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# The Balanced Development of Yunnan Bazi Agriculture and its Resource Environment

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**Abstract** The developmental status and situation of Yunnan Bazi agriculture are introduced. The prominent problems of Yunnan Bazi agriculture are put forward from the restriction of natural environment and the limitation of social economic conditions. The factors that affect the development of Bazi agriculture in Yunnan Province are analyzed. The factors include the burdens born by Bazi agriculture, the natural endowment of Bazi culture, policy preference of Yunnan Province, the potential and direction of the development of Bazi agriculture. Countermeasures on developing Bazi agriculture in Yunnan Province are put forward: the first one is to improve the level of agricultural science and technology; the second one is to intensify the balanced development between mountainous areas and mountainous areas, industry and agriculture, urban and rural areas; the third one is to pay attention to the development and adjustment of ecological agriculture; the fourth one is to keep rational development.

**Key words** Yunnan Province, Bazi agriculture, Resources environment, China

Yunnan Province is characterized by its jagged and vast mountainous areas. 94% of its land is covered by mountains, plateaus and hills. The relatively flat and fertile land is called Bazi (an informal name of small basins among mountains and plains in Yungui Plateau). The Bazi agriculture plays a crucial role in Yunnan Province. Under the strategic situation of further implementing the plan of developing west China and constructing Yunnan Province to a bridge that connects South Asia and Southeast Asia, the traditional "Bazi agriculture" in Yunnan Province faces great developmental opportunities and unprecedented challenges as well. To develop the Bazi agriculture, the advantages and disadvantages of each area should be known clearly; the local situation should be considered to display the advantages and avoid disadvantages. The eco-agriculture should be launched vigorously, as well as the balanced development between Bazi agriculture and resources and environment. Displaying local feature and balancing urban-rural development is the actual road and inevitable choice for Yunnan Bazi agriculture and for realizing sustainable development in rural areas.

## 1 The developmental status and problems of Yunnan "Bazi agriculture"

**1.1 The developmental status and situation of "Bazi agriculture" in Yunnan Province** Bazi agriculture in Yunnan Province confronts complicated domestic and international situations. In China, the western development strategy is implementing; Yunnan is in a crucial state in the strategy of opening to South Asia and Southeast Asia and the geographic advantages of Yunnan is prominent; on the basis of concluding the

strategies of social economic development, Yunnan Province has made the developmental strategy for invigorating its industry; the development of industry may effectively drive the development of agriculture, but the booming mining, road construction and industrialization and urbanization will inflict bad impacts on Bazi agriculture. In the world, as the acceleration of globalization, the traditional market is facing the fierce competition in international market. Besides, the volatile climate and ecology worldwide add great uncertainty to the development of regional agriculture. How to development scientific and reasonable agriculture is the key problem confronted by Baizi agriculture in Yunnan Province.

Yunnan Province has more than 1 800 Bazi, accounting for 1/3 of total farmland of the whole province. In Bazi, the land is flat, the soil is fertile and climate is warm and humid. Many rivers run through the Bazi, so the irrigation is convenient. Bazi has a large population, especially the Bazi with large area. Through years' construction, Bazi with large area has become the political, economic, cultural and agricultural production base of each county in Yunnan Province. Besides, Bazi has become the area with large population and dense residences and transportations. It has displayed a crucial role in the construction of national economy in Yunnan Province.

Yunnan Province is located in mountainous plateau with low latitude, vast land and various types of land. The resources of sunshine, heat and water are abundant and the three dimensional climate features are existed. Bazi has rich species and is a famous ecological kingdom. Under rich and colorful climate and ecology environment, the Bazi has the actual situation of developing three-dimensional agriculture and colored agriculture.

### 1.2 Prominent problems in Yunnan "Bazi agriculture"

**1.2.1 Restriction of natural environment.** Yunnan Province has many Bazi, but generally, the Bazi is characterized by small area, dispersed distribution, multiple formation reasons. Due to the differences in terms of location, topography, climate

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and social economy, the development and use status of Bazi agriculture are different. The resources and environment situation differs hugely among different areas. The Bazi is mainly distributed on central part, eastern part and southeastern part of Yunnan Province. Most part of Bazi is covered by limestone, thin soil and shallow outcropping of foundation rock. The Bazi has long suffered from the damage of natural grass and forests, the exploration on slopes, which results in the exposition of soil surface. Washed by heavy rains, a large amount of soil is wash away, and the rocks appear, which leads to the stony deforestation. Yunnan has abundant water resources, but the regional and seasonal shortage of water exists. With the rapid development of economy in Bazi area, the demands of water has soared, which leads to the structural shortage of water. In some areas, the shortage of water has become very serious<sup>[1]</sup>.

**1.2.2 Limitation of social economic situation.** As the traditional prior industry, agriculture is in a disadvantaged state in market-oriented economy for its low efficient input and output. The development of agriculture and rural economy is tardy nationwide, the western China in particular. Due to insufficient infrastructure construction, high production costs, backward technology, high risks, weak competitiveness, the urbanization process in western China stagnates<sup>[2]</sup>, which can not effectively drive the development of rural areas and increase farmers' income. These problems cause the prominent marginalization of rural areas, the dual structural of urban-rural structure and large regional gap.

In western China, Yunnan is a typical province, which is characterized by mountains, multiple minority ethnic groups (51 ethnic groups, 26 of them have more than 5 000 populations respectively), border province (the aggregate boundary line is 4 060 km), large population, serious conflicts between land and people, inland province, undeveloped transportation and high transportation costs, limited social openness degree and rare connections of officials and other organization and administration system to the outside world, and conservative society. Agricultural personnel in rural areas of Yunnan Province has low educational degree, backward ideas and low agricultural technology level, the irrational land use in some areas has damaged the agricultural natural environment and caused the ecological and structural poverty.

The diversified natural ecological conditions in Yunnan Province are the basic situation for launching multiple economic activities. However, affected by unbalanced distribution of landscape, climate, soil, society and population, the agricultural activities are easy to surpass the threshold value of ecological balance and result in the degradation of ecological environment and the geological disasters. Besides the natural factors, human activities, such as deforestation, and blind exploration of slopes, have added the frequency of geological disasters. The blind and excessive scale planting of glue in Xishuangbanna has gravely damaged the natural water-keeping and climate-adjusting functions of natural forests, as well as the inheritance, upgrading of biological species and the ecological balance<sup>[3]</sup>.

## 2 Factors that should be taken into consideration in the development of Bazi agriculture in Yunnan Province

China continuously adheres to the stability and development of agriculture, rural areas and farmers. And China has adopted a series of policies for constructing rural areas and protecting land. In the strategy of developing west China, the government lays great stress on the development of agriculture. In the updated 12th Five-Year Plan, the government has clearly pointed out promoting agricultural modernization and accelerating socialist new village construction. And then, in the *Developmental Outline of National Long-term and Middle term Education Reform and Development* (2010 – 2020), the government points out that accelerating rural areas oriented vocational education and improving the technology and skills of agricultural personnel to enhance the income of farmers in west China and accelerate the development of agriculture and rural economy. The national policies and countermeasures have laid a solid foundation for the development of agriculture. The coordinated development with resources and environment in Bazi area and the balanced development with agriculture, industry, commerce and urban and rural area are the keys to the sustainable development of Bazi agriculture.

**2.1 Bazi takes the responsibility of diversified development** In Yunnan Province, which is characterized by more mountainous land and less great plain, the population, farmland, economy and culture are concentrated in Bazi. Bazi is the basis for the economic development of Yunnan Province<sup>[4]</sup>. Bazi is the competitive center of each industry. Under new developmental situation, the developmental tempo will be increased greatly. In Yunnan Province, except for Kunming City, more than 70% of towns out of 100 towns are located in mountainous areas. There is no county in Bazi completely. In the future, due to the population movement and ecological migration caused by geological disasters, the population pressure in Bazi area, as well as the conflicts of land use will become increasingly prominent.

**2.2 Natural endowment of Bazi culture** The Bazi culture in Yunnan is prominent. It has 49 Bazi, with the area of more than 100 km<sup>2</sup> and the Bazi area, which accounting for 6% of the aggregate land in the whole Yunnan Province. Bazi has concentrated 2/3 of population and 1/3 of farmland in Yunnan Province. Due to the fertile land and favorable climate, the Bazi has been the habitats for earlier human beings and developmental places for rice production and most Bazi are given the reputation of "grain-productive place". Distinctive natural conditions and people's hard work have made Bazi in Yunnan Province to be the best place for rice production and for economic development. In the long history, the rise and decline of ethnic groups contains colorful ethnic cultures, not only merge together, but also maintain their own distinctive features<sup>[5]</sup>. These distinctive features have huge potential for exploration and the prominent cases are Lijiang ancient city, Dali ancient kingdom *et al.* Agriculture, rural areas and agricultural culture are consistent. Realizing the effective development of agricul-

ture is an important section for protecting relevant culture.

**2.3 Policy tendency of Yunnan Province** Bazi agriculture in Yunnan Province is experiencing the historical changes. In the past thousands of years, due to the colorful ethnic features, the special Bazi agriculture is famous for its paddy fields. In recent decades of years, the Bazi is rapidly changed to construction land, which appears not only in Bazi with large area, for example, Bazi in Kunming, and Qujing, Chuxiong, Yuxi *et al.*, but also in relatively remote areas<sup>[6]</sup>. At the same time of achieving huge achievements, the social economic construction in Yunnan Province has accelerated the disappearance of Baizi. Yunnan Province is introspecting how to maintain the harmonious development between economy and natural ecology and reserve the natural landscape of Bazi agriculture and the traditional culture it carried. For example, some relevant departments suggested that adopts certain measures to keep farmland and move villages and industrial constructions to hills.

**2.4 The potential and direction of developing Bazi agriculture** Due to the rich resources, the actual agricultural income in western China, including Yunnan Province is high. It is caused by the relatively low land price and labor costs in western China, so compared with other areas in China and the same products in other countries, the fruits, vegetables, flowers *et al.*, have relatively strong price advantages, which is conducive to exploring the market both at home and abroad. The different regions should determine their developmental directions of distinctive agriculture according to different resource endowments.

Ecological agriculture, with flexible agricultural production and strong market adaptability, is the developmental direction and dominating model of Chinese modern agriculture. The excellent natural resources and natural environment of Yunnan Province determines its position of the kingdom of plants. Yunnan has great prospects of developing ecological agriculture. Owing to its advantages, the flowers, vegetables, fruits and flue-cured tobaccos and some other industries develop well. The Bazi agriculture should start form actual situation and sustainable development; adjust structure; coordinate resources and environment and take industrialized road.

### 3 Countermeasures and suggestions

The ecological system in Bazi area is relatively fragile, under the advantaged situation of social economic development, Bazi agriculture in Yunnan Province should seize the opportunities and reach balanced, scientific and reasonable development with resources and environment.

#### 3.1 Improving agricultural science and technology level

The highlight of constructing Yunnan modern agriculture is to improve the output of land<sup>[7]</sup>. The improvement of output relies on the great enhancement of agricultural science and technology level. For example, the distinctive fresh flower production has taken half of the national flower market, but the technology content is low, and there is large room for development<sup>[8]</sup>. The basic way out for development relies on science and technolo-

gy. In the past, China paid much attention to the construction of agricultural science and technology talents; the establishment of the innovation and promotion system of agricultural science and technology and rational adjustment of industrial structure. The suggestion on intensifying the vocational education, which takes rural areas as orientation, newly put forward by national education development outline is an important measure for promoting the advancement of the whole rural areas from the global perspectives.

#### 3.2 Intensifying the balanced development of Bazi area and mountainous areas, industry and agriculture, and urban and rural areas

The Bazi area and mountainous area have close internal relations, both the prevention and control of unexpected geological disasters and soil erosion in small waters; and the rational movement of agricultural industrialization population, market population and agricultural population all need the comprehensive regional plan, coordination and the timely plan according to actual situation. The development of modern economy includes the balanced development between agriculture and industry, between towns and villages; intensify the transfer of rural surplus labors; increase non-agricultural income and motivate the development of agriculture and rural areas.

#### 3.3 Paying attention to the development and adjustment of ecological agriculture

Ecological agriculture pays attention to ecological balance and lays stress on diversified planting and the balanced development with environment. Compared with traditional agriculture, ecological agriculture is a long term and sustainable developmental form. Yunnan Province has the advantages in developing ecological agriculture. The Bazi agriculture in Yunnan Province should develop distinctive agriculture such as colored agriculture, organic agriculture, export-oriented agriculture on the basis of displaying the geographic features and comparative advantages and implementing the principles of ecological balance. The current major products of Yunnan Bazi agriculture include flue-cured tobacco, wild mushrooms, kidney bean, tea, aromatic oils, and coffee *et al.* In the developmental plan, the changes of natural and social conditions should be considered and the structure should be adjusted to complete the optimization and upgrade of agricultural structure; overcome the structural conflicts and multiple level conflicts in the agricultural development, and intensify the stability of agricultural production.

#### 3.4 Keeping rationality of development

As for nature, Yunnan Province should intensify the governance on geology and ecology and establish environmental shields for developing agriculture. In view of the problems of geological disaster, stony desertification and soil erosion *et al.*, each Bazi area should determine the environmental governance cases with differences and implement them. In social economic activities, the man-made damage on natural ecology, such as deforestation for planting glue, should be reduced. Several years ago, the speculation on puser tea has thrown a heavy blow to tea industry. So in the process of agricultural maketization, the governmental department should intensify its role in directing; mas-

ter market trend; control and avoid agricultural risks and avoid the huge fluctuation of agricultural production.

Bazi is widely distributed in Yunnan Province. Due to the different water, light, heat and natural plants of Bazi, different industries should be developed according to the local conditions. At present, the global climate is volatile and geological disasters, drought and floods happen frequently, which has high demand on the development of agriculture. The status quo of resources and developmental trend, force Yunnan Province to make the balanced developmental strategies and timely adjust them, on the basis of fully respecting the natural situations and natural laws. The resources and developmental trend of Bazi area has determined the basic developmental direction of Bazi agriculture.

## 4 Conclusions

The Bazi in Yunnan Province is the center for modern social economic development and it carries multiple natural heritages of history, ethnic groups and ecology, and the traditional Baizi agriculture and agricultural culture are important carriers of the heritages. Agricultural production is in a strategic position in China, which has a large population, especially in southwest minority ethnic groups. The special national policy made big inertia of population growth and the clash between population and resource and environment. At the same time, the demand of social economic development inflicts great impacts on traditional agricultural economy, social culture and values. So far, 83.6% of population in Yunnan Province is rural population and most counties and cities rely on agriculture or agricultural economy<sup>[9]</sup>. Under new situation, Yunan Province should seize its geographic opportunities and resource opportunities and mirror the advanced thought pattern both at home and abroad. Yunnan Province should make long-term strategy from the national and global perspectives. Realizing the balanced development with resources and environment is the practical road for ensuring the scientific development of Bazi agriculture in "Yunnan Province".

(From page 22)

Jiangsu Province. So we need to change the current industrial structure in Jiangsu Province. Through the correlation analysis of the output value of industry, the construction industry, the financial industry, and real estate industry, and GDP, we can find that real estate industry makes the greatest contribution to economic growth of Jiangsu Province; financial industry and construction industry make relatively small contributions; the potential of industry needs to be further developed. In the process of economic development of Jiangsu Province, the industrial structure is yet to be further optimized so as to give play to the role of industry in promoting the development of Jiangsu Province.

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