

Chapter 4 . Market Integration of Hill Agriculture

4.1 Introduction

In order to use scarce land resources more efficiently so as to provide gainful employment and increased incomes to the labour force in the hills, development of market-oriented multiple cropping systems present a major potential. As argued in Chapter three, potentials for improvement in productivity of traditional subsistence hill agriculture are becoming increasingly difficult. Without access to economically superior cropping systems, using improved technology and high pay-off inputs, subsistence farming in the hills will generate even greater problems of poverty and environmental pressures in future. A poor hill farmer is less capable of properly managing the hill environment.

Development of a market-oriented multiple cropping system has played a major role in transforming small-holder family- based agriculture in many countries in South-east Asia. And more recently this has been evidenced in hill areas such as Himachal Pradesh in India. Disadvantages of extremely small land holdings, comparable to those of the hills of Nepal, have been offset by the development of very high cropping intensity which has successfully absorbed the rural labour force. Increased flow into the market of many non-cereal agricultural products has sustained the development of a diverse range of agro-processing industries, and has made it economically viable to expand services and physical infrastructure deep into the rural areas. The major precondition has been the existence of a technically sound research and extension system that is able and willing to work closely with the farmers to help them increase their productivity. The fact that large groups of small farmers were able to organize themselves and work together was closely related to the existence of a fairly equitable landholding distribution. Unlike in many countries where the agriculture sector has either lagged behind the industrial sector or where only large- holder agriculture has expanded, transformation of small-holder agriculture has also provided a very sound basis for sustained all-round development [Oshima 1983].

Multiple cropping systems that are well suited to conditions with high labour-land ratios, as in the middle hills, cannot develop without the availability of improved crop varieties and related cultural practices. Farmers will not give up their subsistence crops completely. Under special conditions of the monsoon climate, many areas in the hills will have no alternative to rice and maize cultivation in the summer. In many cases, hill farmers may also take a second crop of cereals. However, there are periods when land is fallow, or when land is being used for non-high-value crops. In some cases, it may even be possible to convince hill farmers that a high-value crop would perform better than the crops currently being raised by the farmer, even under conditions of existing resource endowments. Alternatively, it may also be feasible to profitably exploit tree crops with other seasonal crops as is being increasingly practiced in many hill areas of China and India.

Another important aspect of multiple cropping is the assumption that there is a demand for higher-value crops raised by the farmer. It assumes the existence of a market. As additional varieties of crops and increasing quantities of products are added to the supply, the market becomes the most powerful factor for inducing changes in the farming system.

Similarly, multiple cropping development cannot succeed without strong agricultural institutions to ensure: (a) guarantee of fair returns from the efforts and risks undertaken by the farmer; (b) responsiveness through appropriate research and educational institutions by developing new products, technology, and productivity; and (c) encouragement of strong local farmer organizations that increasingly undertake the responsibility for management of inputs and primary marketing activities [Huang 1975:64-76]. The last point is particularly important as agricultural development programmes cannot be designed on the needs of the individual farmer. Development of specialized crop production or more appropriately, specialized systems of multiple cropping, based upon demand, local factor

endowments, available technology, etc., requires that we seek to develop these potentials in larger areas. The individual farmer still operates as the owner and manager of his farm, but does so under a planned system, with institutions and organizations to assist him in his production, input supply, marketing, and other activities. Thus, while individual family farms are still the basic operating units, they are organized to change or engage in various planned farming activities on a group basis over a larger area.

4.2 Multiple Cropping and Market Orientation in the Hills

Having made out a case for market-oriented multiple cropping systems, it is useful to examine this issue more carefully in the current context of hill agriculture. It becomes immediately apparent that there is already a very high degree of multiple cropping in the hills, and that some marketing of agricultural products also already exists [Calkins 1976; Jones and Innes 1981].

Insofar as multiple cropping in the hills is concerned, it is generally much higher in upland fields than in the lowlands where the soil moisture and other conditions seem to be more favourable [Calkins 1976]. Over time, with the increases in population pressure, the cropping intensity of hill agriculture has increased [Schroder 1985]. These increase in cropping intensity is accompanied by decreasing labour productivity, which contribute less to both subsistence needs and net incomes. It has been argued that, in many cases, reducing the number of crops with focus on only some that have good yield and marketing potentials would increase farmer incomes quite substantially [Calkins 1976]. These changes towards greater specialization on selected crops could be undertaken without affecting the cultivation of major cereal grains in appropriate seasons.

Regarding market orientation of hill agriculture, some sale of agricultural products is necessary as it is one source of cash income for the hill farmer. Obviously, sale of agricultural products alone is insufficient to meet all the cash needs of the household and needs to be supplemented with off-farm work [Banskota 1986]. The balance between subsistence and sale of crops is, therefore, a very critical decision for the hill farmer as it affects the choices of crops and use of his limited

resources. At present, market sales are mainly from surplus of larger farms located in lowlands, using high-yielding seeds and irrigation. Sale of livestock products has declined, as a higher priority has been given to subsistence crops due to increasing population pressure. There has also been a marked decline in the sale of forest products following extensive deforestation across the hills.

Multiple cropping is sequential cropping of various crops, both planted and harvested in a 12-month period, on the same piece of land [Lee 1975;200-215]. It includes relay planting but excludes intercropping. Multiple cropping systems could be monoculture, duoculture, or polyculture. Monoculture is the sequence of the same crop. Duoculture is the sequence of the same type of crop, such as grain after grain or vegetable after vegetable. Polyculture is the combination of different types of crops, such as grains and pulses or grains and vegetables or fruits and vegetables, etc. In deciding about multiple cropping systems under conditions of limited farm resources, it is important to ascertain whether the crops have a competitive, supplementary, or complementary relationship. A competitive relationship, would mean increase in output of one crop to decrease the output of another crop. If supplementary conditions prevail, then increase in output of one would not change the output of the other. While in the last case, increasing output of one also results in output increase for the other, given various conditions. Obviously the search should be for complementary multiple cropping systems as far as practicable [Lee 1975].

4.3 Hill Ecozone Specialization

One alternative to predominantly subsistence farming in the hills is part or full specialization of agricultural production. As opposed to the current "inward looking" strategy of the hill farmer, ecozone specialization calls for some degree of "outward orientation". Underlying such a strategy are a number of important assumptions. First, there are potentials for meaningful specialization in hill farming activities. If there were none, the current pattern of resource allocation by hill farmers would clearly be the most optimal. Second there are economic advantages to specialization through economically superior systems in the use of scarce resources in the hills. Third, specialization automatically

assumes trading and marketing beyond those already being undertaken by hill farmers. In other words it also assumes both potential local and non-local demand for specialized agricultural products produced by hill farmers.

At the regional level (in terms of the plains and hills) the idea of specialization in agriculture has been well known for a long time. It started in Nepal's Fourth Plan, when the concept of regional development based on a regional focus on specific types of agricultural activities was expounded. It was argued that the plains should focus on cereal crops, while the hills should develop livestock and horticultural activities. [Gurung 1973:1-17]. Efforts to implement this strategy however did not go very far, as it failed to develop both the understanding, as well as practical plans and activities that were necessary for providing integrated development thrusts. It remained a good idea lacking in adequate research support and careful planning necessary for affective implementation. Such an approach was not easy, but was bound to face complex problems as it meant many changes for hill farmers and related development institutions. For the hill farmers, it meant a switch from subsistence to greater dependence on trade and the outside environment. It also meant development of more effective farmer cooperation to implement carefully designed production plans for which the hill farmers neither had resources, relevant knowledge or strong institutional support. For development institutions, it meant facing upto many obstacles, inherent in such shifts in policies and programmes. For national planning, it meant a greater degree of close-to-ground bare-foot thinking necessary for translating a good idea into meaningful practice, which was a far-cry from the harmless exercises of manipulating capital output ratios. Such radical changes in development planning are seldom self generating or self inspired. They often require careful national direction and extensive resources. This is where Nepal's regional development strategy floundered.

Futhermore, this approach also overlooked a number of critical stages in regional development. First, it did not start from the farm and work its way upward, integrating homogeneous units by cropping zones, resources, settlement clusters, market accessibility, similar investment packages and support services required. Second in a predominantly subsistence economy, trade

and marketing developments in the initial stages are better stimulated in smaller spatial units than in the larger regional context. Farmers are more comfortable trading with people they know and in markets more familiar to them. Later on as development expands to higher levels and more experience is gained in market oriented production, regional trade becomes more feasible. Another important constraint with the development of inter-regional trade has been the costs of transportation associated with such long distance trade.

If it is somewhat premature to expect promotion of inter-regional trade within the current levels of development in the hills, how should specialization in hill agriculture proceed? Our attention naturally turns to the environmental diversity of the hills and the extent to which this could be a basis for agricultural specialization. To some extent this is already evident in hill farming. Crops raised in lowland valley areas (Khet) differ from upland fields (Bari). Similarly as one moves northwards, crops also change to some extent. Focus on specialization in the hills should have three major thrusts. First, is to increase productivity of existing crops that are best suited to the local environment, as for example paddy in lowlands where irrigation is feasible. In view of the monsoon conditions, very few crops perform as well as paddy in lowlying fields. Second, there is substantial scope for off-season production. Third, high value tree crop specialization potentials are greater in the hills and this is likely to be highly desirable from environmental considerations.

In the past in Nepal, ecozone specialization has meant simply identifying horticulture and livestock in the hills and cereal grains in the plains. This approach has not worked because of the lack of carefully designed plans for specific agroclimatic zones starting with what the hill farmer is already doing, and focusing on providing high pay-off inputs and services to the most beneficial combinations of crops, within the existing cropping system. At present for example, one finds little qualitative difference in the agricultural development plans for the various hill districts and sub regions even for an area like the Bagmati Zone where there are better institutions. Some crops out yield others over a wide range of soil, micro climate and factor combinations. Identification of these crops, including demonstration of their benefits, is the surest way to convince hill farmers of progressive specialization in hill agriculture.

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(Courtesy : Tej Pratap)

7. Cash Crops in higher altitudes.

Cabbages grown in an apple orchard at Marpha Agricultural Farm demonstrates ways to enhance farmer income levels at higher altitudes.

8. Raddish marketing by roadside.

The entire family is busy cleaning and stacking raddish for transportation to Kathmandu market.

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(Courtesy : Tej Pratap)

The extent of current research work on the economic and environmental aspects of ecozones is very limited. Based upon changes observed in different parts of the hills further agronomic, economic and environmental analysis is required for specific directions that ecozone specialization in the hills may follow.

Products Most Appropriate to Different Altitudinal Belts

It is by now well established that crop performance varies with different altitudinal belts. Hill farmers themselves have evolved a wide choice of crops through experience over the years. There is need for research, in terms of which of these is likely to have greatest comparative advantage in local conditions and after the development of market potentials. Some examples from Nuwakot will help to clarify the argument. [Calkins 1976]. For the tropical zone farm located at 2500 ft. or less, net income through specialization increased in each cropping season. In lowland fields during winter, farmers raised as many as four crops. But it was found to be more advantageous to concentrate on only potato. Similarly in upland fields during the winter, it was found more profitable to increase area under ginger cultivation from the 2 percent allocated by the farmer, to almost 85 percent of the area. Similar examples can be identified for farms in different altitudes. There are also some crops that out yield others over a wide range of soil, micro climate and factor ratios, such as potato and rape seed. This type of identification requires very careful analysis. Unless this type of research to identify and analyse these influencing factors is undertaken, it will be difficult to recommend improvements to systems being used by the farmer.

Focus on Seed Production

Many types of seeds produced in higher elevations perform relatively better in lowland conditions. In some areas, farmers have already started seed production of potatoes, and other vegetables. The scope for expanding seed production is very large indeed. If proper quality control can be maintained, market potentials are very large.

Off Season Products

The harvest periods of similar agricultural products vary under different altitudinal conditions. For instance if

vegetables like cauliflower, chilli and sweet pepper are harvested during January and February in the Terai, they can be harvested in the hills from November onwards, while in still higher altitudes they can be harvested from July onwards. Proper planning of crops in different altitudes in the hills can ensure a steady flow of products to the urban and Terai markets especially when there is no production in the Terai. This aspect of agricultural production in the hills holds a major potential for development. The only major precondition is proper transport and handling of these products as they need to be transported over longer distances in order to exploit off season advantages.

Development of Livestock Products

Despite many potentials, current livestock conditions in the hills is shocking. As one of the most seriously mismanaged sectors of the agricultural system, it is characterized by shortages of feed, heavy parasitic infestation in a generally very inferior breed, and low livestock productivity. [LRMP 1986:5-6]. Furthermore, its effect upon the environment is a very serious issue. "While ruminants are a key link in the vital chain connecting cultivation of crops and forestry, they are also the weakest links. Virtually all of the environmental degradation so common is directly attributable to the management of the livestock sector".[LRMP 1986:14]

The potential for livestock development lies in improving the productivity of livestock. Demand for livestock products is very strong even in the hills. Fresh milk is always in short supply though there are well known techniques for processing milk into ghee and cheese. For hill farmers with little land, productive livestock can be a major source of income. If managed properly it can even exceed contributions from the land. It is a sector of immense potential that has been grossly neglected so far.

4.4 Trade and Marketing Development

There are a number of possibilities for developments in trade and marketing in the hills. With specialization, intra- hill trade is likely to develop a strong interdependence between different ecozones in the hills. Following specialization based on comparative advantages, each farmer group is likely to be better off

through trading as compared to prevailing subsistence production. Rural demand structure for agricultural products are also not uniform in the hills. They vary by income groups as much as in other areas. The demand structure between upper and lower income groups also vary. This difference in demand structure has been identified as a possible source of promoting rural growth linkages for other areas and there are no reasons to believe that this would not be applicable to the hills. [Mellor 1983].

The second and more exciting possibilities lie in the development of rural-urban trade and marketing linkages. With increasing pace of urbanization across the hills, urban centres represent an important potential for increased momentum of hill development. The traditional isolation of rural hill areas is rapidly breaking down with the development of infrastructure, urbanization and other socio-economic changes. Rural areas are quickly being swept into the vortex of urban influence. If this is not properly managed and directed, the hill economy will not be in a position to take advantage of the opportunities afforded by urban development in the hills.

Experience with mountain area development generally suggests that the potential contribution of urban areas has not been fully exploited. Rural urban developmental linkages in the hills have been relatively weak. If these rural hinterlands could be made more responsive to the opportunities created by a growing and diversified urban demand structure for agricultural products, the impact upon rural income and employment would be quite substantial.

The comparative advantage of rural hill areas in horticulture, livestock and vegetable products clearly suggests major possibilities for gains from specialization and exchange to rural hill households. An agrarian economy, isolated from trade, is inhibited by the lack of market opportunities to diversify production and expand income and employment opportunities. Once trading opportunities are developed, and rural areas begin responding favourably to urban demand, there are other important production and consumption linkages that will emerge in the urban economy as well. The process of agrarian specialization, based upon strong urban linkages is likely to lead to improved productivity of hill agriculture, through adoption of improved technology,

and increased rural consumption of intermediate raw materials and capital goods, supplied by urban areas. Thus the reduction of market barriers and expansion of trading opportunities between rural and urban areas provides a major opportunity for transformation of the hill economy. An appropriate investments package should be designed to help rural hill economies respond to these increased opportunities for trade and exchange. Incentives and support systems are necessary to encourage rural hill households to reallocate their resources to meet growing and diversified urban demand for various agricultural products. In the past a good deal of emphasis has been laid on increasing rural food production per se, without any attention to urban demand structure, marketing and enhancement of trading opportunities. Without major improvements in these areas, emphasis on food supply alone is unlikely to generate sustained improvements in rural incomes, as the comparative advantage of many hill areas might lie in the production of non grain crops.

Market areas in the hills are limited in number, far apart, poorly organized and relatively undeveloped in scope and type of marketing functions. In many instances, inaccessibility has limited the development of markets, but in many other cases improved access has not resulted in any significant improvement. Markets, on account of transport improvements, have undoubtedly grown, but have not really developed. Transport is just one among a whole host of factors that have hindered the development of these markets. Other factors include lack of marketing knowledge, weak research and extension institutions, and total absence of promotional activities.

This issue of marketing development is emerging as a very significant factor in the transformation of rural hill economies. Rural development activities that have carefully developed and organized a marketing approach as a critical component, have made some very significant economic impact upon rural households. In others, where marketing has not been given due attention, even innovative farmers have been unable to dispose of their produce or receive "fair" prices for a variety of reasons to do with pre and post harvest operations.

The lack of a market-oriented approach in the hills has clearly demonstrated the persistence of many anomalies such as:

- hill demand for many commodities is being met through imports when they could very well be supplied from the hills
- many hill products fetch significantly low prices due to their inability to compete with similar products entering the market from the plains
- because of the lack of regular markets and reliable marketing, hill farmers find it too risky to switch to more lucrative high value crops, and continue with subsistence farming
- in many hill markets producers try to maintain direct contact with the consumers, increasing the cost of marketing. This is prevalent even in areas with good access due to lack of market intermediaries.

On the other hand, the potentials of marketing in hill development can be seen in terms of:

- stimulating market oriented higher value cash crop production;
- generating higher levels of cash incomes for hill farmers
- generating more off farm employment in post harvest and marketing activities
- more effective use of costly transport and energy infrastructure in the hills in areas where these are available, and
- in the long run the development of more environmentally and economically sound land use practices.

4.5 Organization and Management Aspects

The task of organizing thousands of small hill farmers to participate in the development of specialized production system, is not easy task by any account. Many good programmes and policies have been wrecked because of inadequate attention paid to organization and management. After all these years of poor plans and programmes, it is now necessary to examine the appropriateness of the existing organizational and

management set up. With strong institutions, even weak programmes are likely to become stronger, though the same does not hold true in the reverse situation. The experience of countries like Nepal is increasingly beginning to suggest that the biggest weakness in development has been the lack of organizations and institutions capable of bringing desired changes on a sustained basis. [Cernea 1987] Complex developmental programmes are casually dumped upon organizations that expand programmes and area coverage without efforts to consolidate existing activities. Many organizations have become so susceptible to outside pressures and influence that there is constant "fine -tuning" of programmes. No good is ever likely to come out of such organizations. Development is to a large extent the process of creating opportunities for the emergence of more productive forces. As we learn more about the process of development, readiness to organize necessary changes, particularly through sustained improvements in organization and management, become a critical precondition for the success of development programmes. Thus one important aspect of development is a process of creative destruction of institutional arrangements, organizational structures and management systems. The extent to which subsistence hill farming can make a reasonable transition towards greater market integration depends on the effectiveness of organization and management and the demands made are neither simple nor limited.

Establishment of Specialized Production Ecozones (ESPE)

Establishment of specialized production ecozones in different altitudinal belts is the first major task. The objective behind ESPE is to enlarge the scale of farm operation of specialized agricultural production activities so that management can be organized on an area-basis. It is far too complex to deal with diverse activities of the individual farmers. As a matter of fact the continuation of a diversified pattern of family subsistence farming in the hills, is a response to the lack of effective organizations for integrating and managing hill farming on a larger area basis. Operation on a larger area basis provides many advantages. It is easier to improve basic production facilities, provide commercial scale handling and marketing, and cost of services to the farmers can be substantially lowered. While individual family farms are still retained as the basic units they now operate on a

planned basis under different systems of price guarantee, supply of improved packages, contract growing and marketing etc. The most appropriate mix of incentives and support services will vary from area to area and crop to crop. Some advantages of group activities have already been well established - under the SFDP in Nepal - particularly risk sharing, access to credit, and linkages with outside organizations. All of these advantages need to be fully exploited under the ESPE. The big question is who will manage these ESPE's? Will they vary by crops and by area?

Decisions on what should be produced will require a careful evaluation of alternative land uses in the hills. Specialization cannot ignore the limitation of environmental sustainability. Areas of comparative advantage have to be meticulously identified. A beginning towards ESPE is already evident in Nepal through identification of special crop areas for tea, cardamom, apples, etc. In areas where such potentials have been identified, they need to be developed intensively, while for other areas, such opportunities for specialization have to be carefully identified.

Development of Infrastructure

Physical infrastructure like roads, electrical supply, provision of water etc. are very limited in the hills and are in rudimentary stages of development. Slow development of infrastructure has, in part, been due to high costs of providing and maintaining these facilities. Assumptions underlying these high cost investments, that they would quickly transform the areas brought under infrastructural development have not been validated. Consequently there have recently been strong economic reservations expressed about further high cost infrastructural investments in the hills, while large parts are still lacking in any type of modern infrastructure.

One of the basic premises regarding infrastructures like road and power supply is that they only become economic when they are used for productive purposes. Under major constraints such as subsistence agriculture, it is difficult to use infrastructure productively. High costs are not the only implications but also the lack of profitable alternatives. It is therefore very important that use of infrastructure be carefully planned and integrated with other productive activities. Infrastructure

investments alone are insufficient to generate their productive use. While they offer many opportunities, their development requires additional investments, appropriate technology, availability of support services and marketing outlets.

The development of specialized production zones cannot take place without basic infrastructure. Movements of goods and services, both in and out of these zones, requires reliable and relatively cheap transport services. Availability of power will help reduce the burden of human drudgery and enhance labour productivity. It is clearly inappropriate to attempt development of specialized production areas without the basic infrastructure. There are many important choices of technology and phasing possibilities that need to be examined within the specific possibilities of each specialized production zones.

Research, Education and Extension

Research and educational institutions have played a major role in agricultural development when ever they have been properly organized and managed. The successful propagation of high yielding seeds in paddy, wheat and maize has been possible mainly because of effective research and education programmes. However much of this development has occurred outside national systems in places such as IRRI and CIMMYT. In spite of the high pay off from such research and education programmes, countries like Nepal have failed to develop a strong domestic research capability. [Yadav 1987]. This sharply contrasts with agricultural developments in countries like Japan, Taiwan and South Korea, where, because of the strong support provided for agricultural research in a wide variety of fields, agricultural development has been largely internally induced and has provided valuable surplus resources for development of non-agriculture in the initial stages of development. Agricultural research institutions in these countries have enjoyed strong support from the government for a considerably long time. [Oshima 1983] These organizations cover many activities from research and experimentation to establishment of research centres, experimental stations, improvement stations, multiplication centres, breeding stations and very specialized farms. Many improved varieties and new agriculture production techniques have been developed

by these institutions. Closely related to these organizations, are many vocational schools in almost every major district or county. These schools have played a very important role in training large numbers of agricultural workers and technicians and have become an effective mechanism for agricultural development because of the quality of research work and linkages. The conditions in countries like Nepal are quite the reverse, with undue concentration of resources, technicians and organization only at the top. Basic facilities for research work are lacking in most field stations. As a bureaucratic system, resources are often used for purposes other than activities benefitting the farmer. The entire agricultural development system needs to be re-organized to respond more effectively to the needs of the farmer.

The development of sustainable hill agriculture that balances economic and environmental factors will not progress without strong research institutions capable of dealing with specific problems - as for instance, developing seed varieties that are not damaged by hails. Various methods need to be designed to deal with these specific ground level problems.

It will be almost impossible to improve the hill agriculture productivity without the support of strong research institutions. This means major investments in manpower to provide adequate research facilities and reasonable motivation for individuals to undertake research activities in hill agriculture. Extension services are equally critical as vital links between the hill farmer and researcher. While various alternative models exist for organizing hill agricultural research and extension based on the concept of specialized production ecozones, the fact that prevailing systems have not been effective underscores the need for a thorough evaluation of the prevailing research and extension system in the hills.

Market Functions and Pricing

Development of marketing is particularly critical as specialization progresses. In many cases weak marketing activities have resulted in very serious consequences to farmers. Marketing must include identification of suitable products and pass on this information to research and extension. Alternatively, it must also identify suitable markets for different products. It should support the development of processing, storage, transport, packaging,

provide farmers with some reasonable estimates of prices, and advise the concerned agencies on appropriate pricing policies.

Given the fact that there is increasing competition in agricultural products that are generally perishable, the role of marketing activities cannot be underestimated. Many products will lose their off season advantages if they fail to reach the market on time. The problem of finding ready markets cannot be left to the hill farmer. Strong institutional support is required for marketing development if hill agriculture is to be more productive.

Organizing the Farmers

Without effective local change agents to implement programmes, new technology or development programmes are unlikely to have far reaching impact. Experience all over the world has clearly shown that strong grass root organizations are vital for the sustainability of development programmes. Financially induced changes invariably wither away, unless supported and managed by strong grass root institutions. Thus in the specific domain of agricultural programmes, deliberate promotion of a strong local organizational base is as important as financial resources and improved technology. Unfortunately this has been overlooked for a long-time at great cost to otherwise good agricultural development programmes.

An example of effective management at the grassroot level is the Farmer's Association in Taiwan that has had a very good track record. [Huang 1975]. It has existed in almost every community, providing various kinds of services needed by farmers-such as credit, marketing and extension services. Credit has been the "heart" of the association as it mobilizes both deposits and disburses credit. It therefore must compete with local banks for deposit mobilization. That farmers are members of the Association has been very important too. This alone would have been insufficient if it had not at the same time provided good returns on the farmer's deposits. Capital needed by the farmers has come mainly from this source. To support its banking functions, the Association has organized effective extension systems so that farmers can take advantage of the latest technology. It has encouraged joint cultivation system in order to take advantage of economies of scale in mechanized farm

operation, bulk marketing, and setting up of agro processing units. It has been argued that the success of this organization lies mainly in its organization structure and particularly its links with farmers. Bulk of the management staff come from the farmers themselves. The government has also tried to help the Association with necessary organizational, technical and even financial assistance. A well organized and responsive agriculture research system providing improved technology and farming practices was also very essential for the Farmer's Association to succeed in developing effective support services and organizing the farmers.

Many other examples can be cited where the

formation of effective local organization with strong support from the government has provided opportunities for unprecedented changes in rural areas. There are successful cases of dairy development, afforestation programmes, cash crop development and even agro-processing, organized on a group basis by farmers. Working together in groups has been a major factor in overcoming many constraints related to capital shortages, marketing, quality of extension work, etc. The critical element in development of specialized production ecozones in the hills is the extent to which hill farmers can be organized and mobilized to work jointly in improved production systems and management of limited hill resources.

9



(Courtesy : Tej Pratap)

9. A Familiar Courtyard of a Mountain Household.

A common scene of subsistence mountain households with livestock, piles of firewood, stacks of hay and small terraces in the front. (Photo from Himachal Pradesh.)