

ORGANISATION AND MANAGEMENT IN RURAL COMMUNITIES

Functions of the Village

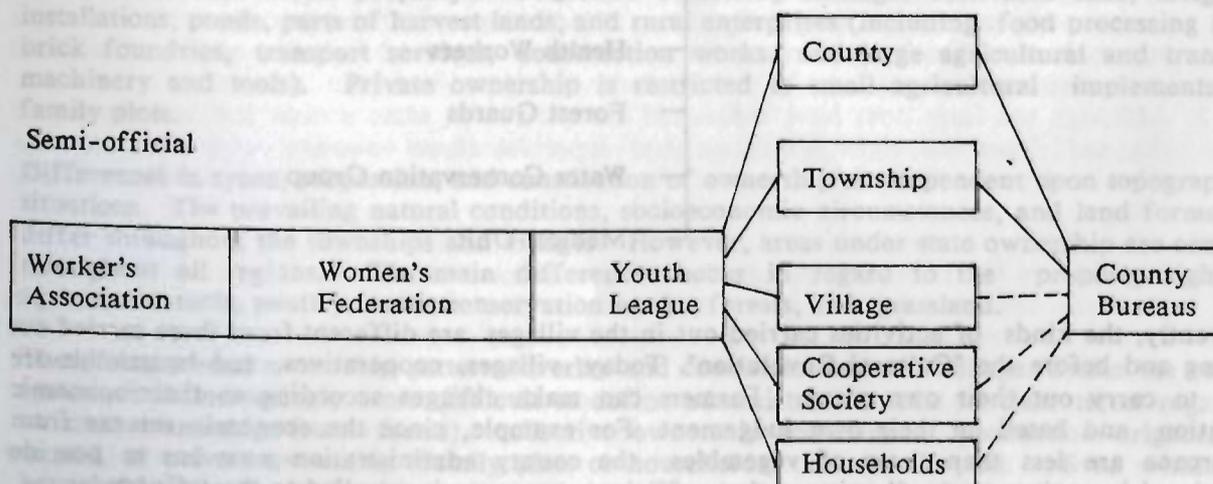
Organisational Characteristics of Villages. There are four major characteristics of villages in mountain areas:

- o A certain population scale is maintained. In Miyi County all villages have between 1,000 to 5,000 inhabitants.
- o Predominance of natural groupings, some of which are ethnic, groups that have a long history of coexistence.
- o Villages have been subject to a series of name changes depending upon political changes and different management systems. However, the historical units have remained intact.
- o The village is only an "organisational unit" under the township. It has no electoral, government or legal system of its own.

Position of the Village in Rural Organisation. The village is an administrative unit under the township. It administers the cooperative society under which operate the households. This results in a vertical organisation structure as presented in Figure 4.1.

Village Structure. Each village is similar. The village head is in charge of organisation and management. He also relays directives from the higher administrative levels to the village and vice versa. He is responsible for administering the various cooperative societies and for heading the people's committee.

Figure 4.1: Hierarchy of the Organisational Structure

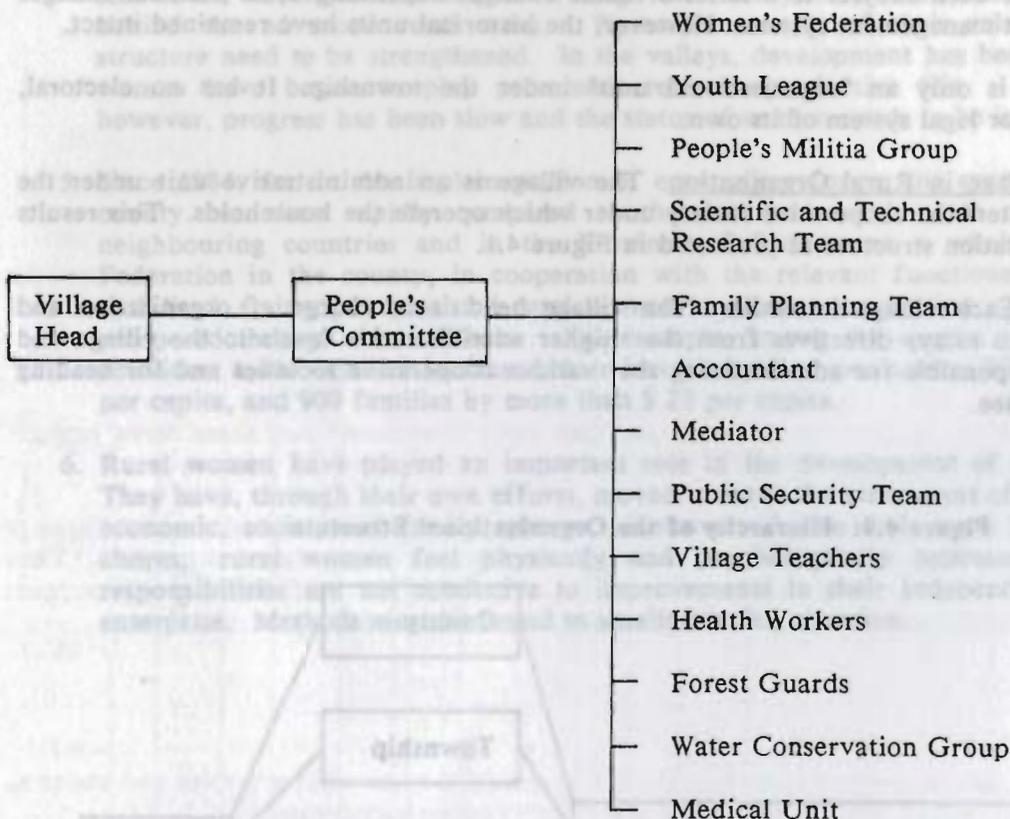


The people's committee consists of five to seven members. They and the village head are selected by the villagers. The committee is responsible for village development and day to day administration. Each member is responsible for a specific area such as production, accounting, militia, women's services, public security, and mediation. Specialists can be appointed by the committee, to deal with specific problems, on a full time or part time basis. The organisational structure in the village is given in Figure 4.2.

Organisational and Management Functions

The village, therefore, is not only in charge of its own administrative affairs, it is also responsible for production management. Without this being so, it would not be possible for the village to implement the directives coming from the county and township levels. For example, had the village not been in charge of agriculture, management of water conservation would be impossible and the prevention and cure of plant diseases would be extremely difficult.

Figure 4.2: Organisational Structure in the Village



Currently, the kinds of activities carried out in the villages are different from those carried out during and before the "Cultural Revolution". Today, villages, cooperatives, and households are free to carry out their own plans. Farmers can make changes according to their economic situation and based on their own judgement. For example, since the economic returns from sugarcane are less than those of vegetables, the county administration now has to provide additional incentives to the farmers so that sufficient sugarcane is supplied to the refinery.

Similarly, a Cooperative Credits' Association is established in each township in order to provide funds to farmers for agricultural expansion. The interest rates charged are lower than those charged by the Government Credit Society. The overall list of village functions is presented below.

1. To implement policies coming from higher administrative levels. The village head has the right to convene and preside over village meetings for this purpose.
2. To elect representatives to the People's Congress at township level.
3. To implement the tasks assigned by the township. These may include conscription, state purchasing of grain, family planning, etc.
4. To implement village welfare services and pay teachers' salaries; to provide relief for widowers, widows, and orphans as well as providing health services for the village.
5. To sign contracts with cooperatives, household groups, and households for agricultural production tasks.
6. To facilitate the use of agricultural technology and commercial services by farmers.
7. To mediate in disputes among the cooperatives.
8. To direct the distribution and management of the collective fund.
9. To organise and manage rural enterprises.
10. To coordinate with other villages in water conservation, highway construction, forestry, and cooperative enterprises.

Ownership Patterns under the "Contractual Responsibility System"

Current Ownership Types. There are currently three types of ownership in Miyi County: state, collective, and private. Collective ownership is, however, predominant over the others.

State Ownership is confined to land, rivers, communication networks, highways, large reservoirs, and parts of the forest property. Collective ownership manages cultivated land, irrigation installations, ponds, parts of harvest lands, and rural enterprises (including food processing mills, brick foundries, transport services, construction works, and large agricultural and transport machinery and tools). Private ownership is restricted to small agricultural implements and family plots.

Differences in types, proportion, and constitution of ownership are dependent upon topographical situations. The prevailing natural conditions, socioeconomic circumstances, and land formations differ throughout the townships and villages. However, areas under state ownership are common throughout all regions. The main differences occur in regard to the property rights to agricultural tools, poultry, water conservation works, forests, and grassland.

Therefore, several ownership patterns overlap and coexist in the same village. Under the current system, it is increasingly more difficult to define administrative units in clear terms regarding national ownership (state farms), collective ownership (communes, production brigades, or teams), or private ownership (family plots or households) than in the past. Even within one household, collective and private ownership systems coexist.

State Ownership

In recent years, there have been progressive economic reforms in China. The state ownership pattern has changed to one that is similar to those of the villages in terms of management and labour arrangements. Some characteristics of national ownership remain in the overall management pattern but collective production and private contracting systems are also practised.

On the Miyi State Farm there are 124 employers on 19 ha of land. One fifth of this area is occupied by a pond where fish and ducks are raised. In addition, cows are raised and grain, sugarcane, and vegetables are grown. The following forms of ownership are in practice.

1. The land, pond, weir, and cows belong to the State. The weir for irrigation is used by the whole farm and is maintained collectively. The land, pond, and cattle are contracted separately and managed by groups or households.
2. Ducks, fish, pigs, large tools, and agricultural machinery (tractors and automobiles) are collectively owned and managed. The ducks and fish are, however, contracted out to households.
3. Small agricultural implements (hoes and ploughs, for example); small livestock (chickens, rabbits, and pigs); septic tanks, and seeds are privately owned and managed.

Before 1984, State Farms came under state ownership completely. Funds were allocated annually and they were managed according to the regulations laid down for State Enterprises. Wages were paid to the staff and other workers on a monthly basis and profits and losses accrued to the State. During that period, the Miyi State Farm lost \$ 8,000 per year on average.

Since 1984, contract management has been instituted. Fish, ducks, and cattle have been contracted to different collectives and the planting of sugarcane and paddy as well as pig-raising have been contracted out on a household basis. Every contractor has to pay a certain quota back to the farm based on the type of contract. Any surplus of profit over the quota belongs to the contractor. Likewise, the deficit has to be covered by the contractor also.

Although the State Farm comes under the national ownership category and many of its characteristics are quite specific to this category, it has some characteristics in common with the villages. Below we have compared these characteristics.

1. In comparison to the ordinary village, the farm has a comprehensive plan and assumes social responsibilities and obligations. Production must comply with the County's stipulations. These may include the provision of improved varieties of fish, fowl, and cattle outside the farm.
2. Although the farm does have individual contracts with some groups and households, all the staff have the right to discuss and supervise these contracts. All plans must be submitted to the "Worker's Congress" for approval. This does not apply to the ordinary villages.
3. The farm is better organised than the villages. It has 14 management personnel, including the Farm Director and a deputy. Management personnel are in charge of finance and accounts, supply and marketing, production and technology, and reception. The "Worker's Congress" has 20 members. Its function is to represent the staff, approve production plans, supervise finances, allocate work, and appoint the farm director (by election). It is also the responsibility of the "Worker's Congress" to impeach and dismiss the Director if his/her performance is found wanting. This, too, is a process that does not apply to the ordinary village.

4. The farm has a well-organised material and technological supply system. Although contracts are made with groups and households, common activities such as feed distribution, manure supplies, seed propagation, agricultural tool acquisitions, external relations, and traffic are managed by the management personnel and their offices. Therefore, production contractors are guaranteed supplies and technological inputs. This does not apply to the villages.
5. Food grain is supplied by the State on the basis of 16 kg month per person. In the villages, the peasants are dependent upon what they can grow or else they must purchase grain on the open market.
6. The difference in income between the rich and the poor is on average less than in the villages. In 1987, the average annual income per person was \$ 380. The highest income was \$ 1,080. The director earned \$ 860 and the lowest income earned was \$ 270.

Collective Ownership

Before 1984, accountability in the collective ownership system was at three levels: "People's Commune", "Village Brigade", and "Cooperative". This has changed since the introduction of the "Contractual Responsibility System". Currently, collective ownership operates at the following levels: the village, the cooperative, and the household group. The townships are not considered to be collective production units, except in the case of the few enterprises that they still own. At present, collective ownership does not operate as a single unified system but has been replaced by a variety of ownership patterns that coexist, change, and reorganise constantly. Management under a collective ownership system does not include a large number of activities as it did previously. Its major role is confined to managing village enterprises, technical agricultural inputs, and public welfare. Day to day activities have now been replaced by household and collective contracts. The activities are flexible and are determined by the village, the cooperatives, and the households themselves.

Principal Collective Activities. Collective management of the cooperative economy decreased considerably after the introduction of the "Contractual Responsibility System". At one point, collective activities had almost completely disappeared; although they have now gradually started to recover. Currently, collective activities in Miyi County cover the following areas:

- o water conservation projects;
- o technical services such as those involving the prevention and control of plant diseases and pests or introduction of progressive technology;
- o information in relation to production before, during, and after production activities; and
- o welfare activities for the benefit of those who, for some reason or other, cannot engage in normal labour activities.

In their organisation, these activities differ from that in townships and villages. To illustrate these differences we have taken specific examples from different villages.

1. Guabang township has a collective water conservation project. It is being implemented by laying down a rule for the contribution of 20 days of voluntary labour per year; by charging fees for water based on the total amount of cultivated land in irrigated areas; and by insisting that families that cannot contribute labour pay for labour hire or send substitute labour. Labourers are hired by the Water Management Committee and are paid approximately 40 cents for every cubic metre of earth that they dig.

When a new water conservation project is to be established, the Water Management Committee under the township administration organises the construction and deputs the necessary labour. Labour wages are met through the above-mentioned water fees. When the construction is complete, annual maintenance works are undertaken by voluntary labour. Should voluntary labour be insufficient, the water management committee uses the money realised through water fees to hire the necessary labour.

2. In Qingpi Village, an service station has been established by the township administration. It is manned by technicians from the villages and operates on a part time basis. The technicians are partly self-employed on their own land and draw half of their wages from the village. Their responsibilities are to guide every household on agricultural problems such as plant disease and pest control, advice on planting periods, and improved species, etc. One of the agricultural technicians from Qingpi village is deputed to work in the township service station for one month a year.

Also, production and other technical services are provided by the agricultural service station. Production services include the allocation of transport; the distribution of seeds; the distribution of chemical fertiliser; and the dissemination of information concerning products and supplies.

3. In Qinggang Village, social welfare activities for the welfare of the unemployed include staple food supplies to households who have the right to "five guarantees" (food, clothing, medical care, housing, and burial expenses). Grain is distributed on the basis of an allotted average per head. The land belonging to such households is cultivated by labour employed by the collective but the produce belongs to the household. Pocket money is also shared equally among every household under this category. Usually, the amount comes to about \$35 per year. Each villager pays on average 27 cents annually to the township administration towards the support of these households and this in turn is allocated among the villages.

Production Contract

After the implementation of rural reforms, the "contract system" was introduced. Agricultural production is realised through a series of contracts made at different levels. The county administration signs a contract with the township, the township with the village, the village with the cooperative, and the cooperative with the household. The content of these contracts includes such items as the types of crops, areas of cultivation, and the amount of produce over a one year period. The normal contract system is not very popular in Miyi County because the amount of work allocated to each household is excessive; variability in the productivity of land among the households is high; and the amount of cultivable land is limited. This means that farmers are not confident that they can fulfill the contract obligations. As a result, only 11 or 12 townships operate the normal "Contract System". However, the "contract system" is retained for special products. A good example of this is fruit production which has three types of "contract system":

- o "Team Contracts" are carried out by cooperative teams where orchards are large enough and where the trees are owned collectively. The orchard is divided into plots and these are assigned to households. Income is distributed individually according to the amount of work expended and a percentage of the total income is put aside for improvements and extensions.
- o "Household Contracts" operate in hilly areas where trees are scattered and where less than 500 fruit trees occupy each piece of land.

- o "Household Union Contracts" operate by dividing the total number of trees among a collection of households (e.g., in Dushu Village, 14 households have an orchard management contract with the village). Five aspects of management are controlled by the union as a whole: planning, nursery stock, management techniques, control of pests and diseases, and sales. Each household has a separate production contract with the union. During the first three years, the village does not take any of the profits; from the fourth year to the seventh year the village takes 1.5 kg of fruits per tree; and thereafter, the village takes 2.5 kg of fruits per tree and \$ 81 for every ha of land.

Amongst the three contract systems, the third appears to be the most satisfactory. It not only involves production, techniques, and sales but also fixes the output and income at household level which makes it more interesting to farmers.

Contract Particulars. Contracts are drawn up by the township administration. These are sent out to every cooperative at the beginning of the year. The cooperatives and households, jointly and consultatively, fill in the forms. The contract becomes effective from the date of its acceptance by the township administration. The particulars include contract period, method, legally responsible individuals, and so on. The material and technical conditions relevant to the contract are also provided. Production targets to be met and dues to be paid are also stipulated. Responsibility for paying state taxes is jointly met. In addition, all regulations concerned with the use and protection of public property must be observed. Conditions under which contracts may be terminated are also outlined.

A detailed description of how such a contract works can be taken from the example of Qingpi village. Its cooperative society has 237 members and on average each member cultivates 0.044 ha of land. Vegetables are produced as a cash crop.

The responsibilities and benefits laid down in the contract are as follows:

- o Each person must plant 0.022 ha of sugar cane and 0.022 ha of vegetables.
- o Each person must pay \$ 5.40 to the cooperative society and \$ 4.90 per year to the State in agricultural taxes.
- o Each person can buy 250 kg of rice at state-controlled prices after he has sold 600 kg of chillies and cucumbers at state-controlled prices.
- o The right to use the contracted land extends for 15 years and the cooperative cannot take back the land during this period.
- o Land must be properly utilised and cared for. It cannot be bought and sold but it can be exchanged with someone working under the same contract.
- o Responsibility for public welfare (as assigned by the collective) must be undertaken. In return, the parties issuing the contract must ensure:
 - o the provision of fertiliser at state-controlled prices;
 - o technical guidance and services.
 - o collection of annual taxes (\$ 5.40 per head) and use them for the benefit of the collective; and
 - o the maintenance and protection of public property.

Should the contract be broken by the farmer, any of the above services may be discontinued by the parties issuing the contract. However, negotiations usually take place in an effort to solve the problem. If, on the other hand, a contract is broken by those issuing the contract, submission for compensation may be made to higher authorities by the farmer.

Labour Exchange

Labour is exchanged on a reciprocal basis between farm households during certain seasons. It is very common in Miyi County and exists in each of the eight villages studied. There are several reasons for the prevalence of labour exchange and these are outlined below.

After the introduction of the "Contract System" in 1982, farming activities were based on single household units and were heavily reliant on manpower. Farming is undertaken on a very small scale and the level of mechanisation is low. In addition, farming is a seasonal occupation. Sowing and harvesting, for example, have to be completed within a limited period of time. Consequently, farmers often face a labour shortage problem in the busy periods. Most households cannot afford to hire labour and those who can are slow to leave traditional customs; hence, the evolution of the labour exchange system.

Remuneration and types of labour exchange among different households are roughly equal in value. For example, one day's labour merits one day's labour in return in the same season between any two households. In other words, it is an exchange of equal value in terms of time but the households do not bother about the concrete nature of the work performed. This is an important factor if the labour exchange system is to be maintained over a long period of time. No money changes hands and this is an important distinction between exchange and hire. In Miyi County, labour exchange takes place in the daytime and food may be supplied by the host. This results in three types of labour exchange all involving some kind of extra remuneration as follows:

- o Host does not provide food but may provide cigarettes, beer, or other beverages. (This is the most common kind of exchange in Miyi county and involves Qingpi, Dushu, and the State Farm).
- o Host provides lunch. (This is common in Guabang and Xizie). This system is the second most common but it has a number of drawbacks. The most common drawback is that the provision of lunch can degenerate into competitive feasting among households. (In the case of Guabang and Xizie, the township administration had to issue a ban on expenditure on "lunches").
- o The third type of exchange is that in which the host only supplies tea and drinking water. In this case, the relationship is based only on labour cooperation. Although this is rare in Miyi County (it is only practised in Kelang Village), it is the ideal type of labour exchange.

There is no fixed pattern to labour exchange, no leadership, and no organisers. Sometimes it is coordinated by cadres from the village and township but usually it is organised among the participating households themselves.

It normally takes place between neighbours or relatives in the same village but it can take place between farmers in two different villages or townships. For example, farmers in Guabang township exchange labour for rice planting with another township.

The number of labourers exchanged differs according to the type of work. The lowest number is two and the highest over 30. Commonly, however, seven to eight helpers are sent. Ten households can exchange labour among themselves on a stable basis over a long period of time.

The sequence of exchange is determined by the order of activities in individual households. Usually, there are no problems with this system because all households do not undertake the same tasks at the same time.

Labour exchange takes place throughout the year, but is more prevalent during the busy seasons. In Miyi County, the busiest season is from December to March, because, in this period, farmers harvest the sugarcane and sow and harvest early spring vegetables. The second busiest season is from June to September when crops sown in Spring are harvested and winter crops are planted. As a result, these two seasons have the highest frequency of labour exchange.

Labour exchange is a traditional system and it was very common before the "Commune Period". During the "Commune Period", labour exchange disappeared because the village headman arranged farming activities for the whole village. After the introduction of farm output quotas, labour exchange reappeared. However, with the change from a subsistence economy to a commodity-based economy, labour exchange will gradually be replaced by wage labour. The result of work distribution, based on the "Responsibility System" is that the means of production are contracted out to households. This means that everything produced belongs to the household apart from that portion that has to be paid as taxes. The amount of taxes collected is standardised and is based on the size of land area and size of population. This means that the more one works, the more one earns so that there is no longer any form of collective distribution. However, collective redistribution still exists. The collective still has the right to deduct a certain percentage from each contracting household and this income is redistributed in a number of ways.

- o For the special care of the families of militia men and revolutionary martyrs.
- o For the care of the disabled
- o For paying the wages of cadres
- o For the development of welfare services
- o For investing in collective businesses
- o For redistribution to families if any surplus remains after meeting the above expenses.

Redistribution of surplus among households does occur in villages where there are good collective enterprises with abundant income. These are still very few in Miyi County.

Because of work and management by households; among which there are great differences in topographical conditions, supply of natural resources, and infrastructural facilities; production levels also vary a great deal and this has resulted in a wide income gap between the rich and the poor.

Some families, with many pairs of hands and good working conditions, earn \$ 2,700 a year. This is far more than the average income of workers, professors, high ranking officers, or State leaders. However, at the other end of the scale, there are extremely poor families, who just get enough to meet their basic necessities, and there are yet others who barely get enough to survive. Kelang village is a good example of this discrepancy. The highest income is \$ 270 per capita per

annum and this accounts for 25 per cent of all households in Kelang. The lowest income is \$ 16 per capita per annum and this accounts for five per cent of all households. The average income for the village is \$ 122 per capita per annum. The rich families own trucks and tractors. Six families have private trucks and 38 have private tractors. At the same time, three families have barely sufficient to cover their basic needs and live on relief provided by the collective fund.

Before the introduction of the "Contract System", this kind of discrepancy between rich and poor did not exist. However, most households were low income households; the average income being \$ 27 per capita per annum. Now, most households earn more and standards of living have improved. Those households with decreased incomes are rare but the disparities make the poverty of those few households more obvious. This is the difference between gradual development and rapid development. Most households support the present policies and are not desirous of change. However, the cadres have different points of view. They believe that the "Contract System" should be revised within the spirit of the present system.

We examined the situation of some of the impoverished families and analysed the reasons for their poverty as follows:

- o the families are short of labour;
- o the families are not too intelligent and have not been able to implement production plans; and
- o The channelising of the means of production is faulty; it permits those who have favourable contacts to buy fertilisers etc. at state prices and resell them at much higher prices which many farmers cannot afford.

The village headmen state that it is impossible to eliminate the wide gap between rich and poor. However, some special policies have been formulated in an attempt to do so. They are:

- o guidance to poor households by cadres and cooperative societies;
- o reformation of essential supply channels; stress is to be laid on the support of poor households and the Government is to be requested to supply essential production inputs directly to the households; and
- o increase of subsidies to poor families by increasing reserves and setting up additional collective funds.

Natural Resource Utilisation Patterns

Innovations in Optimal Use

In the villages of Miyi County, at present, resource use is not at the optimum. For example:

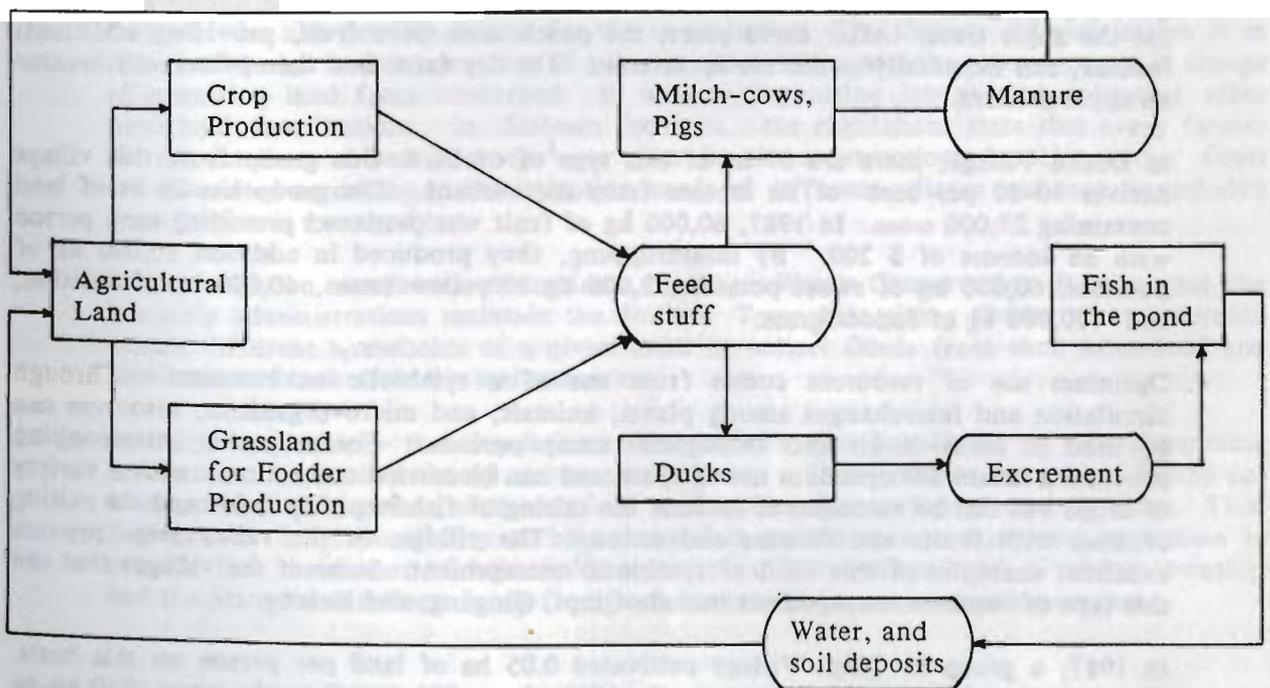
- o optimum utilization of water and soil resources is limited;
- o resource use is based on low level traditional agriculture and rarely on post-harvest processing; and
- o resource use is widely dispersed amongst different production units (e.g. township, village, or family).

In recent years, however, with the development of "vertical agriculture," advances have been made in the optimum use of natural resources. This has been based on planning for "vertical agriculture" as the focus for a comprehensive agricultural system. Resource use varies from the valley to the middle and high mountains. Each village has its own characteristics in terms of resource use. In the eight villages studied, we have found the following types of resource use to be common:

1. Optimum use with a crop-livestock mix (milch cows, pigs, fish, and ducks). Crops are planted on farmland and the by-products are given to the cows, pigs and ducks. The water and the soil deposits from the fish ponds are used as fertiliser. Circulation of resources is as shown in Figure 4.3.

The county farm follows this model. It has 124 workers, 7.33 ha of fish pond, 6.67 ha of grassland, 38 milch cows, 14 oxen, 2,740 sheep, and 120,000 ducks. A fish pond, occupying 0.73 ha of land, is adequate for 2,500 ducks. The duck excrement is used as fish food. The production without using any other kind of feed amounts to 458 kg of fish for every *mu* (0.06 ha). This is twice the amount of fish produced before the use of ducks. By using soil deposits and water from the fish pond, sugarcane production rose to 1.3 tons per *mu* (0.06 ha). Similarly, the production unit in Lianhua village farms a 10 ha orchard and has established a fishpond and a rabbit farm. Peanuts and sweet potatoes are intercropped with the fruit trees. The sweet potato leaves are used as fodder for the rabbits; the rabbit excrement as feed for the fish; and the water from

Figure 4.3: Crop-Livestock Mix in Agriculture



the fishpond for irrigating the orchard. In 1987, this orchard, which is under contract to seven families, realised an income of \$ 17,500 each family earning \$ 2,500.

2. Bio-gas is generated by using fodder provided by grassland and pig excrement as the raw materials. The sludge from the digester is an excellent fertiliser. Kelang village, in particular, uses this system. Out of 53 families, 47 families have 8 m³ biogas plants. The investment involved ranges from \$ 80 to \$ 110 per family but in return, the village saves \$ 1,080 to \$ 1,350 annually on fuel and one third of the labour previously needed to collect fuel. Seventy three hectares of barren mountain, fenced off in 1985, has now become shrubland.

Lin Jingyin, a villager from Chaochang township, manages 0.66 ha of land under contract. He keeps pigs and fish and produces biogas from their excrement. He propagates fish by using liquid effluent from the biogas digester and raises earthworms using the sludge. The earthworms are then fed to chickens and fish. Lin earns \$ 2,700 a year.

3. Optimum use of light, heat, soil, and fertiliser is achieved by creating a "vertical agriculture" model based on the altitude and the growth period of crops and trees. By judicious arrangement of crops at various levels, optimum benefit is derived from light and heat. This is beneficial to farmers in providing short-term as well as long-term income.

In Dushu Village, farmers developed dry farmland by planting apple trees (*arbor*, bearing fruit after 7 years) and peach trees (shrub variety, bearing fruit after 3 years) at the rate of 70 trees per *mu* (0.06 ha). Intercropped with the fruit trees were yellow beans, radishes, and potatoes; all of which can be harvested within a year. In the first few years, the sparse foliage of the apple trees permitted the filtration of sunlight and the healthy growth of vegetable crops. This provided cash income and vegetable humus as fertiliser for the apple trees. After three years, the peach trees bore fruit, providing additional income, and eventually so did the apple trees. The dry farm land then principally became an apple orchard.

In Dushu Village, there are 67 ha of this type of orchard. One group from this village derives 40-50 per cent of its income from the orchard. The group has 21 ha of land containing 27,000 trees. In 1987, 60,000 kg of fruit was produced providing each person with an income of \$ 200. By intercropping, they produced in addition 80,000 kg of potatoes, 60,000 kg of sweet potatoes, 2,000 kg of yellow beans, 40,000 kg of radishes, and 100,000 kg of fodder grass.

4. Optimum use of resources comes from use of a symbiotic environment. Through circulation and interchanges among plants, animals, and micro-organisms, resources can be used at many levels and throughout many periods. For example, intercropping provides a means for optimum use of space and can be carried out not only with a variety of crops but can be extended to include the raising of fish in paddy fields and the raising of bees with fruits and flowers and so on. The villages in the valley areas provide excellent examples of this kind of symbiotic management. Some of the villages that use this type of resource management include Qinpi, Qingang, and Kelang.

In 1987, a group in Qinpi Village cultivated 0.05 ha of land per person on this basis. Crops produced totalled 15 tons/ha. In 1987, from 459 kg of staple crops, 950 kg of vegetables, 850 kg of sugarcane, and a pig, each person earned \$ 80 per *mu* (0.06 ha).

Intercropping permitted them to earn enough cash and keep the grain or staple crops they had produced.

Irrigation and Water Distribution

1. There are 2,282 irrigation works throughout the county and they irrigate 8,070 ha of land. Stable yields are guaranteed for 5,530 ha, notwithstanding drought or excessive rainfall. There are nine reservoirs, each with a storage capacity of over 10,000 m³. There is also a large scale irrigation canal (Qianjing).

Most of the reservoirs were built from 1958 to 1974 and they are all owned by the State or by collectives. Since 1984, their management has been contracted out to households or household groups. Large irrigation works such as the Qianjing canal, however, are managed by the Miyi Hydroelectric Bureau which comes under state ownership. The bureau manages the canal directly and contracts the management of its ditches to townships, villages, and cooperatives.

Under the townships, irrigation works come under two forms of management. The first method involves management of water projects by each unit, according to the area of farmland irrigated. The second involves delegating management of all water projects to one administrative unit, no matter whether their land is being irrigated by these projects or not.

Both the county and townships retain professionals to maintain irrigation works and supervise water distribution. Guabang township employs two such professionals at the rate of \$ 22 per month. They have contracts with the township to maintain each of its main ditches.

2. Construction funds for large projects are collected, by the administration, from the farmers who also provide labour for the construction. The County Administration is in charge of design and construction of culverts and bridges; and the townships are in charge of acquiring land from concerned as well as organising labour and collecting other household contributions. In Sichuan Province, the regulations state that every farmer has to contribute at least 20 *gongs*¹ per year for the construction of public works. Costs are calculated according to the irrigation needs of different villages and each household's contribution is averaged out.

Large irrigation works are maintained by Miyi Water Conservation Bureau and the township administrations maintain the ditches. Townships either divide the maintenance among different households of a given town or collect funds from each household and hire labour to look after the maintenance.

In Xijie township, the regulation states that every household, not completing maintenance works in a timely and proper manner, will be fined at the rate of \$ 1.35 per head per day to hire the people required to complete the work neglected by them. Thus Xijie allots the responsibility to households but maintains a contingency regulation to provide for the failure of households to comply. On the other hand, Guabang township and the State Farm collect funds from each household for maintenance purposes.

1. A *gong* is a period of eight hours' work for one person.

3. Water rates are collected for managing and maintaining irrigation facilities. Rates vary from place to place and allocations within these rates. Guabang and the State Farm collect such rates. Guabang charges \$ 3.50 per *mu* (0.06 ha). Sixty per cent of this is used for the maintenance of the main canal and 40 per cent for managing irrigation facilities. The State Farm charges \$ 8.10 per *mu* (0.06 ha), \$ 2.70 goes for managing irrigation facilities, and \$ 5.40 for maintenance. For the fish pond, the rate charged is \$ 13.50 per *mu* (0.06 ha). In Xijie township, the administration only charges an irrigation rate because the villages are responsible for maintenance. The rate is \$ 0.70 per *mu* (0.06 ha).
4. Water distribution is determined according to the area of cultivated land. Distribution is equal for every *mu* (0.06 ha) of land. However, because of the seasonal characteristics of farming, every household wants to be the first to receive water and, consequently, there are many disputes. To resolve this problem, irrigation is provided according to the natural flow of the current. The upper reaches are irrigated first and the lowest last. Township cadres, village cadres, and cooperative cadres; as well as farmers and irrigation technicians; are mutually responsible for supervision. This is common practice throughout the county. In Guabang township, during periods of shortage, each village irrigates for three days in turn. Within each village, the cooperatives irrigate an area at a fixed time, and within the cooperatives its members do likewise. Mutual supervision is practised and if the water is scarce, the paddy seed beds and then the fields are irrigated. Amounts of water are calculated according to area to be irrigated and discharge from the ditches. Irrigation sequences are sometimes decided by drawing lots, but this solution is usually only applied to cooperatives within a village and farmers within a cooperative.
5. When there is sufficient water, there are usually no disputes. However, whenever there is a shortage, bitter disputes ensue. These disputes are usually settled by the village cadres, cooperative cadres, or irrigation technicians. However, township cadres may be called in; especially if disputes occur among villages or cooperatives. The settlement is based on mediation concerning the irrigation sequence and water quota. Some townships have regulations concerning this. In Xijie, such a regulation states that the sequence for use of township ditches is to be decided by the village head and the village sequence is to be decided by the township head. No matter what the position of the person who violates water regulations, he will be responsible for all losses incurred. For this reason, cadres involved in mediation of disputes must not only be fair but must be seen to be fair.

Management of Rural Funds and Markets

Rural Funds

Rural funds are the resources for agricultural development and expansion. Funds are realised from three sources:

- o State funds for agriculture. The People's Congress, the Provincial Government, and the County allocate annual funds for agricultural development. The amounts to be allocated are based upon natural resources and the socioeconomic conditions in each area, and these amounts are distributed through the lower level administrative units. Special treatment is given to remote mountain areas. Normally, funds are administered by the county administration and are used in administrative expenses and on public works' construction. Very little trickles down to the townships or villages for the support of poorer households.
- o Loans can be obtained from State Banks. Usually the county or township administration has to stand as a guarantor. Interests are low and in some cases no interest is charged at all.

- o Personal savings are disparate and some households have no savings at all. Some of the townships and villages are attempting to establish cooperative funds. In this respect, township cooperative foundations exist but there are none at the village level.

Xijie township is an example of a township with such a fund. Contributions come from the following sources:

- o \$ 9,200 came from savings accumulated during the "commune period"
- o The township administration contributes \$ 1,350 per annum
- o Township enterprises contribute \$ 2,700 from their profits every year.
- o Miscellaneous amounts of money saved and invested by commune members total \$ 23,500.

The total amount in the fund is \$ 36,750 and this is used in the following ways:

- o Priority loans are given to households for agricultural inputs. Interest on these is low, 0.57 per cent annually.
- o Loans are given for such projects as orchard development and piggeries at annual interest rate of 0.66 per cent.
- o Loans for medicinal purposes at 0.96 per cent interest annually.
- o Loans for purchase of superior quality goods at an annual rate of 0.96 per cent.
- o Short-term loans for trade and business investments (3-5 months) at an annual interest rate of 1.2 per cent.
- o The foundation has a management committee and its members are elected by the shareholders. The committee controls and decides how to use the funds.

Commodity Circulation and Market System

1. Commodities circulate in two ways. The first way is through the "invisible" structure of state monopoly in purchasing and marketing. The other "visible" structure is that of marketing and trading in a free market system. The most important agricultural commodities come under state monopoly and this is an important policy mechanism of the planned economy. Within this, mandatory prices are fixed. The traditional rural market remains the main trading system in West Sichuan. Markets are usually held in a square or an open place on certain days of the week or month. State trading agents, rural suppliers and marketing cooperatives, private businessmen, farmers, and town residents conduct transactions in the rural market place. The prices are not fixed and are open to negotiation. Wares include farm products and hand-made goods. The "Business and Industry Bureau" determines the site of the market and is responsible for administration.
2. In Miyi, certain staple commodities such as grain and sugar cane are state controlled. The "Food Bureau" is responsible for grain purchasing and it is mandatory to sell sugarcane directly to the county sugar factory. Each year, the county Administration plans food and sugarcane production in consultation with the various township authorities. The village committees, in turn, are responsible for signing contracts with the farmers. A special

agent collects the products directly from the farmers and the grain is handed over to shops run by the food bureau. The sugar cane is transported directly to the factory and factory pays for the transportation. The county supplies a certain amount of scarce agricultural inputs in order to encourage farmers to produce monopoly goods. The prices of these inputs are fixed and acquisition is based on exchange. For example, if a farmer sells one ton of sugarcane, he will receive a voucher to buy 60 kg of fertiliser.

3. There are 27 markets in Miyi and most of them are periodic rather than continuous. Continuous markets are not feasible because of the low population density and lack of purchasing power. Markets are of three types; namely, basic, local, and central. A basic market serves a township on a retail basis and supplies all the normal farm household needs. In Miyi, there are 20 of these. At the intermediate level, there is the local market which has an important function as a wholesale centre. The hinterland covers more than a single township area, and in Miyi there are six such markets. The central market, which is held in the county town of Panlian, is the largest market of all. It is the most important exchange centre between Miyi and other counties or cities. As such it plays the key role in wholesale purchasing from within the county to points elsewhere and from outside the county to markets inside.

"The Bureau of Business and Industrial Administration" is responsible for administering the markets. Its duties include mediating business issues, dealing with and punishing unfair or illegal practices, scheduling market days, collecting expenses, and constructing and maintaining market places.

Agricultural inputs are principal commodities in the markets. These include such items as chemical fertilisers, plastic sheets, and seeds. The "Agricultural Bureau" looks after seed supply and the "County Supply and Marketing Cooperative" is generally responsible for marketing agricultural inputs in rural areas. Because of a nation-wide deficit of such inputs, only partial amounts of the total inputs needed can be supplied at fixed prices. The remaining inputs are bought on the wholesale market at high prices. State monopoly of purchasing and marketing is illustrated in Figure 4.4.

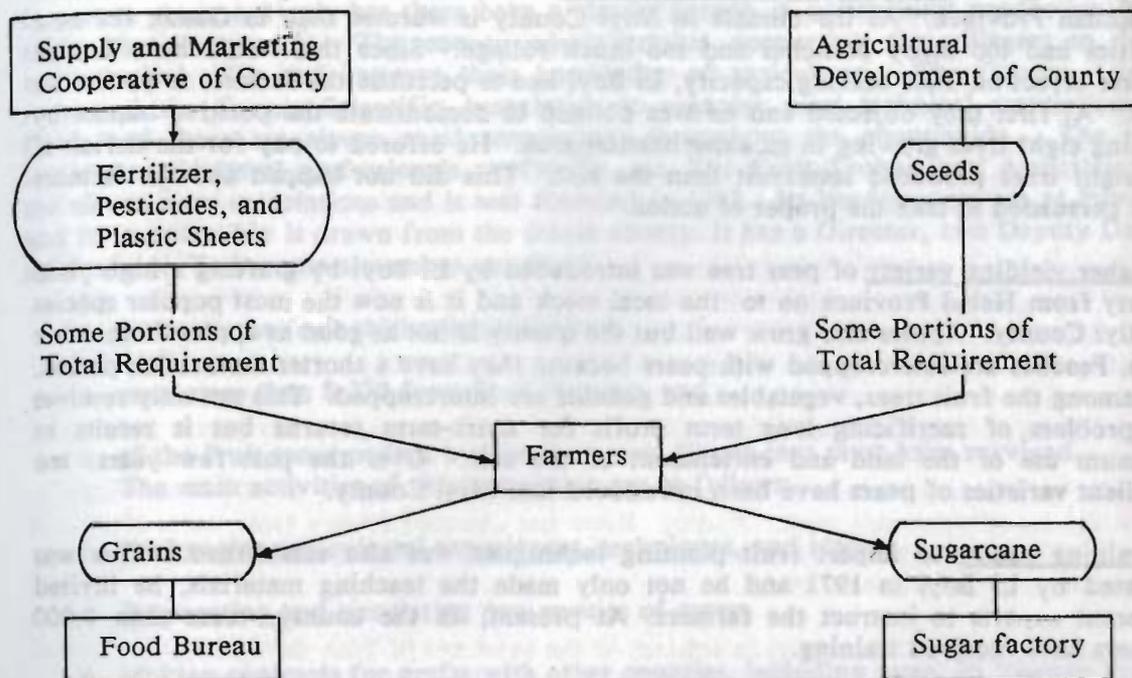
Guidance by the County Towards Agricultural Production

Agricultural production systems are no longer forced on farmers. Today, the county administration guides the rural areas by supplying technological inputs; by providing consultation services; and by introducing experimental projects. Apart from exercising the state monopoly in the purchase and marketing of grain and sugar cane, the county respects the wishes of the farmers in production arrangements.

Technical Guidance by County Cadres

The organisation and management of agricultural production is complex because of the different categories involved. Every sector needs its own specialists in order to organise and manage its specific operations. In China, most counties emphasise agricultural production and there are many related units among which the "Agricultural Bureau" plays a prominent role. In Miyi County, there are ten agricultural units: the Agrotechnical Station, Seed Supply Centre, Horticultural Station, Animal Husbandry Centre, Veterinary Station, Plant Conservation Centre, Accounts' Guidance Centre, Broadcasting Centre, Statistics Centre, and County Farm. These all come under the "Agricultural Bureau" and employ personnel and cadres to look after the organisation and management of their special sectors. Although the townships have no special agricultural organisations, they employ a number of agricultural professionals such as agricultural

Figure 4.4: State Controlled Purchasing and Marketing



technicians, mechanics, water conservationists, foresters, horticulturalists, estate managers, book-keepers, and broadcasters. These are collectively called "Team of Eight".

In the villages, three people are occupied with production on a part-time basis. They are the headman, the branch secretary, and a clerk. Therefore, the county administration assigns officers or cadres to the villages to help them implement county level decisions. One example of such an officer is Li Boyi who graduated from Jiangjin Agricultural College in 1965. He became the Deputy Director of a horticultural station and is currently the Director of the Department of Vertical Agriculture in the County. While working at the horticultural station in charge of vegetable and fruit cultivation, he was successful in developing fruit farming in Miyi county by using the following methods:

1. By examining the situation properly. Directives had been given to develop tropical fruit cultivation. However, Li Boyi discovered that the temperature dropped below zero every ten years. Since this would have destroyed all the tropical fruits, he introduced the cultivation of peaches and pears propagated from local stock and persuaded the administration to develop apple and pear cultivation in mountain areas.
2. Through demonstration experiments, Li Boyi persuaded the farmers that growing pears, apples, and peaches was profitable. In Xinglong Village of Puwei township, a few households were selected in 1968 to cultivate apple and pear trees. Dushu village in Puwei township was also selected to experiment in pear and peach cultivation. Li Boyi was able to show that by intercropping fruit trees with peanuts and vegetables, more profits could be realised than through vegetable production alone.

3. Because local varieties were of poor quality and had low yields, new varieties of pears and apples, along with improved planting techniques, were introduced from Ganzi Prefecture in Sichuan Province. As the climate in Miyi County is warmer than in Ganzi, the new varieties had too many branches and too much foliage. Since this would have had an adverse affect on their bearing capacity, Li Boyi had to persuade the farmers to prune the trees. At first they objected and he was obliged to demonstrate the positive impact by pruning eight trees growing in an experimental area. He offered to pay for the deficit if the eight trees produced less fruit than the rest. This did not happen and the farmers were persuaded to take the proper of action.

A higher yielding variety of pear tree was introduced by Li Boyi by grafting a high yield variety from Hebei Province on to the local stock and it is now the most popular species in Miyi County. Apples also grow well but the quality is not as good as apples from other areas. Peaches are intercropped with pears because they have a shorter maturation period, and among the fruit trees, vegetables and peanuts are intercropped. This not only resolves the problem of sacrificing long term profit for short-term returns but it results in optimum use of the land and enrichment of the soil. Over the past few years, ten excellent varieties of pears have been introduced into Miyi County.

4. A training centre to impart fruit planting techniques was also established. This was initiated by Li Boyi in 1971 and he not only made the teaching materials, he invited different experts to instruct the farmers. At present, in the county, more than 1,000 farmers have received training.
5. Fruit planting was divided into bioclimatic zones and experiments conducted in three different areas which were classified as follows:

- o Valley areas from 980m to 1,000m where oranges, bananas, and papayas can be grown.
- o Mountain areas from 1,500m to 2,000m which are suitable for cultivating pears, peaches, apples, plums, and cherries.
- o Areas above 2,000m which are suitable for cultivating dry fruits.

Currently four townships, Puwei, Hangshan, Huangchao, and Salian are the major areas for pear and peach cultivation and the three townships of Lianhua, Linhua, and Mianhua are the major areas for the cultivation of oranges and bananas. According to the studies conducted, four prerequisites are necessary for establishing orchards:

- o Good irrigation
- o Sufficient access and infrastructure (roads)
- o Plentiful stretches of land
- o High commercial value of the fruit species to be grown.

Within the county new orchards have been established at Puwei township (100 ha), Malong township (27 ha), and Huangcao township (66.66 ha). Agricultural conditions and the production base greatly affect the development of the collective rural economy. However, depending upon the cadres and the quality of their techniques much can be done to improve conditions all round.

Science and Technology Associations

In recent years, not only has there been a steady growth in agricultural production but farmers' skills have improved. The county administration encourages the villagers to develop new technological skills and improve their knowledge of agriculture. The County Administration requested the County Scientific Association to organise rural technical associations in special fields and there are eleven rural associations throughout the countryside. The membership includes agricultural professionals, craftsmen, etc. The Fruit Technicians' Association is one of the eleven rural associations and it was founded in 1988. Its headquarters are at Puwei township and its membership is drawn from the whole county. It has a Director, two Deputy Directors, and a Secretary. To become a member one must:

- o master some fruit cultivation technique,
 - o earn more than \$ 270 from fruit farming, and
 - o of the fruit trees grafted by him/her, over 80 per cent must have survived.
- The main activities of this association are as follows:
- o Exchanging agricultural experiences, techniques, and ideas,
 - o Propagating and circulating new species of crops,
 - o Making contracts for grafts with other counties, including some in Yunnan Province.

The funds for these activities come from the grafting services provided.

Other Agricultural Development Techniques

Other measures implemented in Mi Yi County include:

- o Sending young people to agricultural school or college. Normally the arrangement is that the student's village pays the cost of the education and the college sends the student back to the village.
- o Inviting scientists and experts to give topical lectures.
- o Conducting training courses at township, village, and team level.
- o Sending villagers to agriculturally more advanced areas so that they can communicate new techniques to their own areas.

Ecological Issues in Rural Development

It is necessary for each region to maintain the optimum of ecological stability in order to establish stable long-term social and ecological development. Without this, environmental degradation results and retrogression sets in. However, this has not been universally acknowledged by all cadres in Mi Yi County, especially the village leaders. To a certain degree, development, in the last dozen or so years, has resulted in a concomitant degeneration in the environment. Currently, the serious problems can be described as follows:

Erosion and Forest Depletion. Before 1958, the forest cover was 62 per cent and this was mostly primeval forest. Current cover is only 45 per cent and this is mostly sparse woodland and secondary shrubs. From 1958 to 1987, deforested region in the lower reaches of the mountain areas rose by 10 metres and the total forest area decreased by 970 ha. The total amount of wood volume also decreased to 13,513,700 m³. The shortage of forest resources is a big problem. The County Forest Farm established in Puwei township in 1958 managed 150,000 ha of forest initially and now manages only 40,000 ha. During the past 30 years, almost 1,300,000 m³ of timber has been felled. At the current rate of extraction, i.e. 60,000 m³ yr, the remaining 200,000 m³ of timber will be exhausted in the next three years and 1,917 workers will lose their jobs.

With the destruction of the forests, the water storage capacity of the area has decreased to 12,486,000 m³, i.e. equivalent to a reservoir covering 250 ha and enough to irrigate 10,000 ha of paddy fields. Before 1957, the rivers in the county (Heat, Chaochong, Linxi, and Ganlan) were constantly being renewed. Now in the dry season (February) they dry up. Before 1985, 94 per cent of the farmland in Puwei township was irrigated, now the figure is 56 per cent. Henshan township had 170 ha of irrigated land before 1958, in 1976 110 ha, and now the figure is 50 ha.

Soil erosion has become a serious problem and on average there is a loss of 108 tons which is equivalent to 330 ha of cultivable land. Anning River has changed from a clear water river to a red water river. Silt has shortened the lifespan of many new reservoirs and the Shinfa reservoir, in particular, had to be rebuilt three times.

Frequent Natural Disasters. The county is subject to the extremes of both drought and torrential mountain rainfall. Each year from November to May there is little rainfall and the climate is so dry that the amount of evaporation is greater than the water supply. Then from June to November there is so much rainfall that the total precipitation is 89 per cent of the annual total. Floods inundate the farmland and destroy villages. Previously, some villages (such as those in Yungfeng township) had never experienced such drought and floods, but due to ecological instability, the dry seasons are becoming longer, the planting seasons are delayed, and the mountain floods are more frequent.

Degradation in Quality of Land. Traditional agricultural methods along with lack of conservation measures has led to degradation in the quality of land. Each year 88 per cent of the land is cultivated and 12 per cent only is used for regeneration. Chemical fertilisers are used excessively and this makes matters worse. The area of land with P deficiency is 88 per cent, the area with K deficiency 79 per cent, the area with N deficiency 55 per cent, and the area deficient in organic fertiliser 45 per cent. On hilly grasslands, the vegetation is seriously degraded and the output of grass has decreased from 12.5 tons/ha (1958) to 6.2 tons/ha.

Destruction of Mineral Resources. In 1980, in Tuanjie township, the Yangjiawan and Tontan iron mines, with geological reserves 510,000 tons (55per cent FeO) and 610,000 tons (60 per cent Fe O) respectively, went into production. The average production is 5,000 tons per annum and the highest output has been 20,000 tons per annum. After the mines had been given to the peasants on a contract basis, only the rich, easily accessible one was mined.

There was no production planning, no accumulated funds, and the income was used up. As a result, the mines have been running at a loss since 1987. Workers have been laid off and production has decreased. In 1986, a serious accident occurred in which seven miners died.

Serious Sources of Pollution. There are three serious sources of pollution which are harming the environment. They are effluents from factories on the upper reaches of the Anning River, from the Jianbao Shan Mine in Huili County, and from the county sugar mill. All are directly

discharged, all year round, into the Anning River. The main pollutants, which include ammonia, insecticide, Cd, and Pb, have caused fish and aquatic life to die, crops to turn yellow, plant stems to wither, and plant roots to decay. In 1986, water pollution affected 330 ha of farmland (3 per cent of the total cultivated area); air pollution affected 190 ha (0.09 per cent of the whole county); and soil pollution affected 180 ha (1.7 per cent of all cultivated land).

Environmental Consciousness. So far, very little has been done to conserve the environment. From the top leaders to the humblest peasants, the main emphasis has been on improving incomes and economic benefits. In the area of ecological balance and environmental conservation, there is a great deal more talk than action. Cadres interviewed rarely initiated discussion on the topic. When questioned about this, their responses were vague and evasive. Over the long term this will be to the severe detriment of socioeconomic development. The increasing pollution of air, water, and soil is a constant constraint on resource organisation and the management of rural development.