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# SWOT Analysis and Countermeasures on Development of Sweet Potato Industry in Ziyun County

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**Abstract** According to the actual situation of sweet potato industry development in Ziyun County, we use SWOT analysis method to conduct strategic analysis on strengths and weaknesses of the internal environment and the opportunities and challenges of the external environment of the sweet potato industry, to explore correct strategic countermeasures suitable for the future development of sweet potato industry in Ziyun County and provide reference for the sweet potato industry to maintain sustainable competitiveness.

**Key words** Ziyun County, Sweet potato industry, SWOT analysis

Sweet potato known as fanshu, shanyu, ganshu, and digua *etc.* in China, belongs to the family *Convolvulaceae*, an annual or perennial creeping herb. Originating from Mexico and the tropical America such as Columbia, Ecuador and Peru, sweet potato was brought into China from Southeast Asia at the end of the sixteenth Century<sup>[1]</sup>. In China, it is the fourth major grain crop, preceded only by rice, wheat and corn. In recent years, with consumers' increasing understanding of the nutritive characteristics (low sugar, low energy and low fat) and anti-cancer role most prominent among all foods, sweet potato, the traditional crop for allaying hunger and tiding over a lean year, has regained its vitality in the modern agricultural market<sup>[2]</sup>. As a typical agricultural county, Ziyun County has always been one of the important areas producing sweet potato in Guizhou Province, where the cultivation of sweet potato has a long history and the production conditions are very good. But because of some factors such as sluggish economic development, change in policy factors, diversification of cultural environment and constant shift in dietary structure, sweet potato industry in Ziyun County has not yet gained ground in a healthy and orderly way. Currently only by the full and clear understanding of the strengths and problems in the sweet potato industry in Ziyun County can it seize opportunity and develops by leaps and bounds. As a kind of analysis method, SWOT is used to determine the competitive strengths, competitive weaknesses, opportunities and threats of the study object, and make a comprehensive, systematic and accurate study of the scenario where the study object is, of vital significance to making future development strategy for the study object. Meanwhile, the SWOT analysis on the development of sweet potato industry in Ziyun County has not yet been reported. Using the method of SWOT analysis<sup>[3]</sup>, we probe into the sweet potato industry in Ziyun County in order to provide a reference for its further healthy development and rational planning.

## 1 Strengths

**1.1 Resource strength** In the transitional zone of sub-tropical and northern subtropical agricultural climate zones, Ziyun County enjoys a subtropical humid monsoon climate, four distinctive seasons, abundant rainfall, an obviously dry and wet climate, and its particularly favorable natural conditions provide a valuable resource condition for its biological diversity. Ziyun County has a long history of cultivation of sweet potato, good varieties of kinds, especially well-known for its red core sweet potato with sweet taste. And most of the soil in the county is especially suitable for growing red core sweet potatoes with many advantages such as high yield, good quality, yellow and bright skin and chestnut-like taste, so it is greatly favored by consumers.

**1.2 Industry strength** With the development of agricultural industrialization in recent years, the county has nurtured a group of processing enterprises of agricultural products with better business direction, strong driving ability, wide radiation range and great potential for future development. Ziyun County sweet potato production bases have begun to take shape, and the high-quality red core sweet potato planting demonstration in Monan Village of Songshan Town and Xingfuyuan Village of Baishiyan Township has been built, one of the major development projects of the county's characteristic agriculture. Meanwhile, depending on popularity of "Getu River" brand series of agricultural products in commodity market, produced by the local agricultural products processing enterprise-langgao Company, the management mode of local sweet potato industry agricultural has been basically formed. The county industrial and commercial departments have taken the farmer specialized cooperative economy organization as the rural cooperative enterprises to cultivate and develop. At present, the number of farmer specialized cooperative economic organization in the whole county is 234, and they have played good roles in guiding farmers to participate in every aspect of producing, processing, circulating, selling of agricultural products, *etc.*

**1.3 Inherent need for increasing food security** China has a

large population, while its cultivated land resources have become increasingly scarce. The economic development, the process of industrialization and the urbanization, the increasing population, and the serious non-agricultural use of farmland have resulted in the destruction of cultivated land resource in a different degree, thus the fluctuation of grain production appeared, and the security of food supply was ruined. Sweet potato, with high adaptability, high and stable yield, strong capacity for resisting natural disasters, able to sprout up and bear fruits underground even after its ground part destroyed by natural disasters, is one of the important anti-disaster crops, therefore the fact that the healthy development of the sweet potato industry can increase food security level greatly has important economic value and social significance.

## 2 Weaknesses

**2.1 Market weakness** With its inconvenient traffic and less-developed economy, Ziyun County is a state-level poverty-stricken county. At present, the undeveloped market environment, low-level development degree, imperfect circulation sequence and inadequate information service of the county agriculture have limited the sweet potato selling mainly to door-to-door purchase, badly connecting with the domestic and foreign market, thus the market has failed to drive production. Due to lack of supply and demand information guidance, farmers have difficulty in predicting sales trend, and reacting slowly to market because of absent information and blocked channels. The undeveloped market and information asymmetry between the market demand and production, have resulted in disjunction between the production and the market, and failed high-quality local specialties such as red core sweet potato to fully realize marketization, commercialization, and industrialization.

**2.2 Technical weakness** Sweet potato farmers mostly grow them by experience. The disconnection of producing, processing, circulating seriously has impeded the industry to make coordinated development. The development of scientific research and outreach of characteristic agriculture, processing and circulation lacks material support, directly affecting the development of sweet potato industry in the county. At present, the finished and semi-manufactured sweet potato products have no commodity standards, no packaging or too simple packaging, and the transport vehicles have no preservation and long-distance transportation conditions. In addition, the single sweet potato processing products, relatively undeveloped processing technology, low additional value, the poor efficiency production have also seriously restricted the sustainable and steady development of sweet potato industry.

## 3 Opportunities

**3.1 Broad market demand** As a health food, the nutritional value and healthcare benefits of sweet potato have been gradually recognized by consumers, and its consumer demand has also increased. Especially with the continuous improvement of people's living standard and the rise of diet leisure culture in recent years,

the fact sweet potato has turned to important raw material of the food industry has brought new opportunities to the sweet potato production in Ziyun County. In Ziyun County the main area of growing sweet potato in Guizhou Province, the fact that the demand for annual fresh sweet potato exceeds the supply has caused red core sweet potato prices to increase, and it has become an important way to increase the income of farmers. At the same time, the rapid development in sweet potato processing industry and the increasing contradiction of supply and demand of raw materials have provided new opportunities for the development of the industrialization of sweet potato in Ziyun County.

**3.2 Increasing attention from government** When the comprehensive values of sweet potato are recognized by the masses, the government has increased its strength for supporting sweet potato industry in Ziyun County. In recent years, relying on its resource advantage, Ziyun County has developed its characteristic industry, trying to turn the resources advantage into economic advantage. In the permission of tax policy, the government returns part of the tax or all tax of characteristic products to support a number of leading enterprises, improving the transformation and appreciation in value of agricultural products, continuing to increase the ability of industry nurturing agriculture, and improving the virtuous circle of processing industry and native products. And through the establishment of special funds for developing featured products, it is important by carrying out the "new type farmers training", "science and technology to the countryside", "agricultural structural adjustment on-the-spot meeting" and other activities to help the cadre and the masses to understand the background of agricultural structural adjustment, develop ideas and raise their awareness to make adjustment.

## 4 Threats

### 4.1 Great agricultural ecological environment pressure

Ziyun County is located in the heartland of Guizhou, belonging to the typical karst rocky desertification area. The karst vegetation destruction, severe soil erosion and exposed bedrock, have caused land desertification and poverty. Lack of vegetation, it appeared that rock and soil surface directly were exposed to the atmospheric precipitation, soil and water resources eroded, and the fertility of land reduced year by year, causing a large area of paddy field to descend into dry land, clusters of stone appeared on the sloping land, showing awe-stricken rocky desert, all those seriously deteriorated the local agricultural production conditions and ecological environment, restricted the development of agriculture and rural economy, and left great pressure on the ecological environment for the development of sweet potato industry. In such deteriorated ecological environment, it can't be solved by personal strength, or in a short time, and can only be achieved by pooling the wisdom and effort of everyone together and persistent efforts to promote the sustainable development of sweet potato industry, solve people's livelihood problem, as well as to prevent the desertification of rocks from further deterioration and maintain the local ecological envi-

ronment.

**4.2 Lack of competitiveness** At present, sweet potatoes sold in Ziyun County are mainly the fresh potatoes, only at the primary level of processing. Lack of driving effort of industry chain, with low additional value, and weak resistance against the natural disaster and market risk, and they lack competitiveness in the market. The low-level integration of producing, processing, and selling, poor connection among before-producing, in-producing, and after-producing, and limited number of leading processing enterprises, poor capability to radiate and drive, and the fact a risk-sharing, benefit sharing close economic community has not yet formed, all those means that in order to make the local farmers out of poverty, it is not enough relying solely on the primary level of sweet potato production. Only by using the industry pattern of "company + base + farmers", building plant bases where growing sweet potato varieties with special characteristics for exclusive use of processing for leading processing enterprises to make orders and purchases, and bringing the farmers directly into the market, can make farmers gain real benefits. In order to achieve the sustainable development of sweet potato industry in Ziyun County, it is necessary to take the brand strategy. Through the establishment of protecting identity of origin, it is guaranteed to make a remarkable progress when the product is a national, provincial famous trademark or a brand product.

## 5 Countermeasures for development

**5.1 Improving the market environment and strengthening the construction of market information service system** The industrial development of sweet potato is inseparable from the market support. In order to improve the market environment of sweet potato industry, it is necessary to develop the farmer specialized cooperative economic organizations, and promote, support and develop positively farmers cooperative economic organization, and establish agricultural social service system taking farmers as the main body, improve the organization level of farmers, and introduce the farmers to enter the market, gradually form a market network based on trade market and sales outlets. It is necessary to innovate the benefits connecting mechanism between farmers and the management, extend the industrial chain, and through industrialization to promote the development and expansion of sweet potato products in Ziyun County. At the same time, it is also needed to improve the level of information service of sweet potato products, develop domestic and foreign markets constantly, establish fully-functioned, sensitively-reacted warning system of importing and exporting sweet potato products, and provide timely producing and selling information for farmers.

**5.2 Strengthening the science and technology promotion and technical innovation** Based on the current situation of poor scientific and technological innovation ability of sweet potato industry, it should improve the supporting role of science and technology in sweet potato industry development. It is important to promote the pollution-free standard production, pest monitoring, balanced

fertilization, intensive processing such advanced and applicable technology energetically, boost the scientific research and education department cooperation, and increase efforts to make research and develop of new varieties, new products, and new technology, accelerate the demonstration of new varieties, and promote the popularization of scientific and technological achievements, strive to improve the production of sweet potato. At the same time, it is important to further improve the promotion system and mechanism, establish and improve staff knowledge updating mechanism, change the service concept, extend service, strengthen the service function and the popularization of technology and service, promote the innovation of relevant technology of sweet potato.

**5.3 Positively exploring the mode of sweet potato industry with local characteristics** The sweet potato industry in Ziyun County should make full use of agricultural resource to realize the transformation from traditional agriculture to modern agriculture, quantity agriculture to high quality and high-efficient agriculture, and make it in link with the second or tertiary industry. This will require innovating ideas, establishing thoughts of industry nurturing agriculture, adjusting industrial structure, and promoting the sweet potato industrialization, developing marketable, high-quality, green, organic, good brand sweet potato products, cultivating leading enterprises of processing sweet potato products, strengthening efforts to support leading enterprises, taking policy priority, and making support in fund and technology to develop sweet potato production enterprises and play their full driving roles. About the specific development mode, the positive and flexible approaches can be adopted such as market connecting the leading enterprises, leading enterprises connecting with bases, and bases connecting with farmers. *etc.*

**5.4 Exploring the mode to solve desertification and improve the ecological environment** Ziyun County is a typical ecologically fragile area, mainly known for high sensitivity, low environmental capacity, weak anti-interference ability, poor stability, and fragile ecological system, and once destroyed, it is very difficult to recover. With the development of society and rapid increase of population, to meet their survival needs, man has made predatory development and utilization of the land, vegetation and other natural resources, caused unreasonable land environment deterioration. To solve the serious problem of desertification, it is needed to take measures from the following aspects: first, to increase vegetation; second, to strengthen the basic field construction; third, to explore the development of herbivorous animal husbandry; fourth, to improve the construction of the rural energy biogas, firewood saving stove *etc.* If the above measures can be carried out successfully, the ecological environment will be greatly improved, and it will provide the basic guarantee for the healthy development of sweet potato industry. Ziyun County economy is very backward, and as the county's characteristic industry, sweet potato industry has played an important role in the county's economic development. Therefore, in order to further increase vitality of Ziyun County's economic development, guarantee the farmers'

income, and improve agricultural efficiency, it necessary to increase the sweet potato industry support strength, and establish the industrial demonstration projects to promote its healthy development.

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the status quo of agricultural innovation and realize efficient configuration of scientific research resources.

### 4.3 Synthesized innovation being the successful product of scientific and technological development of agricultural equipment in developed countries

Developed countries have realized overall mechanization in recent decades in China, which is due to the synthesized system of reasonable and efficient agriculture, agricultural equipment, scientific research and education. Taking America as an example, American government passed the *Morrill Act* in 1962, which specified that each state should build agricultural universities. In 1887, *Haqi Act* specified that government will finance agricultural experiment station. In 1914, *Smith – Lifer Act* required that the agricultural technology promotion should be operated by federal, state and regional government so as to establish systematic agricultural teaching, study and promotion system.

American government used to focus on study of agricultural science and technology. Besides of large amount of fund from federal government and each state government, huge public scientific research system has been built to realize the integration of teaching, scientific research and promotion. Agricultural department, the study center of agricultural science, and each agricultural academy in state universities, the powerful scientific research base, as well as the large and competitive private agricultural companies become the three-dimensional synthesized innovative system so as to make the transition rate and contribution rate being above 70%, which makes America the most advanced country in agricultural science and technology.

Practices suggest that synthesis and cooperation form development, reduction of cost, diverse risk and benefit sharing mechanism, which pushes forward the progress and upgrade, re-

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alizes resources integration and expands international development space. This becomes the efficient mode of innovation in globalization.

## 5 Conclusions

In order to occupy the leading role in agricultural equipment and technology industry in the drastic international competition, it is urgent for China to change the current diverse, to colse and to utdate closed and outdated mechanism and system. It is important to break the boundary and realize maximum integration of innovative resources and elements, to build research centers of international significance through modernized agricultural equipment and technology, to build personnel training mode, which would fundamentally change the situation of scientific research of agricultural equipment, narrow down its gap to developed countries quickly, which would provide solid material support to agricultural modernization and national modernization in China.

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