

## Knowledge Gaps and the Need for a Stronger Mountain Focus

Mountain areas have been neglected by the scientific community in the past and, consequently, there is a relatively poor understanding of the dynamics of changes in agriculture and natural resources. There are several reasons for the relative neglect of mountain areas. The first reason involves the difficulties with access and communications, in mountain areas, and these have greatly hampered the build-up of scientific knowledge. Physical difficulties in terms of movement and communications have created major problems for outsiders, who do not come from the local environment, in settling down. Thus, most scientific expeditions have a very seasonal nature. This lack of steady, continuing attention has left mountain ecosystems with limited research attention, resulting in a poor database and observations.

The second reason could also be the difficulties created by strong local hostility towards 'outsiders', irrespective of their intentions. Many mountain societies are still very sensitive about interactions with outsiders, although this is changing. This has resulted in insecurity and contributed towards a lack of sustained interest by scientists, mostly from outside institutions. This attitude has also been reflected in government activities in some areas. Not providing adequate priority to improving education and research conditions in mountain areas has been a legacy of this past pre-occupation and concern with autonomy and security. This, to a great extent, has been reinforced by inaccessibility.

To date, many of the problems have yet to be properly understood, by acquiring the accurate and reliable data which are lacking. Interpretations of changes are widely varying in many aspects of the environment. The following are some examples.

- a) Data relating to firewood consumption and soil erosion vary widely from estimate to estimate, area to area, and country to country. Each set of data may be correct in a particular case, but it is impossible to derive a general idea of the situation in mountain areas as a whole (Thompson and Warburton 1983).
- b) Different groups have taken stands on various issues. Some of these are as follows.
  - i) Some groups say that deforestation is increasing while others argue that this is not so, at least in some areas (Ives and Messerli 1989).
  - ii) Some groups say human activities are destroying the environment, while others argue that this is not so (Ives and Messerli 1989). Both of these positions may be true.

- c) Mountain people appear to be rapidly accepting monocropping, urbanisation, commercialisation, and outmigration, although some appear to be sceptical and question the usefulness of some of these changes for mountain people. Mountain people are asking for more modern knowledge and improved technology, while some seem to be in favour of further developing indigenous knowledge and traditional technologies.
- d) Mountain policies seem to favour food security while mountain farmers, as do other farmers, prefer income security.
- e) Overcoming poverty appears to be a higher priority for mountain farmers than concern for the environment, while many programmes tend to give a higher priority to environmental issues.

In the context of conventional mountain agriculture, mountain specificities have not been given sufficient weight by R&D strategies which could explain our poor understanding (Banskota and Jodha 1992a). In more successful initiatives, such as at the Lumle and Pakhribas Agricultural Centres in Nepal and Himachal Pradesh in India, mountain specificities have played an important role in determining technology options, although this has only been realised through experience after encountering many difficulties in promoting improved technologies (Chand and Thapa 1990 and Keating and Khan 1992). Improvements in access have favoured the adoption of improved technologies that were successful in exploiting comparative advantages through the market. The lack of improved access led to farmers' preferences for technologies that increased local food production. If fragility restricts the scope for land-intensive technology, diversity and niche suggest a need to design improved location-specific technologies based upon an understanding of local farming systems and farmers' practices. A fairly long period of time is needed before the right combination of environmental and economic factors produces a package of improved options that meet farmers' preferences. As part of the system developed to ensure the sustainability of improved technologies, the experience of the Lumle Centre in Nepal highlights the role of mountain specificities more clearly (Pound et al. 1992). It points out the need for: (a) ensuring accurate identification of problems and farmers'/extensions' feedback; (b) carrying out location-specific verification of technologies; (c) multidisciplinary cooperation in assessing research results; (d) careful selection of technologies and subsequent monitoring of the impact of technologies on the environment; (e) assessment of technologies in the context of the limited resource base of hill farmers; and (f) use of indigenous resources.