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# Research on Strategies for the Development of Selenium-enriched Tea in Ankang City of Shaanxi Province in the Context of Targeted Poverty Alleviation

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**Abstract** As an important symbol of agricultural and sideline products in Ankang City, selenium-enriched tea affects the development of regional agricultural and sideline industries. In this paper, the development status and problems of the selenium-enriched tea products of Ankang were analyzed in terms of capital, technology, management and sales mode. This research is of positive significance to the development of selenium-enriched products and other agricultural and sideline products of health value, and plays a very important role in promoting the cultivation of village-level characteristic industries and the effective realization of targeted poverty alleviation.

**Key words** Targeted poverty alleviation, Selenium-enriched tea industry, Characteristic industries, Development strategy

## 1 Introduction

Ankang City is located in the southeast of Shaanxi Province, bordered by the north slope of the Bashan Mountain to the south, the main ridge of the Qinling Mountains to the north, and the main stream of the Han River passes through the border, forming "two mountains with a river" topography. It is the most ecological tea area in the north of China and the largest natural selenium-enriched area in the country. Ankang selenium-enriched tea is a geographical indication product in China. The tea soup is light green in color, high and long in aroma, fresh and mellow in taste, and refreshing<sup>[1]</sup>. According to the former Trademark Announcement No. 1591 of the State Administration for Industry and Commerce, the geographical indication of selenium-enriched tea in Ankang City proves that the trademark commodity producing areas are 1 district and 9 counties in Ankang City, specifically covering 14 townships in Hanbin District, 6 towns in Hanyin County, 6 towns in Shiquan County, 17 towns in Ziyang County, 12 towns in Langao County, 12 towns in Pingli County, 11 towns in Xunyang County, 5 towns in Zhenping County and 4 towns in Baihe County<sup>[2]</sup>.

## 2 Current status of selenium-enriched tea products of Ankang

By the end of 2019, the tea garden bases in the main producing counties (Ziyang, Pingli, Langao, Zhenping and Hanbin) in

the selenium belt of Ankang had reached 34 700 square meters, with an annual output of 12 800 tons of tea and an output value of 1.96 billion yuan<sup>[3]</sup>. The 50 tea garden bases planned and constructed have been promoted in a solid and orderly manner. So far, 6 provincial-level parks and 22 municipal parks have been established. There are 415 tea processing enterprises in the city, among which there are 6 provincial leading enterprises, 12 enterprises with an annual output value of more than 20 million yuan, 6 enterprises with an output value of more than 100 million yuan, and 38 professional tea cooperatives with 5 500 tea farmers and a population of 19 000, including 450 professional tea farmers. It has established 4 tea trading markets and 120 stores in and out of the province, which has laid a solid foundation for promoting the development of selenium-enriched tea industry in Ankang.

## 3 Questionnaire

Taking Ankang City of Shaanxi Province as the research object, this paper designed a questionnaire and carried out a survey on the development status of selenium-enriched tea, and analyzed the development strategies of selenium-enriched tea. By means of sampling survey and field visit, 6 natural villages in main producing areas of selenium-enriched tea in Ankang City of Shaanxi Province were selected for field visit, and relevant government departments were visited and relevant literature was consulted. In this survey, a total of 200 questionnaires were issued, and 196 questionnaires were actually returned, with a recovery rate of 98%.

**3.1 Basic situation** It can be concluded from Table 1 that the age group of growers is mainly over 46 years old, and the middle-aged and elderly are the majority. Among the surveyed samples, 102 people are over 46 years old, accounting for 52.04 percent of the total population. Only 11 are aged 25 or below, accounting for

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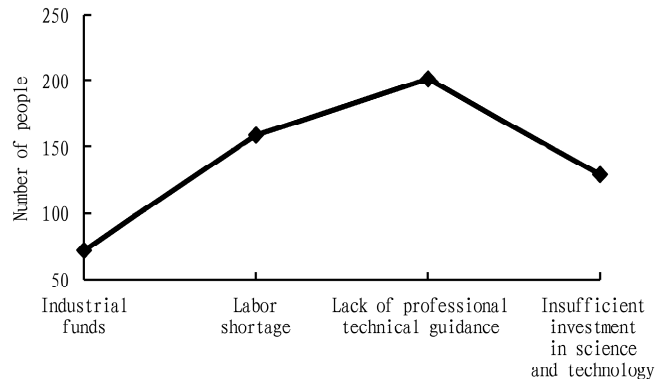
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5.61 percent of the total population. Based on the above, the overall age of growers is too old, the aging trend is serious, and the effective force for subsequent development is insufficient, which makes it difficult for the overall age composition of growers to adapt to the development situation of selenium-enriched tea industry.

**Table 1** Proportion of age groups surveyed

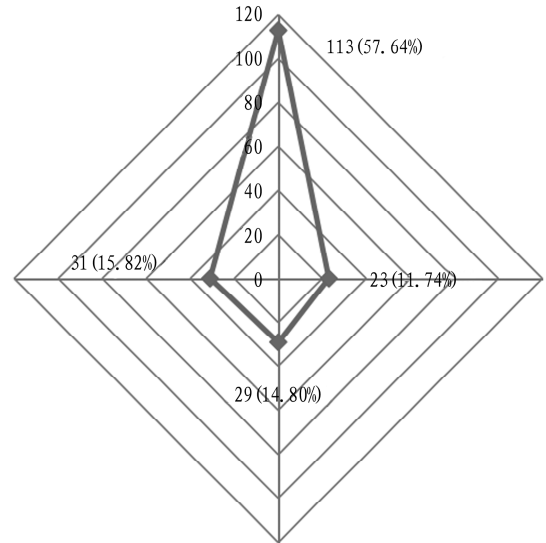
Age group//year	Number	Percentage//%
25 or below	11	5.61
26 – 35	18	9.18
36 – 45	35	17.86
46 – 55	102	52.04
56 or above	30	15.31

**3.2 Management analysis** In 196 questionnaires, 35.83% of growers agree that the biggest problem was the lack of professional technical guidance; 28.34% think the labor force is insufficient; 22.99% believe that science and technology investment is insufficient in the family planting, and technical promotion and training is difficult, so that professional technical guidance cannot follow up in time; 52.48% of the growers have a good evaluation of Ankang selenium-enriched tea, and the growers still have a recognized attitude towards the brand to some extent. However, in the future, we should continue to strengthen brand marketing and publicity efforts to expand the brand awareness and influence (Fig. 1).



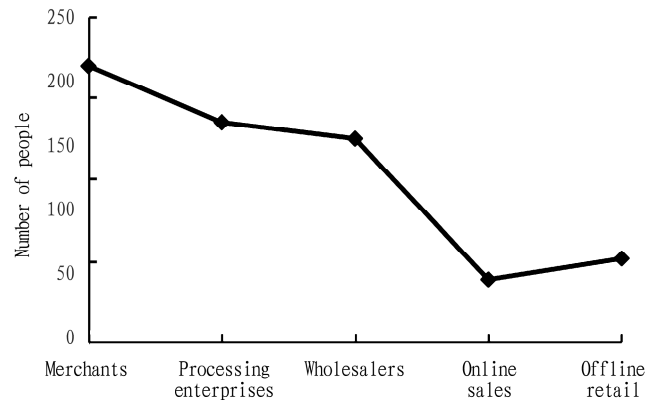
**Fig. 1** Industrial management analysis

**3.3 Risk of industrial operation** Through the analysis of the survey data, it can be seen that most of the risks in the planting process are borne by the farmers. Once the natural disaster occurs, the farmers will suffer a large loss, which will definitely inflict a heavy burden to the farmers. In the survey, there are many cooperatives, but due to a variety of reasons, the number of farmers who really join them is small, and farmers' insurance awareness is weak. All of these lead to farmers taking more risks when faced with risks, which will greatly discourage farmers' production enthusiasm. Therefore, farmers should be strongly encouraged to participate in agricultural insurance, and insurance companies should increase the publicity of fruit insurance, so as to gradually form a risk loss compensation mechanism combining government, growers, insurance companies and market operation (Fig. 2).



**Fig. 2** Industrial operation risks

**3.4 Sales channels** Through the analysis of survey data, it can be seen that farmers have diversified sales channels, which can be generally divided into online sales and offline sales. We should make full use of the Internet, vigorously develop the marketing model of "Internet + selenium-enriched tea", use e-commerce platforms such as Taobao and Jingdong to establish a sales network, and increase the efforts of market development such as direct selling from the origin, counter marketing, tourism promotion and order sales, so as to improve the industrial benefits (Fig. 3).



**Fig. 3** Sales channels

## 4 Problems in the development of selenium-enriched tea of Ankang

The tea industry is an industry with high input, high output and long-term benefits from one-time investment. Most part of Ankang is the mountainous area, and the standardized tea gardens are limited. Most of the tea plantations are located on barren land, steep slopes where water are scarce, similar to rough terrain, and the improvement of infrastructure of tea plantations requires a large amount of investment. According to statistics, every 0.067 ha needs investment of 0.8 to 10 thousand yuan<sup>[4]</sup>. Only relying on the high input of tea farmers is not feasible, tea garden construc-

tion funds are tight, and there is no additional capital investment. And there is no substantial breakthrough in the construction of tea garden for a long time. At the same time, some problems persist such as low investment and blind pursuit of tea garden area expansion, ignoring tea garden fertilization, pest control, soil improvement and other scientific management of tea garden. There are few high-quality tea gardens with high efficiency, and most of them have low yield. According to statistics, Ankang's low-yield tea plantation area reached 10 000 acres.

#### 4.1 Heavy production, light marketing and low market share

The tea industry in Ankang City attaches great importance to planting, but ignores sales and circulation, and the understanding of commercial operation still has not penetrated into the development process of tea industry. Therefore, the market share of selenium-enriched tea in Ankang City is small. In Xi'an and other big cities in Shaanxi Province, shopping malls are also difficult to see. Visibility in big cities across the country is relatively low, and advertising and manpower publicity are not enough. At present, there is no large tea market in downtown Ankang. The e-commerce and Wechat business platforms have just started, and have not formed similar scale. At the same time, the supervision of tea market is insufficient, and the phenomenon of abuse of brand is everywhere. Priority should be given to the construction of smooth tea channels and a safe and honest market<sup>[5]</sup>.

#### 4.2 Lack of science and technology investment and operation related talents

Ankang is located in a poor area of Shaanxi Province, where local scientific research talents are relatively weak. The city's tea technology research center and agricultural science institutions have a low level of scientific research. The only institution of higher learning in the region, Ankang University, has not opened a major related to tea garden. In recent years, there is no introduction of tea-related professionals with higher education. Currently, there are more than 90 tea garden technical cadres and only 52 on the job, all of whom have junior college degrees or lower. Most of them are over 50 years old and concentrated in Ziyang and Pingli counties, which cannot adapt to the comprehensive development of selenium-enriched tea industry. Ankang is also difficult to introduce highly educated tea professionals<sup>[6]</sup>. At the same time, there is a shortage of production management talents. Most tea leaves are based on the family model, which severely limits their development level.

#### 4.3 Lack of high-quality tea making and processing technology

In recent years, through investigation and analysis, the production capacity of mechanically processed tea in Ankang City is about 1 200 t, accounting for only 25% of tea production, mainly because tea production and processing is based on traditional pure manual methods, so in the case of a great increase in labor costs, Ankang selenium-enriched tea cannot form a development model of standardization, scale and industrialization. In addition, most of the enterprises in Ankang City are involved in tea production, processing, sales and so on, but the overall production and process-

ing technology efficiency is low, the economic strength is very weak. At the same time, because these enterprises generally lack in-depth research and analysis of tea, and the product's added value is low. In addition, tea food, beverage, health care products and tea tourism construction base related to tea are in the initial stage, so the development speed of tea industry is slow, and the production, management, processing technology and sales level are low, which cannot play a positive role in the development of Ankang tea industry.

#### 4.4 Low brand benefits and difficult integration

Although there are two famous brands of Ziyang selenium-enriched tea and Pingli *Gynostemma Pentaphyllum* in Ankang, the brand benefits are not strong. Compared with other famous brands such as Yunnan Puer tea and Anxi Tieguan Yin, the brand value difference is very significant, and it is not well-known in the tea market outside the province. According to the evaluation results of Chinese tea brand value in 2013 jointly released by China Tea Magazine recorded by China Agricultural Brand Research Center, China Tea Institute and China Tea Net, Hanzhong Xianhao was ranked 17th, while Ziyang selenium-enriched tea was ranked 24th<sup>[7]</sup>. Ankang tea enterprises are numerous, messy and lack unified brand management. From 2006, Ankang Municipal Government began to implement brand management and work, the progress was slow, there was no obvious progress and improvement, brand integration needed more market regulation, so it is difficult to rely solely on the promotion of the government. And it lacks leading enterprises, so it is very difficult to guide brand integration through the market, which seriously limits the development of Ankang tea industry.

## 5 Strategies for promoting the development of selenium-enriched tea in Ankang

### 5.1 Improving the existing varieties and strengthening the infrastructure construction of tea garden

At present, the tea gardens in Ankang City have been planted with different species since the 1970s, and most of them are reproduced sexually. Due to the low purity of the varieties, irregular appearance and uneven growth levels of the sexually propagated tea plantations, the production and processing of tea leaves are difficult to meet the requirements of standardization and the appearance and quality of tea leaves are also relatively low. By contrast, asexual tea gardens have advantages in producing high-quality and neat tea gardens, so Ankang should strengthen the construction of tea garden bases, take measures to encourage farmers to produce asexual tea, and ban other agricultural planting management agencies, increase the proportion of clonal tea gardens, provide enterprises with high-quality raw material processing, and finally realize the integration of tea production, packaging and sales<sup>[8]</sup>. At the same time, it is necessary to replace the old tea tree, replace the low-yielding tea tree, achieve reasonable close planting, build canals, apply organic fertilizer to improve the soil fertility, and improve the quality

of the tea garden.

### 5.2 Increasing the content of science and technology and improving the comprehensive benefits of industry

It is necessary to introduce and cultivate tea scientific and technological talents for the development of Ankang selenium-rich tea industry, increase preferential policies and related subsidies, extensively develop professionals in the whole province and across fields, and absorb and introduce tea research and technical personnel, give full play to the role of city in developing and training talent base, and set up tea classes to train high-quality professional and technical personnel for the city's tea industry<sup>[9]</sup>. It is necessary to regularly organize party and government cadres in key towns to carry out general technical training for farmers, and set up expert groups of tea farmers in tea association organizations at all levels, so as to provide better services to tea farmers and tea enterprises in terms of improved seed production technology, market operation, and advanced management.

### 5.3 Applying organic fertilizers in large quantities to improve the existing low-yielding tea plantation

Organic fertilizer is the material basis of the development of organic agriculture and the basic guarantee of quality. A large number of organic fertilizer applications not only protect the soil fertility to achieve long-term fertility of the land, but also form a waste-free agricultural circular economy, which is the urgent need of the development of the new era, and improves the quality of the rural environment<sup>[10]</sup>. According to the statistics of the Data Research Center of the Ministry of Agriculture, the proportion of fertilizer input amount of organic fertilizer reached 99.9% in 1949, 91.0% in 1957, 66.4% in 1975, 37.4% in 1990, which fell to 30.6% in 2000. According to data released by the *2018 China Environmental Information Bulletin*, organic fertilizers in 2017 accounted for only 25 percent of the total fertilizer use in China. High yield fields can be slightly reduced, the ratio of chemical fertilizer to organic fertilizer is about 3:2, while low yield fields can be increased, the ratio of chemical fertilizer to organic fertilizer is 2:3. The application of organic fertilizer can significantly increase beneficial microorganisms in the soil, regulate the biological substances produced, promote root growth and nutrient absorption, improve soil structure, enhance soil permeability, improve all-round nutrition, promote crop metabolism and reduce pesticide use.

### 5.4 Building the marketing platform and promoting the diversified development of the industry

Ankang selenium-enriched tea industry should change its ideas, pay more attention to marketing strategy, increase advertising marketing activities and manpower input, strengthen on-the-spot investigation and vigor-

ously carry out relevant marketing activities, and make full use of emerging media such as Wechat marketing platform, establish and improve the Ankang selenium-enriched tea marketing management system, so that Ankang selenium-enriched tea can really go out of Ankang, out of Shaanxi, and even into the life of every consumer<sup>[11]</sup>. It is necessary to promote industrial integration, integrate into local tourism, build tea garden tourist attractions, set up a number of tea-themed tourism demonstration sites, build a number of tea culture tourism villages with vacation as the theme, and strengthen tea tourism cooperation.

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