

Qi Danning

Shijiazhuang Foreign Language School

Shijiazhuang, Hebei Province

China Factor 1: Plants

## **Research on the Present Situation and Countermeasures of Winter Jujube Industry in Huanghua**

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**Abstract:** With the transformation of fruit industry from traditional to modern industry, Huanghua winter jujube industry is facing new problems and challenges. Based on this background, the development status of winter jujube industry in Huanghua was investigated and studied. The results were as follows: Huanghua winter jujube industry has both natural and historical advantages, and also the advantages of large-scale and highly mechanized cultivation. It is also facing with the following problems: The shortage of skill training for farmers, single variety cultivation, poor brand effect and lack of insurance products. In order to solve the problems, 5 countermeasures and suggestions were

put forward in this study.

**Keywords:** winter jujube; Huanghua; Development Status

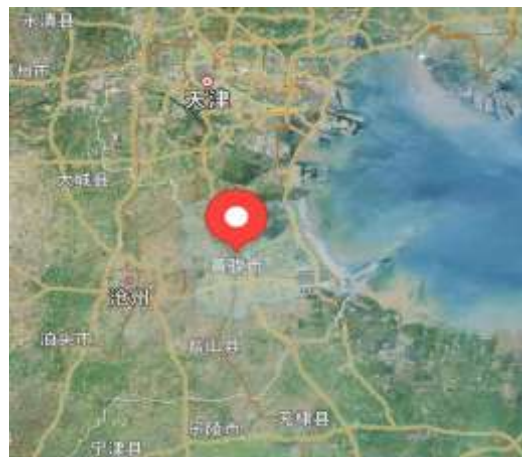
## 1. Introduction:

Huanghua winter jujube, known as the “The best jujube cultivar” and “King of fruits”, is the first fruit in China that has been authorized as an “origin protected product” . It can be said that the winter jujube industry is a characteristic economic industry in Huanghua. However, in recent years, with the new trend of the transformation of fruit industry from traditional to modern industry, it is also faced with new problems and challenges. This study investigated,analyzed and studied the development status of winter jujube industry in Huanghua city,and put forward countermeasures and suggestions for the problems in the development to provide reference for solving global agricultural problems.

## 2. Location advantages of Huanghua City

### 2.1 Natural locational factors:

Huanghua, located in the southeast of Hebei Province, has favorable natural and geographical conditions for the growth of winter jujube, as follows: ①Huanghua is located in the coastal zone with high air humidity. During the day, the temperature changes smoothly but the temperature difference between day and night is large, which is beneficial to sugar accumulation and material transformation.



*Chart 1. Geographical Location of Huanghua City*

②The soil is sandy loam with slight salinity (pH value is about 8), which has good permeability and is suitable for the growth of winter jujube; In addition, the soil is rich in chlorine and potassium ions, which can increase the content of vitamins, other elements and various nutrients, and increase the brittleness and hardness of fruits<sup>[1]</sup>.

### 2.2 human factors:

The planting of winter jujube in Huanghua, Hebei Province has a history of 3,000 years, which can be traced back to the Qin and Han Dynasties. It was recorded in the history that “Liuxian and

Zhangwu (Liuxian and Zhangwu -built in Huanghua in Qin and Han Dynasties) were all planted with jujube, which was used as food and brewed at home.” As a “National Key Cultural Relics Protection Unit”, Huanghua Juguan Gugong Jujube Garden is the only national protection plant unit in China, with 198 trees over 600 years old, and the oldest “Dizu Tree” has a history of more than 740 years, which is known as the “living fossil” of Chinese winter jujube.

### 3. Development status of winter jujube industry in Huanghua City

#### 3.1 Planting area

Since the winter jujube planting was popularized in 2000, the planting area has expanded year by year, reaching 14,500 hectares in 2011, but the planting area of winter jujube has decreased rapidly in recent ten years (see Chart 2 for details). At present, winter jujube planting is mainly distributed in eight townships: Qijiawu, Tengzhuangzi, Changguo, Jiucheng, Yangerzhuang, Guanzhuang, Lvqiao and Huanghua. Among them, there are 1 winter jujube base of 10,000 mu(1mu=0.0667hectares), 35 bases of more than 1,000 mu, 80 bases of more than 500 mu, and a total of 126 quality gardens of standardized management.

area(hectares)

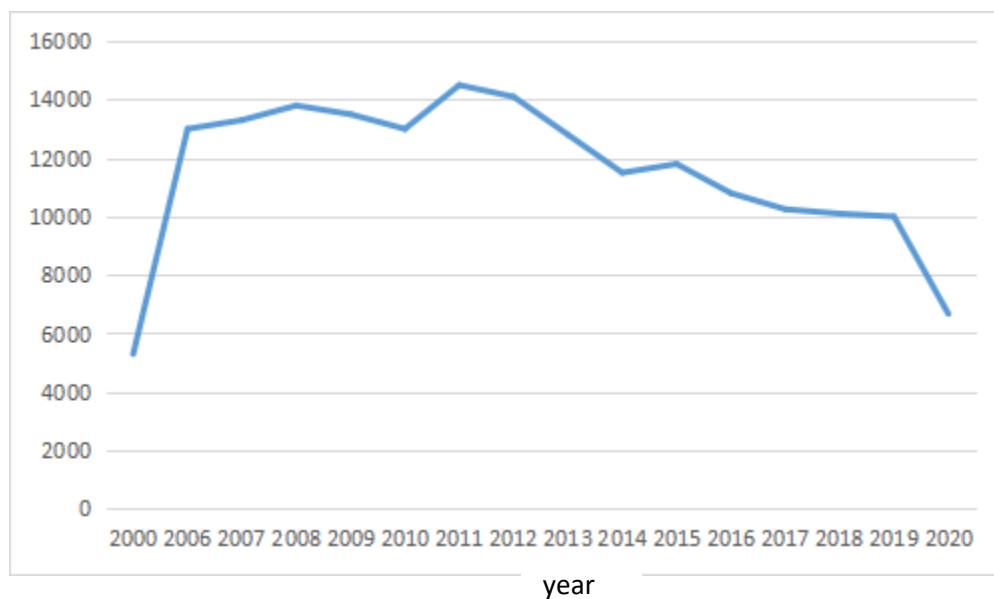


Chart 2. The Planting Area of winter jujubeIn Huanghua City (2000-2020)

#### 3.2 Mechanization degree

When talking about planting winter jujube, it includes many steps such as seedling emergence, grafting, fertilization, weeding, pruning, harvesting and so on. After the author’s investigation, some winter jujube planting professional villages in centralized planting areas such as Kongdian and Juguan have realized mechanization in many aspects. Water and fertilizer integration system in fertilization are realized and pesticide drone spraying

technology in drug spraying is being applied. In the pruning link, the use of pneumatic pruning machine makes the incision neat, and will not damage the branches, improve the pruning quality. In the picking process, the winter jujube is picked with a selective harvester, and the maturity of the fruit can be automatically identified by using cameras, radars and sensors for target recognition and positioning. Such technologies promise a satisfactory level of mechanization in jujube planting in this district.

### **3.3 Sales**

By 2020, the annual output value of fresh winter jujube is about 70,000 tons, accounting for 80% of the city's total fruit output value. After 2006, Huanghua successively established more than 500 large, medium and small winter jujube fresh-keeping warehouses, with an annual storage and fresh-keeping capacity of tens of thousands, and built 16 winter jujube processing enterprises such as Tiantian, Zhongbao and Ruifeng. Since 2007, Huanghua-Shenyang and Huanghua-Beijing winter jujube distribution lines have been established successively, and winter jujube markets in Beijing, Tianjin and Shenyang have been formed. In recent years, winter jujube brokers and winter jujube processing enterprises have made unremitting efforts to internationalize the sales network of winter jujube, and have successively entered the Japanese and American markets and entered the domestic food catering field.

### **3.4 The impact of winter jujube industry on the income of local farmers.**

Due to the decrease of cultivated land caused by the rise of sea level in Bohai Bay and the change of ocean current in history, Huanghua has become the area with the worst ecological and basic conditions in the coastal plain in China. Increasing farmers' income and agricultural production has become the most urgent requirement of people. Since Huanghua vigorously promoted winter jujube planting in 2000, winter jujube industry has become one of the main sources of agricultural economic income. Taking yang'erzhuang town as an example, 20% of farmers' comprehensive income comes from winter jujube planting. For Kongdian, Juguan and other national ecological professional demonstration villages, 80% of farmers' annual income comes from winter jujube planting. The number of employees of winter jujube has reached 50,000 and the annual output value of winter jujube in Huanghua is 1 billion yuan. By 2020, the local people have regarded winter jujube as "iron set crops".

## **4 Problems in the development of winter jujube industry in Huanghua City**

### **4.1 The retail planting mode restricts jujube industry in local area.**

Although there are some professional winter jujube planting villages such as Kongdian and Juguan which has large winter jujube bases, but the proportion of retail planting is still very large. These growers often take the family as the unit and plant winter jujube on their own land. Their planting area

varies in size, and there are different kinds of crops around them. This planting mode has many disadvantages: ①The mechanization degree of retail planting is relatively low. In pollination, nail cutting and pesticide spraying, the traditional planting mode still remains, which is labor-intensive. Especially, the picking period of winter jujube is around mid-October, which is the same as the harvesting time of corn and soybean, so farmers are even more busy. ②Disease and pest control is not unified and not standardized. On the one hand, other crops are planted around the winter jujube garden; on the other hand, the spraying time of pesticides in winter jujube gardens in different family units is different, both of which easily lead to the mutual spread of pests and diseases. ③Extensive management, low degree of standardization, low benefit and people's enthusiasm is not high. Some people only take winter jujube planting as their sideline business. In the long run, the income from planting jujube trees is not as good as that from growing grain, so there is a phenomenon of farmers trading forests for fields. This is also the main reason why the planting area of winter jujube in Huanghua decreased year by year in recent years.

#### 4.2 Jujube farmers are elders with inadequate training.

The education level and training status of jujube farmers will have an impact on the following aspects: The green production mode of family farms<sup>[2]</sup>, the expansion of business scale<sup>[3]</sup>, and ecological behavior<sup>[4]</sup>.

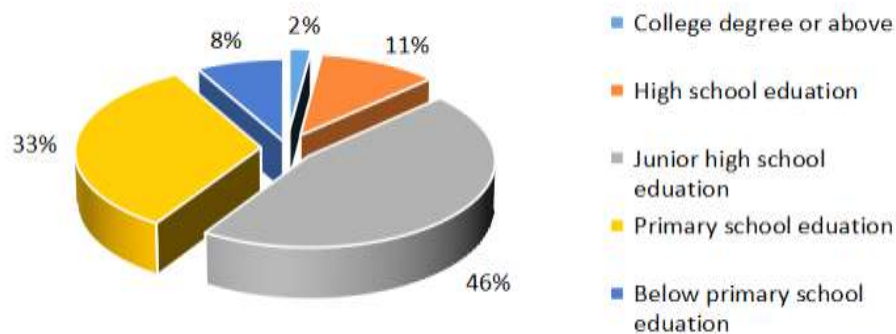


Chart 3. Proportion of Jujube

According to the survey on the educational level of jujube farmers, as can be seen in Chart 3, jujube farmers with junior high school and primary school level account for a large proportion, and their education level is relatively low, which is not conducive to the production and management of winter jujube. In addition, most business entities have not received professional training. In this study, only

26 jujube farmers, accounting for 21.7%, have received agricultural professional and technical training, which is not conducive to their mastering new technologies to improve production efficiency.

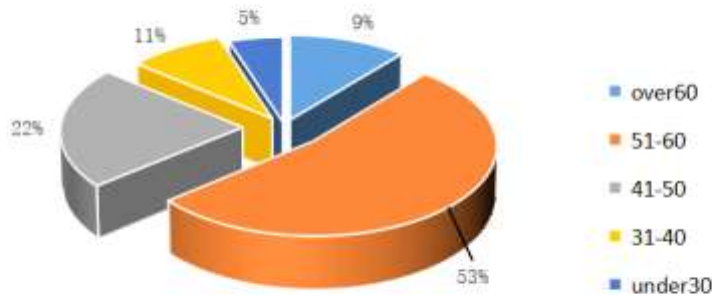


Chart 4. Proportion of jujube farmers' age structure in Huanghua

According to the investigation of the age structure of jujube farmers in this study (Chart 4), jujube farmers are generally elders. Specifically, the average age of 50-60 years old accounted for more than half, and they can't accept new things easily, and their ability to master modern machinery, network training or sales was poor, which restricted the development of winter jujube industry.

#### **4.3 The products of winter jujube have a single variety with poor brand effect.**

As a kind of fresh fruit, winter jujube has its sales rule, that is, 50% winter jujube is used for early sales, 35% for storage, and the remaining 15% for processing and appreciation. Although there are many processed winter jujube products, only crispy winter jujube stands out. Take Guorun Ecological Food Company as an example, the sales volume of the company in 2015 was 80 million yuan, of which 79 million yuan was provided by crispy winter jujube. It can be seen that the enterprises still lack in processing technology and enriching product types. At present, Huanghua has some brands such as Guorun and Shiyuehong, but their influence is insufficient and their popularity is not high, which leads to the inability to form brand effect.

#### **4.4 Winter jujube industry insurance products blank**

Winter jujube insurance due to regional production and exploration difficulties, delayed their launch, become the obstacles of winter jujube industry. Winter jujube is often greatly affected by natural disasters and diseases and pests in the growth process. The research shows that when the wind speed reaches 11 ~ 20m / s, it will cause wind disaster in a short time <sup>[5]</sup>, then a large number of fruits will fall off, which often occur at fruit ripening stage. Drought, even rain in autumn and freezing injury

in dormant period are affected by the local monsoon climate, with a high frequency. In some years, it will cause great disasters or even no harvest. However, due to the strong regional production, winter jujube insurance has not been launched for a long time. In addition, compared with other commercial insurance, the profit level of agricultural insurance is obviously low, and the planting scale of winter jujube is small compared with field crops, which makes the business space and cost of insurance relatively small. What's more the production of winter jujube is greatly affected by natural disasters, once there is a large natural disaster, the insurance company is unable to assume huge losses, which cause the insurance company for the purpose of profit does not have high enthusiasm for the development of winter jujube insurance products.

## **5 Study on the countermeasures of winter jujube industry development**

### **5.1 Strengthen government support and guidance to realize large-scale planting.**

①It is necessary to effect more supportive policies. Based on the traditional land allocation policy of Huanghua and the present situation of winter jujube planting by retail investors, Huanghua should actively respond to the call of “vigorously cultivating new agricultural business entities to help modern agriculture develop”<sup>[6]</sup>. Actively promote the “new rural cooperative construction”, explain the purpose, income and cooperative establishment of jujube farmers. It is encouraged that jujube farmers with families as planting units should unite to form a mutually beneficial and mutually supportive winter jujube park with villages and even towns as units. ②Improve the land transfer system. At present, the rural young adults in Huanghua are constantly transferring to big cities, which leads to part of the land being ignored or the remaining family members being unable to operate. Based on this situation, the government departments should strengthen the reform and innovation of the rural land transfer system and construct a set of land transfer contract system suitable for rural areas. On the basis of complying with rural land laws and regulations and farmers' willingness, we should actively and accordingly guide the land contracting right from farmers to market to realize the scale of Huanghua winter jujube industry.

### **5.2 Strengthen technical training to realize planting standardization**

①It is necessary to conduct regular knowledge training. Based on the current situation of winter jujube planting technology training, Huanghua agricultural technology department should formulate the education and training system for jujube farmers and hold short-term knowledge training regularly. It is necessary to strengthen cooperation with agriculture-related universities and scientific research unit in the province, help jujube farmers obtain continuing education, popularize policy knowledge, and enhance practical production skills and management capabilities. ②It is necessary to introduce assistant policies. Based on the present situation that jujube farmers are old and have low education

level, Huanghua agricultural technology department should carefully plan the training content and spread planting knowledge to jujube farmers in a way that farmers can understand and watch the meeting. In addition, it is necessary to introduce the corresponding entrepreneurial assistance policies to guide college students and non-agricultural employees to start businesses in the countryside, so as to inject new vitality into the winter jujube garden. ③Strengthen technical support. Local agricultural technology departments should, according to the actual production situation of winter jujube, introduce agricultural technical specialists into villages and towns to provide on-site services to solve technical problems for jujube farmers.

### **5.3 Improve processing technology to achieve sales diversification**

Winter jujube processing enterprises are the bridge between external market and internal jujube farmers. If the enterprise is not strong, the industry will not flourish and the market will not live<sup>[7]</sup>.

①Expand the scale of existing leading enterprises and improve the processing technology. On the basis of vacuum oil filtration and freeze-drying of the original winter jujube, new processing technology was developed to improve the present situation of single processed products structure. ②Enterprises should strengthen the research on cold storage and preservation. On the premise of ensuring the quality, the winter jujube can be preserved for a longer time, we should extend the supply period of winter jujube, thus making up for the short time to market of winter jujube.

### **5.4 Increase publicity to realize the branding of winter jujube industry**

Although Huanghua winter jujube is planted regionally, it has failed to make a resounding brand. Therefore, the government should strengthen the promotion of the brand, specifically, it can use the media such as internet, TV stations and newsstudys to publicize Huanghua winter jujube to expand its popularity. Huanghua is backed by Huanghua Port, with convenient land and sea transportation, and can vigorously promote e-commerce cooperation, for example, settle in Miaoshengxian and JD.COM shengxian to set up their own shops. In addition, it can explore new winter jujube industry combination modes, such as *online sales+* and agricultural *sightseeing+* mode, so as to increase the popularity and marketing channels of winter jujube brand.

### **5.5 Establish winter jujube insurance mechanism**

In order to promote the long-term development of winter jujube industry, it is urgent to establish the industrial mechanism of winter jujube. Firstly, to reduce difficulties, Agriculture Bureau, Forestry Bureau and the specialized technical personnel of meteorological bureau need to make an investigation of the damage of winter jujube in different periods of time, different growth stages and different disasters with the local jujube farmers. Launch reasonable insurance policies agreed upon by three parties, to escort the production of winter jujube. It can be tried from the following aspects: ①The implementation of a single natural disaster insurance, with the annual growth period of jujube trees as an insurance period, such as winter jujube pest insurance, winter jujube hail insurance, winter



jujube wind insurance and so on. ②The implementation of a single growth stage insurance, in the different growth stages of jujube trees, the natural disasters are different, the impact on the output is also different, the insurance company can be different development period as a unit, the disaster as a claim standard, reduce the difficulty of loss, launch insurance. Secondly, we will make full use of the state's preferential policies for agriculture, implement policies for agriculture with special features as soon as possible, and include insurance subsidies of various types in the government budget. At the same time, the government should formulate perfect support measures and explore the subsidy model suitable for the development of Huanghua's local characteristic agriculture. Appropriately increase fiscal subsidies to reduce the burden of insurance premiums on jujube farmers. Finally, we will accelerate the establishment of a reinsurance mechanism to ensure that insurance departments pay a certain percentage of compensation after large-scale natural disasters. Through layers of security, reduce the payment burden of insurance companies, improve their enthusiasm in the management of winter date insurance. The government should introduce local policies and regulations to support the insurance industry, institutionalize it, and provide guarantee for the long-term development of characteristic agricultural insurance.

## **6 Conclusion and discussion:**

In conclusion, the winter jujube industry in Huanghua has unique geographical and cultural advantages, and has made great contributions to the economic development of Huanghua. The investigation and research of this study may provide guidance to a reasonable and efficient direction of winter jujube industry development.

Many parts of the world have a similar situation with Huanghua City. The local natural environment is poor and is not suitable for planting ubiquitous crops, such as soybeans, wheat, rice and so on. However, due to its unique natural environment, it has cultivated local characteristic agricultural products, like Kenyan coffee and Egyptian cotton. In order to accelerate the development of characteristic industries in these areas, improve the income of local farmers and living standards, the local government should introduce relevant policies, such as setting up the construction of cooperatives to realize large-scale planting and strengthening the training of farmers to realize standardized planting, gradually improving the insurance mechanism, and finally realize the long-term development of characteristic industries.

However, there are still some problems that are still needed to be further studied, such as further innovation of processed products of agriculture products, environmentally friendly production and processing technologies.

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