

## **Agricultural Development in Ningnan County: Government–Community Interaction to Promote Technology**

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## Agricultural Development in Ningnan County: Government–Community Interaction to Promote Technology

An Interview with Mr. Gao Jianwen, Chairman, Steering Committee of the People's Congress of Ningnan County, Sichuan Province, China



**FIGURE 1** Gao Jianwen speaks at a meeting on annual agricultural planning in Ningnan County. (Photo by Tang Bo)

*“Since I was born into a farming family and spent my childhood there, I know what farmers long for and how I could help them. I spent about 20 years in townships working at the grassroots level, so I have a lot of first-hand experience.”*

*Ningnan County, Sichuan Province, China, is a small, typical mountain county with an area of 1670 km<sup>2</sup> and a population of 167,000. In the past 20 years, great achievements have been made in economic development in general and agricultural development in particular.*

**Tang Ya:** As a start, could you please tell us something about your personal and professional background?

**Gao Jianwen:** I was born into a farming family. My parents are farmers in Xichang. I graduated from Xichang Institute of Agriculture, where I studied from 1964 to 1967. From 1968 onward, most of my life was spent in Ningnan County, working as a clerk, secretary, and party secretary in townships and districts. I was in charge of the construction of Songxin Sugar Processing Factory, and after that, I was Director of the County Committee of Agricultural Development and Vice Governor of Ningnan responsible for agriculture, science, and technology. Since 1998, I have been Chairman of the Steering Committee of the People's Congress of Ningnan County.

**As the Vice Governor of Agriculture, how do you assess the level of agricultural development in Ningnan County?**

Compared with the country as a whole, I think agricultural development in Ningnan is at an intermediate level, and within Sichuan Province, the county is at a higher-than-average level.

**What are the main problems and difficulties in agricultural development?**

There are 3 problems. The first is education. Though we have 9 years of compulsory education, vocational and technical education is poor. After 9 years of compulsory education, graduates have little practical knowledge of agriculture. Only some secondary and high-school gradu-

ates are eligible for higher education, and those unable to enter university or specific vocational/technical institutes usually find that what they learned in school is not useful in solving problems in the fields. We need to train these young people because they are the future generation of farmers. The current curricula should be amended to include some technical aspects, at least for schools in rural areas, so that those students who cannot enter universities and technical schools can easily adapt themselves to agricultural activities.

**Do you have plans to seek manpower support from national institutions and governments, such as central or provincial institutions and agencies, or international institutions such as ICIMOD?**

We are seeking support from various sources. We have good linkages with technical institutions in the cash crop sector, especially in mulberry and tobacco. The second problem is severe soil erosion and continuing environmental degradation. A number of factors contribute to these problems. One is population increase, which we have not been able to control. When I came to Ningnan in 1968, the population was less than 80,000, but by the end of 1999, it was 167,000—a doubling in 30 years. The population has exceeded the carrying capacity of the land, and the environment is fragile in many areas.

**Soil erosion has been a serious problem in this region, but it seems that local farmers do not see this as a threat to their livelihoods. When I came to Ningnan with an American expert in 1997, he described soil erosion as “bleeding mountains” when he saw the very muddy yellow and brown rivers after rains. What do you think of this description?**

It is a very accurate description of the situation. If this continues, the people will also start “bleeding” because they depend on the mountains for their livelihood.

A number of factors contribute to soil erosion, but clearing of natural vegetation has been regarded as the major one. Do you think that what we gain from clearing forests compensates for what we lose from soil erosion?

The loss is much greater than the gains. I believe we gain only 20% of what we lose. In this region, there is a misunderstanding. Many local government officials and farmers see the value of forests only in terms of the timber that can be extracted from them. But forests are also valuable for other reasons such as water conservation, reduction of pollution, and biodiversity (plants and birds) conservation.

The third problem in Ningnan is rural energy. If we cannot supply sufficient energy to farmers, they have to use natural vegetation as fuelwood. But the rural energy supply situation has been greatly improved in the past 3 decades, thanks to increased use of biogas, fuel-saving stoves, hydropower, solar energy, and by-products from agricultural activities. About 70% of the farm households in the county no longer need to use natural vegetation as a source of fuelwood.

This integrated way of solving the energy problem should be useful in other parts of China and other countries in the Hindu Kush-Himalaya region. How important are improvements in education, soil conservation, and rural energy for sustainable mountain development?

Education obviously influences the quality of the population and the workforce. It takes much longer for illiterate than for educated farmers to adopt new and improved technologies and new knowledge. It is also more difficult to reduce poverty in an area where most of the population is illiterate than in an area with a largely educated population. For example, the agricultural channel of China Central TV (CCTV) is broadcasting many new technologies, new knowledge, and new practices. But to understand and

adopt what is shown on this channel, literacy is necessary.

Soil erosion and environmental degradation have also limited mountain development. Crops have become less resistant to drought. We have now built many bench terraces with stone risers, which have some limitations. Hedgerow technology, however, combines forests and agriculture. When I came to Ningnan 30 years ago, I was told that one rice pest had been very common in Xiaotianba village before forests were planted on Yuanbaoshan hills and in Xiaoliukou. But since the planting of forests in the late 1980s, with technical assistance and guidance from the Chengdu Institute of Biology, all the farmers have told me that this rice pest has not been seen for about 10 years. This clearly indicates that a good environment will help maintain good agriculture.

Soil erosion is closely linked with poverty. In China, soil erosion and poverty are called twins. Do you believe that soil erosion and poverty together constitute a vicious cycle?

Yes. When land productivity is low, farmers are poor. Because farmers are poor, they are always trying to encroach on marginal land and forests, which results in soil erosion. Because they are poor, they cannot invest in inputs or technologies that increase yields.

What about cropland in Ningnan? Has the government adopted any policies to encourage farmers to adopt new practices?

Major efforts are being made to develop cash crops, especially sericulture, sugar cane, and tobacco. We have tried to use government projects to help local farmers, including soil and water conservation projects supported by the central government, integrated agricultural development, and others. An ICIMOD project on Appropriate Technologies for Soil Conserving Farming Systems has been very helpful. It has brought new ideas, which is very important in mountain regions. We have adopted integrated mountain development, focus-



**FIGURE 2** Bench terraces have been promoted extensively as a soil conservation measure, but they require a high level of investment for construction and maintenance. (Photo by Tang Bo)

*“Education is very important. We cannot expect good development in mountains without rapid development of education in areas where most of the population is illiterate.”*





**FIGURE 3** Contour hedgerow intercropping technology (also called Sloping Agricultural Land Technology, or SALT) has emerged as an important alternative to bench terracing. (Photo by Tang Ya)

Dr Tang Ya is an agroforestry/soil conservation specialist of ICIMOD and has worked in the fields of biogeography, plant biosystematics, agroforestry, and sustainable mountain development for more than 15 years. He has published some 70 articles in the above fields. He has been the key person for research and development of the contour hedgerow intercropping technology (SALT) in the HKH region and in particular in China. Before joining ICIMOD in 1995, he worked with the Chengdu Institute of Biology, Chinese Academy of Sciences, based in Sichuan Province.

The interview was proposed by Dr T. S. Papola and Dr Tej Partap of ICIMOD. It was arranged and conducted by Tang Ya in China in June 2000. The interview was in Chinese and translated into English by Tang Ya. Dr T. S. Papola reviewed the text and provided useful comments. Ed.

ing on water, forest, cropland, and roads to promote economic development and environmental conservation simultaneously.

If farmers accept hedgerow technology, it will solve the problem of the 3 “Fs”: fertilizer, fodder, and fuelwood. A sufficient supply of green fertilizer will improve crop yields, and farmers could collect fuelwood from hedgerows near their homes and land, giving them more time for agricultural activities and economic development. This would help solve the educational problem: if farmers have money, they will send their children to school instead of keeping them on the land to fetch fuelwood or fodder.

When I came to Ningnan in 1991, farmers asked me why trees should be planted on cropland. Has this attitude changed?

Greatly. Frankly speaking, even I did not initially believe what you said about this technology, especially that planting trees on cropland could improve soil fertility. I thought it would help reduce soil erosion, but I did not believe it could improve soil fertility. Later, when I saw the vigorous growth of mulberry trees within hedgerows, I believed it. Demonstration is the most useful way to educate people. This is why we have been willing to bear some of the cost of training courses each year and organize visits to project sites for large numbers of people.

The county government has played a crucial role in the success of this project in Ningnan. What is the government's attitude toward this technology?

The government has realized that this technology is useful in mountains and that it can promote economic development. It has therefore issued a policy directive to encourage farmers to plant hedgerows. The government will reimburse the costs of planting materials but only when hedgerows have grown. Although government investment is relatively small, the benefits have been important.

Only educated farmers adopt the technology; some have adopted it without subsidy. Although this technology costs money, it produces much greater gains than bench terraces. We have spent a great deal building bench terraces. I believe that, with gradual investment from the government, the whole situation will change. Major developments in Ningnan County have occurred only during the past 20 years. In 1983, cocoon production was only 500 tons. In order to promote it, we encouraged farmers to plant more mulberry trees and to rear more silkworms. Last year, the direct cash income was 50 million yuan (8.28 yuan = US\$1). Government investment has contributed to this achievement. Similarly, if we want to promote hedgerow technology, the government must invest a lot. Otherwise, it will take another 20 years before this technology is widely adopted.

Do you think the experiences of Ningnan can be applied to other parts of China or the HKH region and can Ningnan County send experienced people to other places or countries to help them with development of mountain agriculture?

I have visited many places and I think the experience of Ningnan would have potential in many other places. For example, hedgerow technology should be useful in Yunnan Province, where more than 30 million ha of cropland is on slopes greater than 25°.

We are willing to send our experts elsewhere. We would also receive people from other countries. We will share our experience with them without reservation. For example, government officials, technicians, and farmers from Puge County were sent to Ningnan. They stayed and worked with our own officials, technicians, and local farmers for at least half a year. They learned a lot by seeing things happen on the ground.

Thank you for your time and your willingness to share your experience with us.