changes in the correlation of the components of the system will drive the changes of all industries in the system. Make corresponding changes.

According to the data analysis results, the social environment, agricultural resources, and regional industrial conditions indirectly affect system output through the coupling state. In this process, social environment, agricultural resources and industrial conditions are the main body of system coupling, but because the improvement of ecological environment does not play a fundamental or supporting role in system coupling, the coupling relationship between agricultural resources and industrial conditions Not tight, and the system has not yet achieved a good coupling, that is, industrial development has not been established on the basis of environmental improvement and the increase of agricultural resources, which has an adverse effect on the realization of the benign coupling of the system and the further improvement of regional economic benefits. In addition, the difference in location has led to the difference in the structure of the coupling chain network of the commercial ecological agricultural system. The economic development status of different provinces and cities is different. The impact of external information and policies on the system has gradually weakened. The intensity of resource development has changed from strong to weak. It gradually improved. In the future industrial development, we must increase efforts to achieve high yield, high quality and high efficiency of citrus, do a good job in the introduction and promotion of new varieties, new technologies and technological innovation, technical training, etc., so that the level of citrus production technology continues to improve greatly in Guangxi Improvement. In addition, it has made great achievements in many aspects such as introducing and breeding new citrus varieties and vigorously innovating citrus cultivation techniques. At the same time, increase technical guidance and training for farmers, and promote the development of Guangxi's citrus industry in many ways, farmers' citrus cultivation technology has greatly improved.

The development of the regional agricultural economy is to achieve a balanced development of the agricultural economic system and the agricultural ecosystem. It cannot restrict industrial development on the grounds of ecological reconstruction, affecting the increase of farmers' income and the improvement of regional economic benefits. On the basis of ecological restoration, we should make full use of existing resources and develop different types of commercial ecological agriculture. When the ecosystem enters a relatively stable stage, it will effectively develop and utilize forest and grass resources, develop related industries such as forestry and fruit planting, animal husbandry, etc., and make commercial ecological agriculture large-scale and industrialized. Therefore, improving farmers' cultural and scientific and technological qualities and enhancing labor skills are becoming more and more important in the construction of commercial ecological agriculture. Strengthening rural education is conducive to solving the problems of agriculture, rural areas and farmers. It can promote the transfer of surplus rural labor and promote the process of regional industrialization and urbanization. Through the establishment of popular science service stations, rural adult education, and practical technical training, it can improve farmers 'scientific and cultural qualities, enhance farmers' scientific and technological production capacity, enhance farmers 'science popularization strength, and increase agricultural production and farmers' income.

In addition, strengthening rural infrastructure construction, strengthening quality education and ecological environmental protection propaganda will help to promote the coordinated development of the ecological environment and the social economy, and promote the benign coupling of the commercial ecological agricultural system.

5. Conclusion

Citrus is an important tropical and subtropical evergreen fruit tree in the world, loved by people all over the world. The growing length of citrus is concentrated at 20 degrees north and south latitudes. At present, the world's citrus planting area is relatively extensive, almost all countries and regions are rich in citrus. With the continuous innovation of science and technology, the output of citrus has increased year by year, showing a steadily increasing trend. As an important part of the development of the fruit industry, the citrus industry has become more and more important in the development of the fruit industry.

By analyzing the effectiveness of regional agricultural economic construction, system evolution characteristics and coupling factors, exploring the evolutionary laws of system coupling driving force and coupling situation can not only improve the research system of regional agriculture and system coupling relationship, but also return farmland to forest. The further implementation and management of the grass project will provide a scientific basis for the rational and effective use of agricultural resources, the coordination of industry and resource relations, and the establishment of a benign coupling mechanism between the agricultural economic system and the agricultural regional system.

Due to the differences in natural conditions, resource conditions, industrial layout, external information, and policies that affect the system in different locations, the system coupling situation and the coupling network structure are quite different. Therefore, we should combine the location characteristics and ecological reconstruction requirements, follow the laws of the market economy, adjust the industrial layout according to local conditions, give play to the regional advantages, reflect the regional characteristics, and develop high-efficiency facilities agriculture, high-quality forestry and fruit industry, grass and animal husbandry industry, and related business and other side industries To promote the efficient development of regional agriculture.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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