Forage Development in the Nepal mid-hills: new perspectives

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Introduction Nepali hill farming communities are typically poor and remote, and are currently severely affected by conflict. The challenge is to define simple approaches which can generate results within this context. Livestock are central to livelihoods and to the sustainability of farming, with rain-fed agriculture dependent on inputs of manure-based compost. Stall feeding has increased dramatically with the adoption of community forestry and general preclusion of grazing. A broad landscape approach to forage development is increasingly being adopted, with concurrent on-farm interventions, such as intercropping and back-yard forage, and off-farm interventions, such as landslide stabilisation with forages, development of forest understory, and reinforcement of degraded grazing areas with forage. Considerable work has been undertaken in the mid-hills (below 1800m ASL) with very limited higher altitude programs to 4,000m ASL. Until the late 1990s forage development was restricted to use of a very narrow array of genetic material. To accommodate the agro-ecological diversity, broad mixtures are now commonly used, encompassing species with known potential locally, and some peripheral commercial and pre-release material for testing to refine recommendations. Productive erect cut-and-carry grasses including Mott Napier (*Pennisetum purpureum* cv Mott) are popular. A suite of legumes including *Stylosanthes.guianensis*, *Chamaecrista rotundifolia* cv Wynn, *Aeschynomene americana* cv Glenn, *Aeschynomene villosa*, *Neonotonia wightii*, forage arachis (*Arachis pintoi)*, and *Leucaena leucocephala* have been successful in various niches.

Scale and benefits Since the late 1990s, it is estimated that at least 40,000 households have been involved in the adoption of the newly introduced genetic material. There are now more than 20 new species actively promoted. Additionally, more than 35,000 school students became involved in only two districts during 2004. Adoption rates of the forage packages are as high as 80%, with preliminary "social mobilization" unnecessary. Farmer-farmer exchanges have been encouraging. Most forage from on-farm and cultivated communal plantings is used in cut-and-carry systems for feeding goats and dairy and draft bovines, with increasing use also for poultry and swine. On-farm forage development has dramatically reduced labour requirements for forage collection. Farmers report benefits from forage legume introduction to crop areas, in terms of stabilizing crop production. Landslide stabilisation from direct seeding has been successful on many sites.

Major reasons for success

Farmer attitudes and farmer groups Farmers perceive the lack of good quality forage to be a major constraint on livestock productivity. Women commonly spend more than four hours per day on fodder collection; they welcome any intervention to reduce this burden. Traditional involvement of the majority of households in milk production for home consumption or sales is considered to be a major factor in achieving higher adoption rates than could be expected, for example, in South-east Asia or most of Africa. Nepali hill farmers are commonly coordinated into focus groups, such as livestock groups, community forest user groups (of which there are now more than 10,000) and various women's empowerment groups; this presents exceptional opportunities for intervention and efficient delivery of technology, with high rates of farmer-farmer adoption locally.

Farmers and participatory research The Nepali Government capacity for conventional forage research is negligible in the context of the vast agro-ecological diversity. Hence large numbers of widely scattered farmers and farmer groups are now directly involved in screening new development strategies and genetic material. Experience has shown the necessity of including simple and reliable strategies (such as back-yard or terrace-riser forage) and some conspicuous and reliable genetic material including Mott napier and forage arachis. Such species have had a high rate of spontaneous lateral adoption locally, although technology transfer over larger distances has typically been slow; this reinforces the importance of initiating work at many widely scattered sites.

The future Remoteness of communities and the current conflict preclude regular visitation. Simple and flexible technical packages and technology delivery mechanisms, with the capacity to provide quick and conspicuous results for poor and remote communities, are central to success; recent programmes have demonstrated the potential for reaching large numbers of poor hill farmers. It is now necessary to maintain access to improved genetic material, to improve the supply of good quality seed, to involve more development agencies and community based organisations in delivery of the technology, to trial technologies in new environments, and to streamline adoption by facilitating exchange visits for farmers from new areas.