

Comparative Advantage Analysis of Jasmine Tea Production in China

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Abstract: Based on the analysis of the evolution of the production layout of jasmine tea since the founding of new China, this paper explores the heterogeneity of the comparative advantage in the main producing areas of jasmine tea from four aspects: comparative advantage index of efficiency, comparative advantage index of scale, comprehensive comparative advantage index and comparative advantage index of development. The research shows that except Fujian, the traditional producing areas of jasmine tea have lost their comparative advantages, for example, Zhejiang and Guangdong. Although the emerging producing areas, led by Guangxi, have absolute comprehensive comparative advantages, they do not have advantages in terms of the development advantage index. Therefore, it is necessary for all parties to focus on the key technical issues in order to achieve the sustainable and healthy development of the jasmine tea industry. Based on the above research results, it is proposed that under the background of "One Belt and One Road" initiative and economic new normal, opportunities should be seized to improve the international competitiveness and influence of China's jasmine tea industry, improve effective supply and promote tea consumption to promote economic growth.

1. Introduction

China produces the most jasmines in the world, accounting for more than 60 percent of the world's total annual output. Special tea, jasmine tea is China's traditional export perennial exported to Japan, Morocco, the United States, Russia, Hong Kong, Germany, Malaysia, Singapore, more than 20 countries and regions such as Senegal, Sri Lanka, jasmine tea health care function is outstanding, unique flavor by overseas customers, is the highest average price of all the export of tea in the tea. By the end of 2017, China had exported 6,165 tons of scented tea, up 6.1 percent, and exported 50.93 million us dollars, up 6.5 percent. Among them, the export amount of jasmine tea has increased by 48% over 2008, and the unit price of jasmine tea has increased by 61%.

With the popularity of domestic mass tea, the domestic market of jasmine tea is also increasing year by year, and has a group of loyal customer base in the north and southwest of China. In 2018, China's domestic tea sales reached 1.91 million tons, an increase of 5.1%. Domestic sales reached 266.1 billion Yuan; The average sales price was 139.3 yuan/kg, up 5.2% year on year. He agricultural output value of jasmine tea in China is 10.91 billion yuan, accounting for 5.1% of the total output value of tea, and its output value is increasing year by year. It can be seen that the domestic market of jasmine tea has started to grow. Although the total market share is small, it has great potential.

Therefore, under the background of "One Belt And One Road" initiative and economic new normal, how to seize the opportunity to improve the international competitiveness and influence of China's jasmine tea industry; To improve the effective supply and promote tea consumption to drive economic growth is the important background of this paper.

According to statistics, China tea circulation association from 1949-2017, jasmine acreage and jasmine tea output volatility rising trend overall, jasmine flower planting area increased from 143.87 hectares in 1949 to 12333.33 in 2017 hectares, the output of jasmine tea from 1949 221 tonnes to 2017 tonnes in 63975, and the focus of jasmine tea production has moved from the southeast to the southwest. It can be said that since the founding of new China, China's jasmine tea

production space layout has undergone profound changes.

In recent years, many scholars in China have studied the evolution of spatial distribution of crop production, but most of them focus on cash crops such as grain crops and cotton. The research on the distribution of tea production started late and mostly focused on descriptive analysis. And there is no systematic analysis of single tea production layout. Yong Li (2010) located the national status of tea in each province through the scale, efficiency and development comparative advantage index. The results show that the tea production in China has a comparative advantage, and the tea area north of the Yangtze River has developed rapidly, showing a significant shift from east to west. Haifeng Xiao, Yanxiu Yu (2018) further studied the comparative advantage of China's cotton production layout from three aspects: resource endowment index, production cost first-order probability advantage and comprehensive comparative advantage index, based on the analysis of the changes of China's cotton production layout since 2000. Reference of previous research methods, the use of resources endowment index, the development of comparative advantage index and comprehensive comparative advantage index, analysis our country jasmine tea production of comparative advantage, in order to optimize the space layout and adjustment of jasmine tea industry planning, to establish a new production area is relatively concentrated and stable space structure, jasmine tea production to maintain the equilibrium of supply and demand of jasmine tea, jasmine tea producers' interests, the protection and inheritance jasmine tea culture and promoting the sustainable development of jasmine tea industry in one thousand were has important practical significance, with such research also expanded the perspective and thinking of tea production layout research.

2. Data Sources and Research Methods

2.1 Concept Definition and Data Source

Jasmine tea is a reprocessed tea made from green tea blanks and jasmine flower scenting. The planting area of jasmine directly determines the production and supply scale of jasmine tea. Therefore, the output of jasmine tea can be equal to the area of jasmine tea planting and the yield of jasmine tea per unit area.

From 1949 to 1984, the total area of the five provinces of Fujian, Zhejiang, Hunan, Guangzhou and Sichuan accounted for more than 95% of the total area of jasmine tea cultivation in China. From 1985 to 2017, the total area of the four provinces of Fujian, Guangxi, Sichuan and Yunnan accounted for more than 95% of the total planting area of jasmine tea in China.

This study mainly used data from two levels of China and major producing areas from 1949 to 2017, including jasmine planting area and jasmine tea yield. The data of "jasmine planting area" and "jasmine tea yield" in 2007-2017 came from the analysis report on the production and marketing situation of jasmine tea in China released by China tea circulation association (2008-2018), and the data before 2008 came from literature of CNKI, tea annals of Fuzhou, jasmine tea of Fujian and other materials. Data on the sown area of crops in the whole country and the sown area of crops in this region are supplemented by data from the China rural statistical yearbook, China statistical yearbook and the agricultural statistical yearbook of each province. Historically, data of Jiangsu province and Taiwan province are missing, which are ignored here. The area and yield units are all in accordance with the Chinese national standard. The area is in ha, the yield is in ton, and the data are kept to two decimal places.

2.2 Research Technique

2.2.1 Comprehensive Comparative Advantage Index

According to the theory of regional comparison, the comparative advantage of regional crops is determined by the endowment of agricultural natural resources, socio-economic conditions and location, technological progress, planting system and market demand. The comprehensive comparative advantage index (AAI) is composed of efficiency comparative advantage and scale comparative advantage, which can comprehensively and systematically reflect the advantage degree

of a certain crop production in this region. Comparative efficiency advantage (EAI) reflects the land yield rate of a certain crop production in a certain region in a certain period compared with the national level in the same period. Scale comparative advantage (SAI) refers to the proportion of the sown area of a certain crop in a certain region in a certain period of time to all the crops in the region and the proportion of the sown area of the whole country in the same period. This paper USES this index to analyze the comparative advantages of jasmine tea production in different provinces and regions compared with the national average level. The calculation formula is as follows:

$$EAI = \frac{AP_i}{AP}, SAI = \frac{GS_i/TS_i}{GS/TS}, AAI_i = \sqrt{EAI_i \times SAI_i}$$

Among them, AAI_i is the comprehensive comparative advantage index of jasmine tea in region I; EAI_i is the comparative advantage index of jasmine tea efficiency in region I; SAI_i is the comparative advantage index of jasmine tea scale in region I; AP_i is the yield per unit area of jasmine tea in zone I; AP is the average yield per unit area of jasmine tea in China during the same period. GS_i is the planting area of jasmine tea in zone I; TS_i is the sum of the sown area of all crops in zone I; GS is the planting area of jasmine tea in China; TS is the sum of the sown area of all crops in the country, AAI_i<1, indicating that jasmine tea in region I is at a disadvantage compared with the national average level and does not have a comprehensive comparative advantage. AAI_i>1 indicates that jasmine tea in region I is in an advantage compared with the national average. The higher the AAI_i value is, the stronger the comprehensive comparative advantage of jasmine tea in region I is.

2.2.2 Develop the Comparative Advantage Index

Different from the comprehensive comparative advantage index, the development comparative advantage index can reflect the development potential and prospect of specific crops in this region. Therefore, based on the research method of Yong Li (2010), the author introduces the index of comparative advantage to measure the development speed of jasmine tea in a certain region. The calculation method is as follows:

$$DAI_{ij} = (D_{ij}/D_{ij}) \div (D_{in}/D_{in})$$

Where, DAI_{ij} represents the development comparative advantage index of agricultural product I in region j, D_{ij} represents the sequential development rate of agricultural product I in region j, and D_{tj} represents the sequential development rate of all crops in region j. D_{in} refers to the growth rate of the planting area of agricultural products I in China, while D_{tn} refers to the growth rate of the planting area of all crops in China. If DAI_{ij}>1, it means that regional j has a comparative advantage in the development speed of agricultural products I in this period. On the contrary, it has no development advantage. The smaller DAI value is, the more obvious the development disadvantage is.

3. Heterogeneity Analysis of Comparative Advantage in Main Producing Areas of Jasmine Tea

3.1 Comprehensive Comparative Advantage Index Analysis

The comprehensive comparative advantage index of China's jasmine tea production from 1978 to 2019 was calculated based on the relevant data of China statistical yearbook from 1978 to 2019. It can be seen from table 1 that the regions with comprehensive comparative advantages in the production of jasmine tea in China from 1978 to 1990 were mainly concentrated in Fujian, Zhejiang, Guangxi and Guangdong, which were 3.63, 2.76, 1.94 and 1.17, respectively. Specifically, 1978 ~ 1990, Fujian and Zhejiang province 2 jasmine tea production comprehensive comparative advantage index average greater than 2, the jasmine tea production has obvious comprehensive comparative advantage, Guangxi and Guangdong province 2 comprehensive comparative advantage index values of jasmine tea production is greater than 1 and less than 2, the jasmine tea production

has a certain comprehensive comparative advantage.

Table 1 Comprehensive comparative advantage index of jasmine tea in major producing areas from 1978 to 1990

Year	Guangxi	Sichuan	Fujian	Yunnan	Zhejiang	Hunan	Guangdong
1978	0.72	0.00	3.92	0.00	4.08	0.00	1.86
1980	2.24	0.00	2.86	0.00	3.48	0.00	1.48
1985	0.00	0.00	3.83	0.00	3.50	0.56	1.34
1990	4.80	0.00	3.92	0.00	0.00	0.00	0.00
AVG	1.94	0	3.63	0	2.76	0.14	1.17

It can be seen from figure 1 that from 1993 to 2019, the comprehensive comparative advantage areas of jasmine tea production in China shifted. The traditional jasmine tea producing areas in Zhejiang, Hunan and Guangdong have lost their advantages and retired from the stage of history. As the main producing area of newly emerging jasmine tea, Guangxi has absolute comprehensive comparative advantage, with the index of comprehensive comparative advantage as high as 4.20. The comprehensive comparative advantage index of Fujian shows a downward trend, but it still has a relatively stable comprehensive comparative advantage. The comprehensive comparative advantage indexes of the two newly developed provinces of Sichuan and Yunnan are all less than 1, indicating that they are at a disadvantage compared with the national average level of jasmine tea production and have no comprehensive comparative advantage.

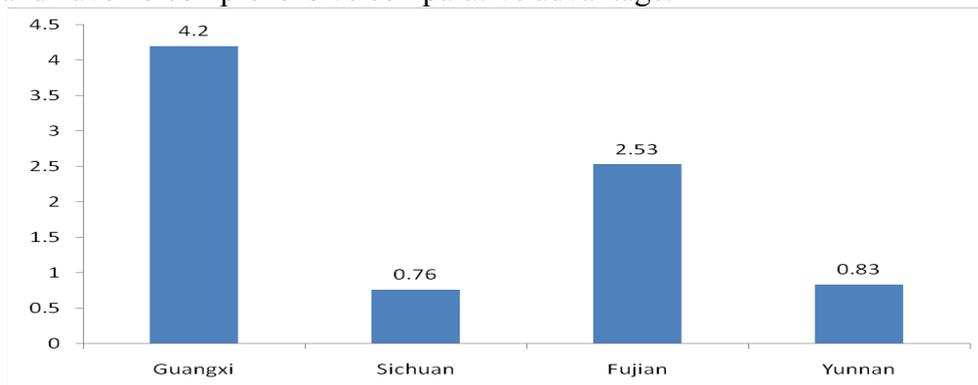


Figure 1 Comprehensive comparative advantage index of jasmine tea in major producing areas from 1993 to 2018

3.2 Development Comparative Advantage Index Analysis

As can be seen from table 2, Sichuan province of China has a strong comparative advantage in development, with a comparative advantage index of 1.42, which is related to Sichuan's strong support for the development of jasmine tea industry and increased agricultural investment in recent years. Guangxi, Fujian and Yunnan all have a negative development comparative advantage index and are at a comparative disadvantage in the production of jasmine tea.

The development of urbanization in Fuzhou has forced the jasmine tea enterprises in Fuzhou to relocate, resulting in decoupling of the production, processing and sales links. At the same time, with the continuous increase of labor cost, jasmine flowers in Fuzhou are also decreasing in production, which cannot meet the production needs of jasmine tea of tea enterprises in Fuzhou. Therefore, in the long run, the development of jasmine tea in Fujian is at a disadvantage. However, the transformation of aging low-yielding gardens is an urgent problem to be solved in Guangxi, which severely restricts the output efficiency of jasmine tea and leads to the disadvantage of jasmine tea development. However, although Yunnan is endowed with advantaged natural conditions and geographical advantages, jasmine flowers have a long flowering period and superior quality, but it lacks a large jasmine planting base, so the development is extremely slow.

Table 2 Comparative advantage index for the development of jasmine tea in major producing areas from 2012 to 2018

Year	Guangxi	Sichuan	Fujian	Yunnan
2012	0.0000	1.3164	-2.2289	0.3196
2013	0.0000	6.6202	-2.8409	-1.0037
2014	0.0000	-14.5689	-0.4175	4.6546
2015	0.1715	15.3620	0.5905	-20.7506
2016	0.0544	0.5538	0.0000	-1.0307
2017	0.0000	0.9276	0.0000	-0.2695
2018	-5.9801	-0.2357	-0.4669	0.0762
AVG	-0.8220	1.4251	-0.7662	-2.5720

4. Conclusion and Discussion

Based on the evolution of the production layout of jasmine tea in China since the founding of new China, this paper explores the heterogeneity of comparative advantage in the main producing areas of jasmine tea in China by using comparative advantage index of efficiency, comparative advantage index of scale, comprehensive comparative advantage index and comparative advantage index of development.

The research shows that the changes in the production layout of jasmine tea affect the continuous transformation of the advantages of the main producing areas. The main producing areas of traditional jasmine tea in China are shrinking or even disappearing, which is related to the local economic development. Therefore, after the reform and opening up, because of the rich resources, low labor costs of field and non-public industry development lagging change in southwest, thus Guangxi, Sichuan and Yunnan have become jasmine tea production areas, and Fujian province is the only preserved tradition of jasmine tea production areas and its history, humanity should be important driving factor. However, the development advantage index of emerging producing areas represented by Guangxi is not optimistic, so relevant departments need to focus on overcoming the bottleneck of industrial development.

The new era is the era of people's pursuit of green health, but also the era of people's happiness. In the new era environment, jasmine tea, which integrates natural and fashion elements, has ushered in a new opportunity for development. Jasmine tea has very good characteristics and advantages and is the combination of Chinese and western, the combination of tradition and fashion, the combination of flower and tea, "three in one" products. Therefore, the jasmine tea industry should make concerted efforts to seize the opportunity, give play to its characteristics, and make concerted efforts to turn the jasmine tea industry into a sunshine industry from the following five aspects: strengthening the market, inheriting and innovating, expanding exports, producing in large volume and converging forces.

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