

VI. Summary

The Land

The nature of the Nepalese landscape and the characteristics of the soils have been discussed, in relation to their significance for management. While, in general, the climate and soils are conducive to moderately high levels of agriculture and forestry production, it is only through careful husbandry that soil fertility can be sustained.

The Farmer

1. Soil fertility in Nepal is maintained by good soil management practices, not by the inherent properties of the soil.
2. While indigenous farmer knowledge is rich with appropriate soil management techniques, that knowledge has only recently been considered relevant in agricultural research and extension.
3. Agricultural production systems in the hills are dependant on forest resources for the maintenance of soil fertility. The past lack of consideration of the farmer's needs in forest management has been a major obstacle for developing a more productive system. The strong emphasis of the present Government towards local forest control and management is highly desirable.
4. Present constraints to production are generally seen to be scarcity of land, capital, and labour. These, in turn, strongly influence the fourth constraint - fertilizing material - whether compost or chemical fertilizer.
5. Subsistence demands can no longer be met because of increased population pressure on a currently static agricultural system. Alternative off-farm employment is becoming increasingly attractive to Nepalese farmers, as returns to labour on the farm diminish.

6. Degradation of the soil resource is a direct result of increasingly marginalised agriculture and forestry production systems practised by small farmers. An improvement in the overall environmental condition of the country must be centred on changes within the agricultural production system.
7. Maintaining good soil fertility management practices is motivated primarily by the presence of a productive and profitable agricultural system.

The Future

1. The carrying capacity in Nepal has increased in spurts throughout history, in response to major changes in production systems. The present stagnation in agricultural production can only be broken by increasing the returns to investment of the scarce resources of the farmer, whether capital, land, or labour. Participation in commercial agricultural production appears to provide such an opportunity.
2. There are many examples of Nepalese farmers reacting decisively to increase commercial production of agricultural commodities when prices are encouraging.
3. Market-led agricultural development appears to be the key to enhancing the present agricultural system. Increased profitability will have spinoffs that include a more productive and sustainable soil base.
4. A more dynamic agricultural production system will, in turn, create a local demand for agricultural inputs and extension services to meet their production goals. A real demand for fertilizers, pesticides, etc will encourage the trader. A real demand for appropriate technology will make the extension agent's job more demanding and rewarding.

Recommendations

1. **On the household and village level**, technical, socioeconomic, cultural, and political changes will help to enhance soil productivity and the overall profitability of farming systems. These changes include the measures outlined below.
 - a. Family planning services, including child and maternal health care. Sustainability of any future programme for the enhancement of agriculture and the soil resource is dependant on a stable population. Reducing child mortality is the first step to acceptance of family planning.
 - b. A client-oriented extension system in which the needs of the farmer are the focus for agricultural development technology.
 - c. Increased sophistication in the understanding of markets, variety, timing of scarcity and glut, quality, packaging, and processing. In many cases, these appear to be more important than the production itself.
 - d. An education system that encourages more productive and profitable agricultural production rather than flight from the village.
 - e. Competitive, private rather than monopolistic, public enterprise to provide the inputs required by the farmer.
 - f. Local empowerment by user group formation for the management of common resources, particularly forest lands.
 - g. Gradual reduction in the traditional role of caste and elite rule as other ethnic groups begin to assert themselves.
 - h. Initiation of local political power.
 - i. Initiation of the local ability to collect taxes and manage a development budget.
2. **At the national level**, real decentralisation of authority and responsibility is a prerequisite for creating a healthy development atmosphere. Facilitation, rather than control, of the entrepreneur (including the small farmer) should be the guiding force in policy-making. Many of the past regulatory functions of the Government have had a strong negative effect on private initiative and thus overall development. Areas where the Central Government should strengthen its facilitating role include:
 - a. transportation,
 - b. communication,
 - c. education, and
 - d. research agriculture and forestry and a systematic means for its dissemination.
3. **The donors' role** should increasingly be seen as that of a "broker" between the "bottom up" demands of the local farmer and the "top down" policies adopted by the Government. Direct or indirect involvement in 1 or 2 form the basis for the brokerage. Specifically, the donor should fulfill the following functions.
 - a. Assist the Government of Nepal to better perform its facilitating role. Assistance in developing appropriate research and extension domains for agriculture and forestry is discussed in the report.
 - b. Wherever possible encourage the Government to give up its centrally conceived, target-oriented, "top down" approach to development. Assistance in the formation and empowerment of local user groups will be a critical part of the overall development.
 - c. Open up, direct, or encourage more efficient marketing of agricultural products. The initial linking of producers, traders, and markets as well as streamlining the process is crucial.
 - d. Align themselves more closely with the many newly-formed NGOs throughout the country. There is no substitute for the local initiative of serious community-based interest groups. Implementation of programmes can be much more effectively carried out by local non-government organisations.
4. Based on the strategy analysis, an entry point for improving the overall agricultural situation is

suggested. This entry point focuses on introducing high value fodder species on marginal rainfed lands, encouraging productive livestock to use the fodder, and providing enhanced market opportunities to sell animal products. This process is of primary importance for improving soil fertility management.

5. The Government should continue to investigate:

a. the management of soil organic matter,

- b. the squandering of night soil as a fertilizer source,
- c. the enhanced use of chemical fertilizers,
- d. the problems of soil acidification,
- e. the policies for fertilizer use in remote areas, and
- f. the development of national and local fertilizer production capabilities.