

Node: Suite Summary^{1,2}

Nepal: Linking field activities with policy

Context

Two contextual aspects informed the direction and purpose of this Node: Suite. The first was specific to Nepal and the concerns of soil fertility decline, soil erosion and land degradation on the steep slopes of the Middle Hills, where 12 million people subsist on hillside-terraced dryland holdings of less than 0.5 ha. The second was generic and related to the identified need to undertake effective farmer-participatory research in order to influence development policy to the benefit of poor people.

The Nepal Agriculture Perspective Plan (July 1995) specified ways to improve efficiency in the agriculture sector and to accelerate the growth rate of agricultural production. It identified soil fertility and the availability of fertilizers as the key constraints to increased crop productivity. NRSP responded by commissioning some early studies (e.g. R6757) to show that integrated use of manures and fertilizers provided the best options. In 1997, NRSP hosted a soil fertility workshop at Reading where participants from Nepal, UK and elsewhere recognized that interventions were needed to target both nutrient losses and the management of surplus water. These interventions would provide producers with a range of options to manage the interactions between soil nutrient loss, organic matter decline and water movement. The key researchable constraint was to devise, test and adapt the most appropriate techniques for small farmers.

Farming systems research (FSR) and participatory technology development (PTD), supported by the CGIAR (Consultative Group on International Agricultural Research) centres and by agencies trying to respond to the failures when technologies were inadequately promoted both advocated agricultural research in the context of the whole farming system, necessitating some degree of farmer participation in experiments. By 1996, farmer participatory research had developed and was becoming almost mandatory when dealing with complex natural resource (NR) management issues such as soil erosion and conservation. However, by placing research on farmers' fields and changing the nature of control over the experiments, agricultural research was in danger of becoming too local and losing any potential to influence policy and policy processes. Projects within this Suite were researched using farmer participatory techniques to identify adoptable soil management practices for resource-poor hillside farmers. They also aimed to provide information relevant to the development of policy.

Research Topics

- How can soil fertility decline be reversed on steep lands where resource-poor farmers manage a difficult environment, infrastructural problems prevent increased use of inorganic fertilizers and organic materials are scarce because of competing demands for fuel and fodder?

¹ This document summarises NRSP's work in one of its Uptake Promotion Node: suites. For further details and links to project and project documents see <http://www.nrsp.org.uk/6.aspx>

² This document presents research funded by the UK Department for International Development (DFID) for the benefit of developing countries. The views expressed are not necessarily those of DFID.

- What are the most appropriate ways to design and manage joint farmer-researcher experiments to minimise nutrient losses?
- How can the lessons and results from these field activities be linked to create the policy environment for sustained change?

Projects

R7412 (see project links below) (1999-2003) was developed to meet the original, pre-1999, Hillside Production Systems (HS) purpose, which concentrated on “participatory approaches to the design of technologies that reduce erosion and nutrient losses and provide greater benefits to farmers.” With the change of management of NRSP in 1999 and the development of a new HS output, the focus of R7412 shifted primarily to exploring means for local professionals and rural communities to identify, develop and test soil and water management interventions to minimise nutrient losses (due to leaching and erosion) in the middle hills of Nepal. The starting hypothesis was that farmers are the best judges of their own circumstances. Hence incorporating farmer knowledge into research and technology generation was viewed as a promising approach for devising economically and culturally viable NR management techniques.

After an analysis of farmer knowledge, current practice and constraints, intervention options were identified and tested using a process of Participatory Technology Development (PTD). Farmers then participated in on-farm trials of soil and water interventions that might prove suitable for their community. Thirty-six farmers were selected from three sites, and they met regularly as a research farmers’ committee. The farmers decided on four intervention designs for each research site, including the use of legume and non-legume forage species, fruit trees and water harvesting structures. The scientists supported them by supplying seed, planting materials and advice.

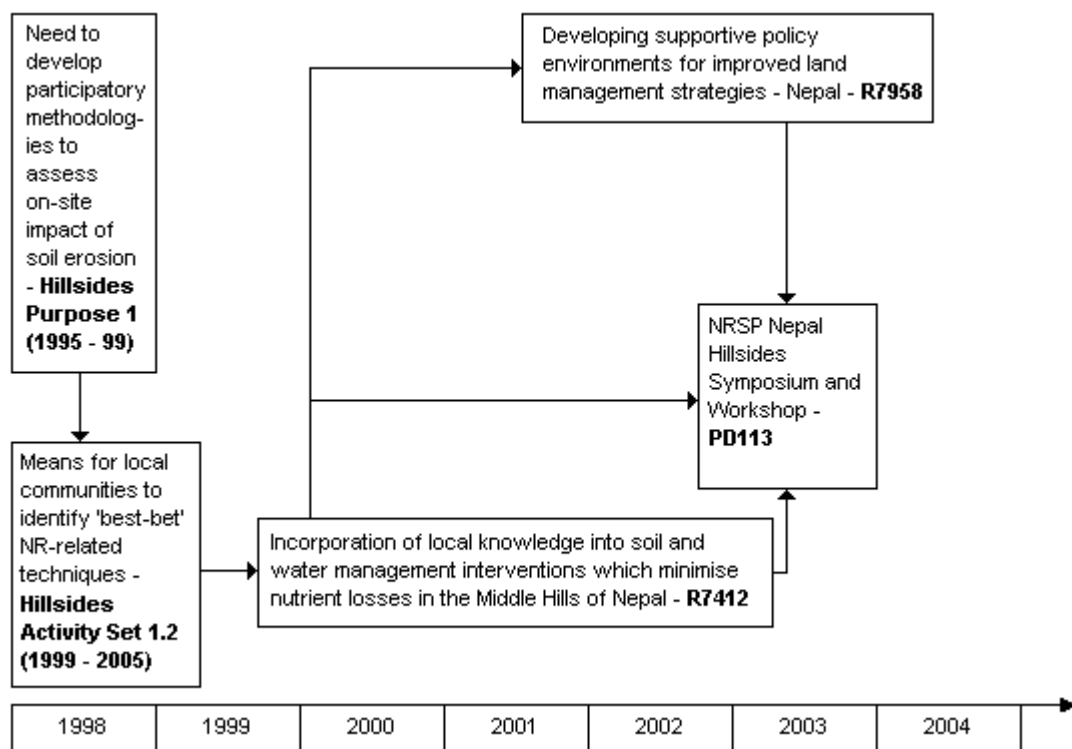
R7958 (2001-4) was developed as part of the NRSP Hillside emphasis on scaling-up research results to the wider community. Specifically, it addressed integrated soil and land resource enhancement through developing supportive policy environments for improving land management. The project investigated if information from pilot studies can be fed into policy-making processes in such a way that the subsequent policies are more conducive to the adoption and adaptation of improved land management strategies. Using an approach called TORA (Theory of Reasoned Action), farmers’ attitudes, intentions and subjective norms with respect to the use of land management practices were analysed and cognitive barriers and drivers to decision-making were identified. A review of policies on land management and an exploration of the policy-making process identified gaps in current policy pertinent to influencing farmers’ land management behaviours.

PD097 (2001-2) (see R6525) is more fully reported in Bolivia Suite 3: Promotion of hillside products. It was a development of experiences gained in a number of Hillside projects, including R7412, which showed the benefits of conducting research investigations with farmers as well as training local professionals in field assessment techniques for soil erosion and its impact. NRSP co-financed a handbook on this subject, published in 2001 by Earthscan and widely disseminated through NRSP networks, the United Nations University and UNEP (United Nations Environmental Programme).

PD113 (2002-3) had three main themes: i) participation of farmers at all stages of technology development; ii) new ways to integrate farmers’ local knowledge and practices with

scientists' knowledge and findings in order to develop appropriate soil and water management interventions; and iii) communication of policy-relevant findings to policy makers as an essential element of effective research. In February 2003, ICIMOD (International Centre for Integrated Mountain Development) and NRSP jointly convened a public symposium (in Kathmandu) and a research workshop (in Pokhara) to bring together key international stakeholders in NR research to share experiences and develop new research agenda that links with policy for mountain communities. NRSP brought researchers from Bolivia, Uganda and Nepal, while ICIMOD brought its participants in PARDYP (People and Resource Dynamics in Mountain Watersheds of the Hindu-Kush Himalayas Project). The final product was a book (see Key Research Products below), which distilled knowledge on how to make renewable NR management research more effective for the societies and environments of steep hill lands.

Project links within Nepal Suite 2: 1998 - 2004



Outputs

Findings

R7412 revealed that farmers have a good knowledge of local soil types and their properties. They understand the processes of soil erosion and the practices to minimise the loss of soil fertility and plant-available water. They appreciate the impacts of interventions on crop production. The interventions tested reduced soil and nutrient losses and increased production of fodder, fruit and vegetables. Incomes were substantially increased. Using the PTD process pioneered by the project, and drawing on local knowledge, farmers were able to identify and test appropriate interventions that increased income. However, farmers need guidance on implementation of trials in issues such as site selection, setting up a control plot and the number of seasons needed to gain acceptable results. Farmers involved were

impressed with the results, as indicated by the continuing participation of all 36 of the original research farmers. The trials attracted the attention of other farmers, many of whom began working with the research farmers and scientists.

Some important lessons were learnt in the development of the trials and the involvement of farmers:

- Trials need to be undertaken over several seasons.
- Trials should compare with current practice (the 'control') to measure benefits from any new practices being tested.
- The selection of sites for the trials is important, especially where comparisons are made visually between current and new practices.
- Careful choice of indicators is needed to judge the effectiveness of trials.
- Trials are needed in different environments to judge their reliability and transferability.

In project R7958, farmers identified six land management practices that contributed to their strategic goals of soil fertility management and soil conservation – use of manure; chemical fertilisers; fodder trees; hedgerows on sloping land; cutting (rather than pulling) legumes; and stall-feeding of livestock. Analysis of farmers' attitudes, intentions and norms with respect to the use of these practices revealed multiple motivations and constraints for adoption of improved land management. 'Salient outcome beliefs' included farmer perceptions of the potential of chemical and organic fertilizers, of the way in which legumes should be used to enhance soil fertility, and the role of trees and hedgerows. These beliefs fundamentally influence what farmers do and must be taken into account in developing supportive policy environments.

The research suggested some specific areas for policy review and change in the context of Nepal and hill lands:

- Support for extension reform. Extension has positive impacts but greater differentiation is needed in the planning and targeting of extension interventions.
- Community forest management. District Forest Office staff in Nepal have a major influence on forest management plans, which in turn affect many people's access to organic matter sources. Understanding these effects and impacts is essential for policy development.
- Fertiliser. Farmers have substantial concerns about the effect of chemical fertilisers on soil. Local testing of soils can help to assess soil quality and ensure sensible decisions on land management.
- Land tenure. Insecurity of land tenure discourages tree planting and establishment of hedgerows on farmland. Although the 1997 Land Act amendment should have improved the situation by removing 'dual ownership', insecurity prevails. Mass media and civil society organisations have a role in making local people aware of their rights under legislation.
- Credit for establishing nurseries. Credit and subsidies are usually targeted at commodities rather than means to improve land management. Guidelines for implementation of credit need to be reviewed.

PD113 demonstrated strong mutual interest and engagement on land management issues by researchers in the broader Hindu-Kush Himalaya region. It built a strong demand in the region for the type of research undertaken in Nepal by NRSP researchers.

Research messages

- Farmers generally have a thorough knowledge of local soils and NR dynamics. Incorporation of farmers' knowledge in the technology development process and giving farmers a lead role in experimentation and decision-making ensures development of appropriate technologies.
- Placing research trials in farmers' fields encourages uptake of the research results because local farmers can see the practices in situ and hear the experiences of the trial farmer. Uptake is more effective when the research trial landholder is actively engaged with the trial.
- Farmer researchers need to understand some of the basic principles behind research so that results are widely applicable and capable of being transferred to other sites. Enthusiasm is necessary but not sufficient.
- The whole farming community needs to be involved in initial consultation, invitations to participate and, if possible, active engagement in the agricultural practices being tested. Their continued support as well as the smooth running of research activities facilitates uptake of the research results and involvement in future farmer-led trials.
- Analysis of farmers' attitudes, intentions and subjective norms is a useful way of identifying cognitive drivers and barriers to land management decisions. This is essential information for developing meaningful policy messages from research.
- Policy makers' awareness of the direct and indirect impact of policies on land management decisions needs to be improved through enhanced inter-agency and inter-ministry sharing of information and more structured interaction with scientists, local professionals and farmers. Interventions for raising awareness include briefing papers and increased mass media coverage of land management issues.

The research also produced messages relevant to specific institutions involved in research and development interventions in steep hill lands.

- For NRSP, PARDYP and other NR research programmes, sharing experiences and disseminating research messages to stakeholders at all levels – locally, nationally, regionally and internationally is valuable. Dissemination strategies and capacity building should become integral parts of the research process.
- For DFID, linking field activities to development policy requires substantial investment in information on farmer attitudes and behaviours. Simplistic 'blueprint' approaches to technology development and dissemination are unlikely to work.
- For development institutions more broadly, using project outputs to develop training approaches and materials that highlight a farmer-perspective is important.

Key research products

- Stocking, M.A. & Murnaghan, N. 2001. Handbook for the field assessment of land degradation. Earthscan Publications, London. xvi + 169 pp. (PD097/R6525).

- Stocking, M., Helleman, H. & White, R. (eds.) 2005. Renewable natural resources management for mountain communities. International Centre for Integrated Mountain Development, Kathmandu. 314pp. (PD113).
- Joshi, L., Shrestha, P., Moss, C. and Sinclair, F.L 2004. Locally derived knowledge of soil fertility and its emerging role in integrated natural resource management. In van Noordwijk, M., Cadisch, G. and Ong, C.K. (eds.) Below-ground interactions in tropical agroecosystems: Concepts and models with multiple plant components. Wallingford, UK: CABI (R7412).
- McDonald, M.A., Lawrence, A. and Shrestha, P.K. 2003. Soil erosion. In Schroth, G. and Sinclair, F.L. (eds.) Trees, crops and soil fertility - concepts and research methods. Wallingford, UK: CABI (R7412). Pp 325-343.
- R7958 working papers:
 - Review of land management policy in Nepal (working paper 1);
 - Engaging with the policy process in Nepal (working paper 2);
 - Field-level management technologies in Nepal hill regions (working paper 3);
 - The theory of reasoned action and its applications to understand the relationship between attitudes and behaviours: An introduction and a review. (working paper 4);
 - Farmers' attitudes towards land management strategies (working paper 5).
- Final Technical Report for Project R7412.
- Final Technical Report for Project R7958.

Impacts

- In addition to the 36 research farmers, nearly 100 more as well as local groups were involved in R7412 and now have an enhanced perspective of their role in developing and testing techniques to improve soil and water conservation in the mid-hills of Nepal.
- Doctoral level research training was provided to two Nepalese professionals linked to R7412 and 60 farmers were trained in on-farm research approaches.
- Policy makers in Nepal are now more aware of the use and function of research for the development of policy. Links between policy makers and researchers in Nepal are more solid, as evidenced by the range of types of participant and their active participation in R7958's September 2003 workshop. Since 2004, researchers at the Nepal Agricultural Research Council are reported to be using one-to-one discussions with policy-makers to discuss research findings.
- Nepali research partner LI-BIRD (Local Initiatives for Biodiversity in Rural Development) of R7958 is now using the techniques developed by the project, including TORA. Evidence of impact is in (1) a new project, PROLINNOVA, to promote innovation with local farming groups, and (2) the development of participatory social analysis tools for NRM in a new IDRC-funded project (2004-7)
- The training materials prepared in PD097 have been taken up in a number of other projects (see Bolivia Suite 3 for more details). Examples include:

- Land Degradation Assessment in Drylands (LADA), an FAO project in Argentina, China, Cuba, Tunisia, Senegal and South Africa.
- Materials are being translated into Russian for a 2006-2008 project on Sustainable Land Management in the High Pamir and Pamir-Alai Mountains (Kyrgyzstan and Tajikistan).
- The book 'Field Assessment of Land Degradation' is available in Spanish and English, and Arabic and Chinese language versions are planned

Further work

This Suite has identified specific knowledge gaps that could be addressed further:

- From the work of R7412 it is evident that farmer-initiated research can be achieved in communities where local people have recognised and prioritised some clear researchable problems. The role of the researcher needs to be re-assessed in the context of these findings. This is a subject for both the conduct of the process of research and the management of it. For example, how should local people be approached and who should take the initiative to develop research trails. Does the reward system for researchers encourage the process of working with, and moving more decisions to, research farmers?
- Although there were meetings between policy makers and Nepalese researchers, R7958 provided only sporadic evidence that the relationship between them has fundamentally changed. Policy areas identified for review in this research need to be discussed with policy-making bodies so that experimentation with alternative land management strategies may be supported.
- In many research and development institutions, formal scientific approaches still prevail. These approaches primarily use scientific and technical criteria to assess the relevance of technologies for resource-poor farmers. However, many, if not most, of the problems are non-technical. How should this be addressed so that interventions for reducing poverty and hunger in marginal steep land societies can be improved?

At the time of writing (2006), the current policy environment in Nepal, with conflict between insurgents and government, is not conducive to further work.