

Study on the industrial structure optimization of high quality cocoon silk in ChinaXuejie CHEN¹, *Gang FANG²¹Business school , Beijing Institute of Fashion Technology, China

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Abstract:China is the world's largest producer of sericulture, silk products renowned at home and abroad, but in recent years, with the westward migration of cocoon silk in China, the scale of production of high-quality cocoon silk in the east and other reasons, the market quality cocoon silk in short supply of the structural problems are becoming more serious. This paper first analyzes the current situation of the development of high-quality cocoon silk industry, and then analyzes the advantages of high quality cocoon silk from two aspects of quality and price, in order to show that expanding the scale of high quality cocoon silk production is in line with the current consumer demand and the future development direction of sericulture industry. Finally, the paper mainly analyzes the reasons for the shortage of high quality cocoon silk supply from the supply point of view, and puts forward some suggestions for the reasons mentioned in this paper.

1.Introduction

Silk industry has long been China's traditional industry and dominant industry. In recent years, with the upgrading of China's economic level, silk products by virtue of its "light luxury" formation has attracted more consumers, but with people began to pursue quality of life, correspondingly, consumers on silk products also have higher requirements. And from the international point of view, with the change of international silk production, trade and consumption pattern, the World Silk Production Center is gradually shifting to China, the world's love for Chinese silk fabrics and demand is also rising. Domestic and foreign demand for silk products and quality requirements of the promotion, China's silk industry put forward higher requirements, on the one hand, we should not only ensure the production of silk products to meet market demand, on the other hand, we must ensure the quality of silk products to build Chinese silk brand, to meet the quality needs of the market.

And meet these two requirements need us to better quality cocoon silk raw materials as a support, only with sufficient high-quality raw materials, we can fully produce better products. Finally, after analyzing the reasons of the shortage of high quality cocoon silk supply, this paper puts forward some suggestions to solve the solution.

2.The current situation of high quality cocoon silk industry at home and abroad

Definition of quality cocoon silk. Cocoon silk production in a broad sense should include cocoon production and raw silk production two parts, Silkworm cocoon quality can be used to use cocoon rate, cocoon layer rate, silk rate reconciliation Shushichang, relieving rate and other indicators evaluation, raw silk quality can be used to uniform two degrees change, fiber deviation, fiber maximum spread, cleaning and cleanliness and other indicators to evaluate. It is generally believed that the main difference between ordinary cocoon and high-quality cocoon is whether the reeling can be made of 5 A, 6 a class and 6 A grade or above raw silk, that is, under the current technology can be reeling to produce 5 a class and 5 a grade or more of raw silk cocoon, can be called high-quality cocoon, only can be reeling into 4 a Because there is no accurate definition of high quality cocoon silk, this paper directly defines the high quality cocoon silk as 5 A grade and above raw silk according to the broad range of cocoon silk production.

Current state of international development. From the international market point of view, the demand for high quality cocoon silk increased. In recent years, the total export of silk products in China is increasing, the total number of silk products exported to Nigeria, Saudi Arabia and other countries has even seen a huge increase of more than 100% (see table 1), which is actually a transfer of the "silk market", the heat of silk products will gradually go over to more new economic power countries, Create a new silk rush. The demand for silk products in the international market increases, coupled with the awareness of the quality of foreign consumer groups, the international market demand for high-quality silk weaving will be further improved.

Table 1. export of Chinese silk merchandise main marketing market in 2017

Ranking	Countries and regions	Amount (\$10,000)	(US Year on year (%))
1	America	39665.82	-6.35
2	India	31042.19	5.41
3	Nigeria	26425.52	135.64
4	Saudi Arabia,	25327.18	198.40
5	Italy	21460.20	1.03
6	Ethiopia	20929.08	256.50
7	Hong Kong	17184.77	-13.48
8	Japan	16857.85	5.70
9	Britain	16426.84	30.93
10	Pakistan	13914.55	-19.97

Source: world Silk Network

Current state of domestic development. From the domestic market point of view, on the one hand, industrial transformation and upgrading and consumer demand upgrading are the demand for high-quality cocoon silk, to improve the added value of Chinese silk products and the creation of China's world-class silk brand, China from intermediate exporters to the exporter of silk end products, it is necessary to have high-quality cocoons and high-quality silk as support Especially in recent years, the national "Belt and Road" strategy, cultural heritage and the international main silk products led by the creation and promotion of silk brand, the demand for high-quality cocoon silk more urgent. On the other hand, the essence of silk has been a kind of "luxury" since ancient times, with the improvement of national income level and the upgrading of consumption consciousness and consumption structure, a large number of potential silk consumers have been transformed into actual consumers, and the demand and quality requirements for silk have been increasing, which has led to the continuous increase in the demand for high quality cocoon silk raw.

Key advantages of high quality cocoon silk. First of all, high quality cocoon silk has a price advantage. Because of the difference of technology and facility input, the degree of marketization and organization, especially the failure of high quality and excellent price mechanism, it is difficult to reveal the difference between high quality cocoon and ordinary cocoon by signal, but the price of high grade raw silk is obviously higher than that of low grade raw silk, and the price fluctuation is small, the higher the grade, Price stability can not only reduce the risk of Mulberry silkworm breeding and the instability of silkworm production, which can also affect the relative stability of the export price of silk products, so that small and medium-sized enterprises to maintain a more stable profit.

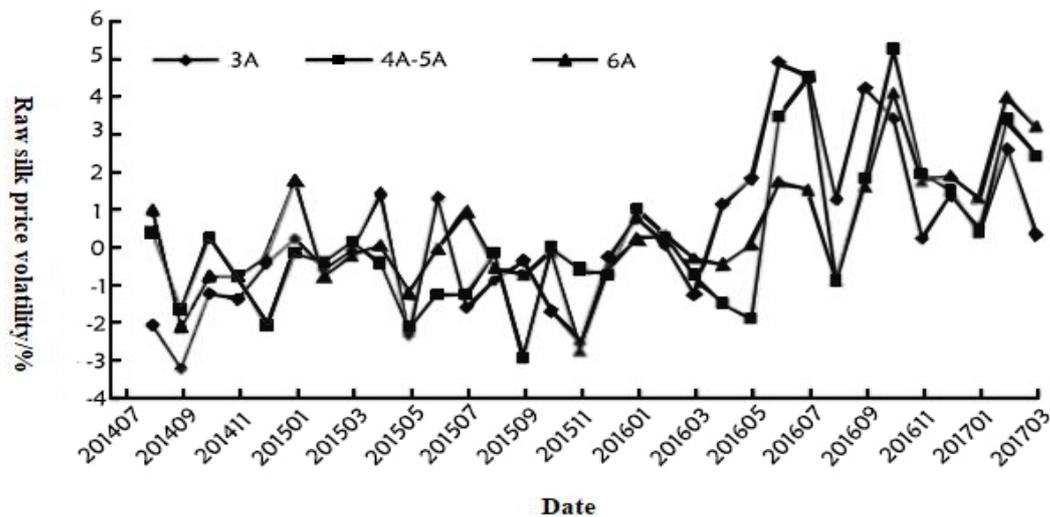


Fig 1. Comparison of price fluctuation rates of raw silk at different levels

Source: Author from the data collation according to the relevant papers

Second, high-quality cocoon silk has quality advantages, quality cocoon silk quality so that its finished products generally have "luxury" nature, with high added value, the customer group is also the economic strength is more stable and high income groups, customer loyalty is high, so can avoid vicious price competition, avoid the risk of price fluctuations. and cocoon silk different quality differences is equivalent to product differentiation, product differentiation can not only effectively avoid the same quality products see fierce price competition, and once the formation of a higher customer loyalty, then it is possible to form a certain reputation, and thus develop into a brand. Then enterprises can rely on the brand effect to set high prices, access to higher and stable profits, high-quality cocoon silk has such advantages and development trends.

Reasons for insufficient supply of high quality cocoon silk The main reason of the shortage of high quality cocoon silk in our country is that the demand is increasing, but the supply is seriously inadequate. With the "East sang West Shift", China has gradually formed the eastern and western two major cocoon silk production areas, the two major production areas in the development of the problems together led to the current stage of high-quality cocoon silk supply shortage.

Eastern production areas.First, the production scale of the traditional high quality cocoon silk production area in the east is decreasing. The Eastern traditional production area is the main origin of China's high-quality cocoon silk, especially in Zhejiang, Jiangsu, Shandong as the representative. In recent years, the eastern region's rapid economic development, industrial transformation led to a decline in the proportion of agriculture, labor and land and other factor costs continue to rise, the benefits of Mulberry silkworm farming, in Zhejiang, Jiangsu, Shandong as the representative of the eastern traditional high-quality cocoon silk production area production area is decreasing (see table 2), In 2017, the total area of Mulberry Garden in eastern production area decreased by nearly 40,000 acres, and the yield of Mulberry Cocoon fell seriously, resulting in a serious shortage of high quality cocoon cocoon silk. Policy reduction and technical support is not in place, by the impact of new industries, the eastern region of the quality of cocoon silk supply scale will be further reduced.

Table 2. Schedule of changes of Mulberry garden area and cocoon yield in the main production areas in eastern China in recent years

Eastern main production area	Mulberry Garden area (10,000 mu)						Cocoon yield (ton)	
	A.D. 2015	Speed increase (%)	A.D. 2016	Speed increase (%)	A.D. 2017	Speed increase (%)	A.D. 2017	Speed increase (%)
Zhejiang (Province)	80	-5.8	70	-12.5	60	-14.3	20470	-10.5
Jiangsu (Province)	56.37	-6.7	52.5	-6.9	48.7	-7.3	38295	-1.5
Shandong (Province)	42.0	-1.6	40.0	-4.8	40.0	0.0	17750	-1.4

Source: The author draws its own data according to the 2017 China Cocoon Silk Development Report

Secondly, the traditional high-quality cocoon area in the east does not produce high quality cocoons. The region's Silkworm cocoon income is no longer the main source of household income, so do not attach importance to technological innovation, the original production technology and methods seriously restrict the production of high-quality cocoon silk. Coupled with the failure of high quality and excellent price mechanism not only led to the confusion of the cocoon market, but also led to the sericulture to take the premature picking and sale of fur cocoon behavior, artificially reduced the quality of Silkworm cocoon, so that the original production of high-quality cocoons in the region can not produce high-quality cocoons. Zhejiang and Jiangsu are the main producing areas of high quality cocoons in China, but the comprehensive quality of silkworm dried cocoons in Zhejiang Province in 2015-2016 is lower than the national comprehensive level (see Figure 2).

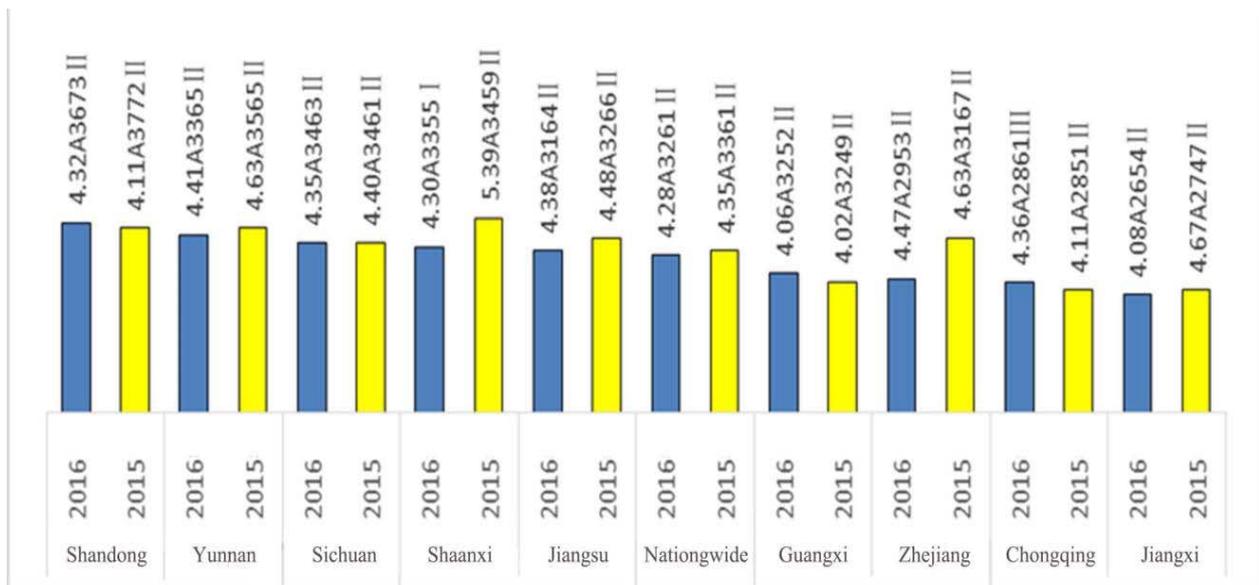


Fig. 2. Comprehensive quality diagram of dry cocoon in main provinces in 2016 and 2015

Source: China Fiber Inspection Bureau. 2016 RAW silk product quality Analysis report

Western production area. First of all, the geographical location and climate of the western region do not meet the conditions of high quality cocoon silk production. Western Region production area is large, 2017 Mulberry garden area of 8.3478 million acres, but the quality of cocoon silk supply nationwide accounted for less than 20%. For example, in 2017, Guangxi province, a year of Mulberry cocoon production accounted for nearly 50% of the country, but from 2016 Silkworm Cocoon Quality Analysis report, the National Silkworm Cocoon Quality of 4.28A, and Guangxi is about 4.1, lower than the national average (see Figure 3).

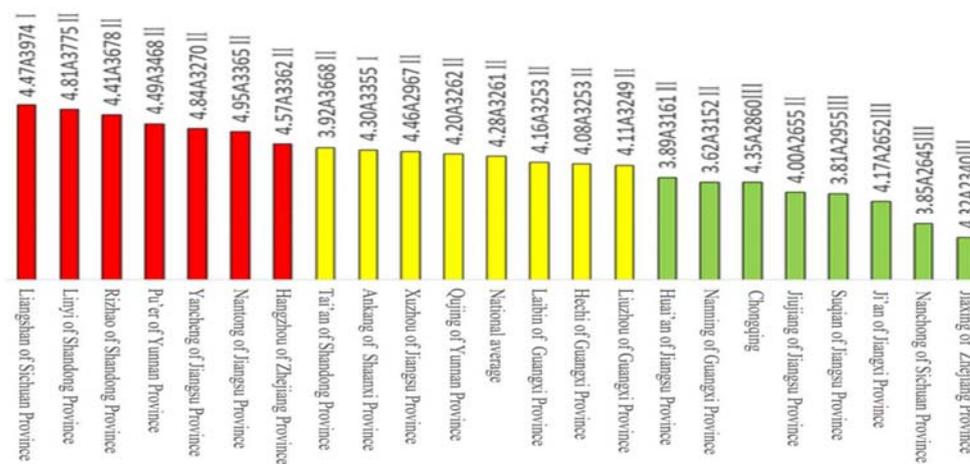


Fig. 3 Comprehensive quality diagram of main production area in 2016

Source: China Fiber Inspection Bureau. 2016 RAW silk product quality Analysis report

Secondly, sericulture experience is lacking, sericulture facilities and technical level backward, not up to the production of high-quality cocoon silk conditions. The Western production area is now in the primary development stage of silkworm industry, the specialization and technical level of sericulture, the poor variety of Mulberry and silkworm, the poor condition of drying cocoon and silk reeling facilities, etc. [2], these factors severely limit the production of high quality cocoons in the western region, And by the current technical and cost requirements of the restrictions can not be achieved with ordinary cocoon mass production of high-grade raw silk.

3.Suggestions for increasing the supply of high quality cocoon silk

To change the current situation of high quality cocoon silk supply, give full play to the advantages of high quality cocoon silk, we need to establish high-quality cocoon silk production base construction in the east and west, optimize the industrial management mode, and then through the technological innovation, high-quality excellent price, geographical constituency and other specific methods to the east and West production area construction, has solved the problem of insufficient supply.

Construction and optimization of high quality cocoon Silk Eastern production Base.First of all, we should further optimize the layout of China's high-quality cocoon silk production base, the base of appropriate extension to the east. China has in Shandong Rizhao, Guangxi Yizhou, Sichuan Ningnan and other 13 regions to establish a high-quality cocoon silk production base, but mostly located in the west, in the eastern region is still China's main high-quality cocoon silk production area, technology can not achieve low-cost high-volume use of ordinary cocoon production of high-quality raw silk, we should extend the base to the east, To ensure the supply of high quality cocoons in the eastern region.

Secondly, the Government should make great funds and technical support, on the one hand, increase subsidies for mulberry garden planting and silkworm farming and infrastructure investment, and introduce a number of preferential policies, such as large mulberry garden transfer funds subsidy and loan guarantee discount, in order to cope with the continuous rise of labor force and land cost, and promote the enthusiasm of farmers. On the other hand, we should speed up the popularization of technology through group training, technical personnel field help, etc., in order to ensure the ratio of high quality cocoon production quality silk [3].

Finally, we should rely on the enterprise to build a high quality and excellent price mechanism, adopt a new mode of industrialization management, through the contract and farmers to establish an effective long-term cooperation agreement for breeding and acquisition, to provide technical support and management services for farmers, to bear a part of the risk for farmers, to form a production and acquisition of integrated industrial chain. It can also guarantee the interests of the farmers. At the same time, in the process of cocoon silk's acquisition, as soon as possible to develop a new cocoon technology method to reflect the "high quality and excellent price", improve the accuracy of cocoon valuation.

Constructing the high quality cocoon silk base of "green ecology" in western China. First of all, we should adjust the geographical layout of the planting area in the western production area, try to choose the low mountain, hilly valley mainly, abundant land resources, belong to the south subtropical and subtropical climate zone, the rain dry season is clear, the sunshine is abundant, the light, the heat, the water resources abundant temperature condition suitable area to establish the modern Mulberry garden and Mulberry. As far as possible to ensure the production of high-quality cocoon condition suitability, through the cultivation of breeding to enhance the environmental adaptability of Mulberry and silkworm itself.

Secondly, technology promotion and training and facility innovation. In addition to the local Government to organize technical training and education to speed up the promotion of technology, the State should also increase financial support, on the one hand, in batches of the western existing breeding, silk reeling of the original equipment to improve, on the other hand, to increase the cocoon evaluation cocoon and hot steam cycle baking cocoon and other intelligent facilities of the new construction.

Strengthen technical support. For the industry as a whole, in order to fundamentally solve the problem of inadequate supply of high quality cocoon silk, it must be supported by the upgrading of technology. First of all, we need to change the backward silk reeling and high-quality cocoon production technology, to achieve the automation and intelligence of silk reeling, improve the old equipment, so that ordinary cocoon has become able to reeling into a high-quality silk cocoon, and secondly, we also need to improve the quality of silkworm cocoon identification technology and instruments to ensure the quality of cocoon silk. Finally, we have to improve from the terminal of the industrial chain, through the upgrading of technology, really let the end products have high added value is the driving force for the development of high-quality cocoon silk, but also to solve the industrial chain of the main points of interest contradictions between the key.

4.Summary

Producing high quality cocoon silk conforms to the future consumption demand and the development direction of sericulture industry, and is an effective way to promote the extraction and efficiency of sericulture industry, change the mode of development, realize the transformation of traditional sericulture industry to modern sericulture industry and the sustainable development of regional sericulture industry. In order to change the structural problems of insufficient supply of high quality cocoon silk, we should build a base production mode, re-structure the production layout and scale of high-quality cocoon silk, carry out large-scale production, and make up for the shortcomings in the development of East and West production areas. Secondly, the most important is the technological innovation, only the continuous development of technology, in order to truly achieve the production of high-quality cocoon silk of the high quality and high rate.

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Reference

- [1]Li Jianchen, Gu Guoda. Development countermeasures of high quality cocoon silk based on supply side structure adjustment [J]. *Silkworm industry in China*, 2017,38 (02): 1-7.
- [2]Kang Haijian, Wang Xinming. Some thoughts on building national quality cocoon Silk Base [J]. *China agricultural information*, 2016 (23): 158.
- [3]Zhu Wanmin. It is imperative to build a "green ecological" cocoon silk base in western China [J]. *Sichuan Silk*, 2000 (03): 4-8.
- [4]China Fiber Inspection Bureau. Report on quality Analysis of Raw Silk products in 2016 [J]. *China Fiber Inspection*, 2017 (7): 2-31
- [5] Yan Haijian, Wang Xinming. Some thoughts on Building National High quality Cocoon Silk Base [J]. *China Agriculture Information*, 2016 (23): 158.

- [6] Su Maoko, Zhu Hongshun. Suggestions on industrialization Management of Silkworm varieties with High quality Cocoon Silk [J]. Sichuan sericulture, 2016N 44 (01): 31.
- [7]Li Jian-qin, Gu Guo-da. The Development Law of World Silk Industry and its Enlightenment to China [J] .Chinese Sericulture, 2014Y35 (3): 11-18.
- [8]Zhu Liangjun. On the production Technology of High quality Cocoon Silk [J]. China Fiber Inspection, 2010 (13): 32-39.
- [9] Sato Haoyou, Zhu Zhengming. The key to producing high quality cocoon from the point of view of raw silk quality [J]. Shaanxi sericulture, 1983 (03): 61-64.