

Policy dimensions of capacity building for sustainable land management: workshop with the scientists and development programme implementers

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Dr R.K. Maikhuuri made a presentation on the issues related sustainability of agricultural land use in Garhwal as a starting point for discussion. The major points of his presentation and those arising from following discussion included:

- Traditional subsistence farming was undergoing a process of transformation – from subsistence farming to market oriented farming since last couple of decades.
- Scientific research initiated since 1970s aimed for agricultural development has concentrated by and large on improvement in the yields of wheat and rice and has ignored the untapped potential of a large number of traditional crops grown locally since centuries (44 crops including 12 pulses). Conventional agricultural scientific community has viewed crops as source of human food rather than as a source of both fodder, human food and medicine and have assumed tradition agricultural systems deficient in all respects. Limited efforts have been made on evaluating the environmental and economic dimensions of traditional crops and cropping systems.
- Much more neglected is the livestock genetic resources even though agriculture-livestock-forest inter-linkages are well known. Cross breeding is being promoted without evaluating the potential of indigenous breeds and indigenous animal breeding knowledge. The indigenous breeds of cattle yielding as high as 35 litre milk per day do exist but have not attracted attention of scientists.
- Public distribution system, lack of compatibility between different institutions, changing food habits, increasing influence of market and cash economy, formal education of women and the youth driving them away from agriculture and are the factors contributing to loss of traditional crop genetic diversity together with indigenous knowledge on agriculture. A crop like *Panicum miliaceum* that matures over a period of as short as 50-60 days remains unknown to the wider community.
- While the need of conservation of agrobiodiversity has been expressed by both national and international environment-development agencies, projects and programmes promoting on-farm conservation and indigenous innovations towards enhancement of agrobiodiversity are altogether lacking. Biosphere Reserves in the country do provide a scope for agrobiodiversity conservation but it is likely to succeed when conservation fetches economic benefits to the people.
- Organic farming is getting more and more recognition world-wide. The State of Uttarakhand has been providing incentives for organic farming. There are however problems in marketing of organic products as the demand for organic food is emerging in areas away from the place of production. The local demand is lacking partly because people are not health-conscious. A high degree of health consciousness related to food quality is likely to increase the demand for organic

food as well as conservation of traditional crops as is the case in a country like Japan. The price difference between organic food and non-organic food in Japan is much higher (about 10 times) compared that in Uttarakhand (Rs 1000 and Rs 2000 per quintal of non-organic wheat and rice, respectively, compared to Rs 1400 and Rs 3000 of organic wheat and rice, respectively). A concern for quality is likely to emerge only after adequate quantity of food is available. In upland villages where land holdings are quite small (< 0.14 ha as stated by one participant), food quality may not be the priority concern. If one looks at the tiny holdings, one realizes the importance of bee keeping, mushroom cultivation and dairying that require less agricultural land.

- Government has been providing subsidy to individual farmers for production of vermicompost. To ease the marketing problems, government agencies such as Biofuel Plantation Board are given instructions to buy vermicompost produced by farmers (@ Rs 250/kg). Substantial amount of compost is being produced by treatment of solid waste by some municipal corporations but there are no users or market for it. Mixed perceptions were expressed about the suitability of vermicomposting exotic earthworm like *Eisenia foetida*.
- Over the last five years, road length in Uttarakhand has increased by 2.5 times, from 8000 km before 5 years to 18000 km now and expansion of road network is estimated to have caused loss of 5000 sq km of agricultural land. Yet, expansion of road network remains a priority consideration of both government and the people.
- The development programmes have neglected the secondary development sector including value addition to agricultural produce. Enhancement of indigenous capacity of value addition of traditional crops may promote their conservation as it will fetch economic benefits to the farmers. Inclusion some traditional food dishes in the menu of food served by the government tourist rest houses since last couple of years is a step in this direction.
- Some interventions promoted by the government such as cultivation of *Jatropha* were questioned on economic grounds and were also to threaten local food security system.
- The causes of loss of agrobiodiversity in China seem similar to those of India though the rates of change may be different. However, unlike India demand for organic farming is rapidly increasing in China.
- Policy action to curtail the use of a depleted natural resource (e.g., banning cultivation of 60-days maturity period rice variety has been banned by Punjab government to increase recharge of ground water) is lacking in the hill region.
- Some symptoms of upward movements of alpine species are visible but the knowledge on influence on climate change on agroecosystems is negligible for Uttarakhand region.
- Most of the conclusions on environmental sustainability or economic productivity of upland agriculture are based on short-term studies (1-2) years of data collection for a given attribute or data collection for a given attribute or process). Further, there has been a low level of communication between and appreciation for each other among biophysical scientists, economists, social scientists, development officials, NGOs and farmers, leading to the risks of

misconceptions about the very existence of some problems and their sustainable solutions. Efforts on an objective evaluation of the impacts of development interventions by independent research agencies (e.g., higher education institutions) are needed for improving the existing policies.