



Research farmers in Nepal

Farmers have always engaged in research: testing out new ideas, crops and techniques. But how many researchers are fully aware of this and are willing and able to exploit this plentiful resource?

Maya Thapa, a 51 year-old farmer living in the mid-hills of Nepal is a research farmer. She keeps cattle and goats to supplement the family income and her village asked her to join the research farmers committee to work with local scientists and experiment with new methods of controlling soil erosion and nutrient losses. She planted new grasses on terrace risers and mixed hedges of mulberry on the edge of terraces. She commented, 'The new grasses grow faster, they are nutritious for livestock and are good for multiple cuts. With mulberry I can now rear silkworm, which is becoming popular in the village. These forage species are also good for the soil. I am happy that I joined the research farmers committee.'

This is just one example of how agricultural research is changing in Nepal. Researchers are beginning to recognise the importance of farmers' knowledge and experience and the significant contribution they can make to research with a little help and support.

In Nepal

There are more than 12 million people in the mid-hills of Nepal subsisting on hillside-terraced land-holdings of less than 0.5ha. *Bari* lands, as they are known, are a focus of great concern. Farmers rely on rainfall and organic manures as their only inputs. But heavy rainfall and poor soil and water management practices are eroding the soil in the pre-monsoon period in April and May and soil fertility is declining as nutrients are lost through leaching later in the season. If farming livelihoods are to be protected then alternative farming practices are urgently needed that help to conserve water, soil and fertility in these marginal and fragile hillside environments.

These are not new problems and yet current research, knowledge and practices have not solved them. Technology is already available but many farmers have not adopted interventions such as the Sloping Agricultural Land Technology (SALT) in spite of their demonstrated effectiveness in reducing runoff and controlling erosion. Farmers though are not ignorant when it comes to farming the hillsides. Studies suggest that many of them already have a sophisticated understanding of soil and water related ecological processes, and that they make rational use of this to devise practices to combat erosion and declining soil fertility.

Incorporating farmer knowledge into research and technology development would seem to be a promising way forward, but how can this be achieved?

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Exploiting farmers' knowledge

The first step in this process was the growing acceptance of the value of farmer knowledge and experience by research scientists and development workers. Until now this was known about but it was just documented as part of field studies and not exploited in any way. The studies showed that farmers have both knowledge and practical experience but a clear distinction was needed between the two. They did not translate all their knowledge into practice and conversely not all their farming practices were adopted with a good understanding of the underlying principles.

The links between cause and effect were also not straightforward and so what seemed to be an obvious solution might turn out to be quite inappropriate. The perceived problem of poor crop yield is just one

example (see diagram). Analysing both knowledge and practices in this way helped to identify the intervention options. These were then tested using a process of Participatory Technology Development (PTD).

Combining this on-farm knowledge with scientific research information from runoff plots was achieved using workshops that local farmers, invited by their village leaders, and scientists attended. Scientists shared soil and water management knowledge with participating farmers with the help of charts, posters and demonstration equipment that the research team had prepared. Particular attention was given to the findings of scientific trials that were not well recognised or articulated by the farmers, such as the leaching of soluble nutrients.

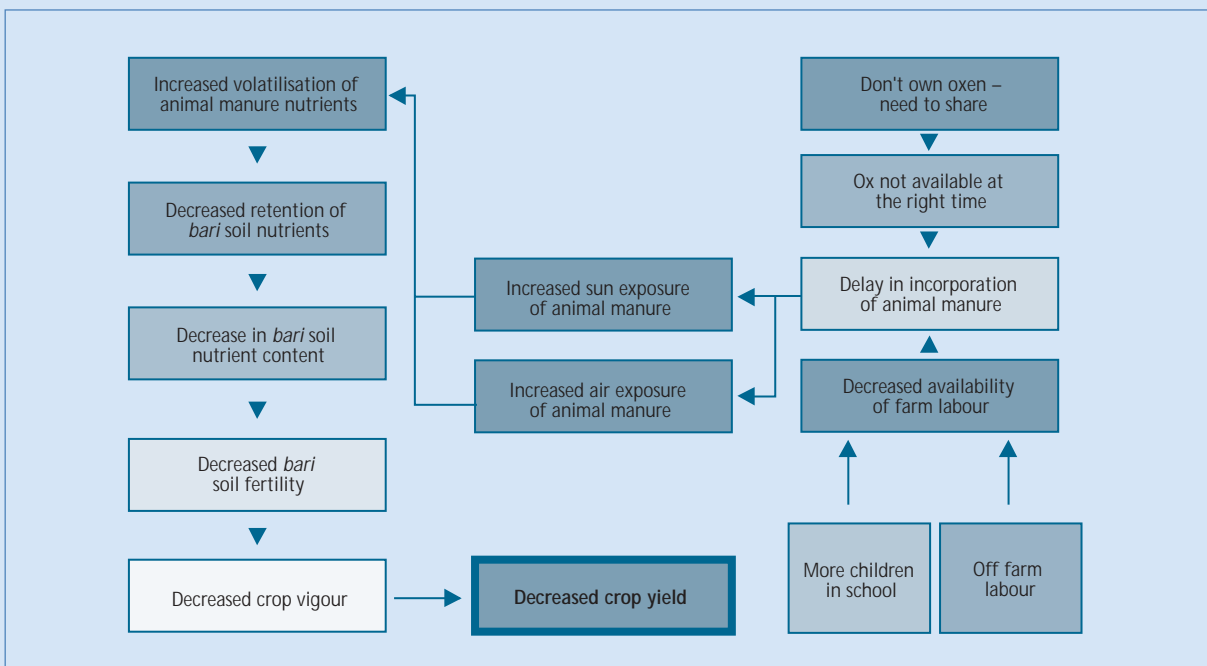
Choosing research farmers

Farmers and village leaders attending the workshops were asked to collectively identify and select farmers to participate in on-farm research into soil and water interventions that might prove suitable for their farms and their community. Twelve farmers were selected at each of three sites and became known as research



farmers. All thirty-six met regularly as a research farmers' committee.

They spent one week together on a study tour visiting research and demonstration sites in different parts of the country. Not only did they acquire new knowledge from this but they also saw at first hand several improved soil and water management practices. On returning to their farms they were highly motivated to try out the new practices. But enthusiasm was not enough and researchers were keen for farmers to understand some of the basic principles behind



research so that results would have added value by being more widely applicable. Such issues as how to evaluate new ideas, how to test them out in practice and how to compare them with existing systems would help them to appreciate that:

- Trials are needed over several seasons to obtain meaningful results
- Trials should be compared with current practice to test their effectiveness (the concept of a control)
- Selecting land for trials is important for comparing different approaches
- Means/indicators are needed to judge the effectiveness of trials
- Trials are needed in different environments to judge their robustness or reliability (the concept of replication).

Farmers eventually came up with 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 and planting materials and providing advice.

Reaping the benefits

After two years of experimentation, farmers' were impressed with the results. All of the thirty-six original research farmers were still actively monitoring the effectiveness of their experiments. A clear encouragement was that the interventions not only reduced soil and nutrient losses but also increased their supply of fodder, fruits and vegetables as well as their cash income.

Farmers are more impressed when they hear directly of experiences from other farmers and see them in practice. So it was not surprising that the trials also attracted the attention of other farmers, many of whom began working with both the research farmers and the scientists. Some 40,000 grass slips, 1,200 mulberry, 200 orange and 121 coffee saplings were supplied in the second year to support the initiative.

Involving the farming community at all stages ensured their continued support in the smooth running of the

The result

Understanding and giving value to the knowledge that farmers already possess about their systems and the rationale behind their practices and finding ways to motivate and empower them to experiment with new interventions, is a significant research tool. They can see for themselves that they are an important source of information and innovation and this lays the foundation for farmers' participation in the technology development process.

LI-BIRD, a local NGO and partner in this research specialises in supporting smallscale farmers to develop good soil and water management practices. It has now adopted this approach to development as part of its future strategy.

research activities. They also developed a responsibility for the process and provided feedback for further improvement. Research farmers felt they had an individual responsibility to the community that appointed them and this ensured a commitment to their experiments and the sharing of information and findings with others.

R7412 Incorporation of local knowledge into soil and water management interventions which minimise nutrient losses in the middle hills.

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