**Left:** Initial discussions about farmer-led experimentation with a farmers' group (Neema Joshi)
**Right:** Farmer-led experimentation on different cauliflower varieties (Juerg Merz)

# Farmer-led experimentation

**Nepal: कृषकले गर्ने परीक्षण वा कृषकको अगुवाइमा गरिने परीक्षण**

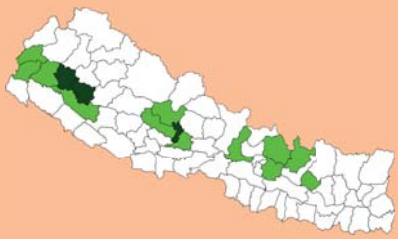
## Participatory technology testing and adaptation through farmer-led experiments

Farmer-led experimentation is a type of action research initiated and carried out by farmers in their own fields. This approach enables farmers to identify technological options suited to local agroecological and socioeconomic conditions. The farmer-led experimentation process is taken up within existing farmer groups. This approach is closely related to the 'participatory innovation development' and the 'participatory technology development' approaches as discussed in Kolff et al. (2005).

Simple experiments are usually replicated in five to ten farmers' fields per group. Generally, the whole of each experimental plot from each field is harvested and the yield recorded. Field implementation, group visits, and observations are carried out by the farmers themselves. The processing of results is done in groups together with the support staff from the facilitating organisation. These farmers are very likely to adopt tested technologies that are shown to be better for meeting their needs. The results are also used by support staff and shared with other organisations, and provide input for dissemination through farmer-to-farmer diffusion.

Farmers play a leading role in all steps of the process, starting from problem identification to planning, implementation, and evaluation of the experiments. This ensures that farmers are the driving force in the research process and not mere recipients of research findings that have been generated elsewhere. The detailed implementation plan is discussed within the groups and individual and collective responsibilities are assigned. The experimental site, individual implementing farmers, group visits, and results-sharing meetings are decided on by group consensus. Some observations are recorded by the implementing farmers. Promising innovations are then identified based on the collective evaluation of the tested treatments. Technical and other facilitation support is provided by organisations active in the area.

The Sustainable Soil Management Programme (SSMP) implements its projects in several midhills districts of Nepal
(dark green - previous working districts;
light green - districts in 2007)



**WOCAT database reference:** QA NEP3
**Location:** Nepal
**Land use:** Cropland
**Climate:** Humid subtropical
**Related technology:** Improved cattle shed for urine collection (QT NEP1); Legume integration (QT NEP3); Organic pest management (QT NEP4); Improved compost preparation (QT NEP7); Better quality farmyard manure through improved decomposition (QT NEP8); Improved farmyard manure through sunlight, rain and runoff protection (QT NEP9); Cultivation of fodder and grasses (QT NEP23); Urine application through drip irrigation for bitter gourd production (QT NEP24)
**Compiled by:** SSMP
**Date:** May 2007

The Sustainable Soil Management Programme is implemented by Helvetas Nepal and Intercooperation in collaboration with the Government of Nepal and civil society actors. It is financed by the Swiss Agency for Development and Cooperation. The technology was documented using the WOCAT (www.wocat.org) tool.

## Problem, objectives and constraints

### Problem

- The common issues concerning farmers in growing crops include pests and diseases, yield decline, inappropriate crop varieties, and the introduction of new varieties. Rather than technicians providing farmers with ready-made solutions to their problems (that may or may not work), farmer-led experimentation allows farmers to carry out their own trials to try and solve specific problems.

### Objectives

- Local farmers collectively solving problems by identifying and using the most appropriate local solutions
- Local farmers designing, testing and disseminating alternative technologies adapted to local conditions
- Strengthening joint learning by farmers and development actors

**Constraints addressed**

| Major | Specification | Treatment |
|---|---|---|
| Technical | Problems related to agricultural production and soil fertility | Testing and adaptation of technologies to local conditions using local human and natural resources |
| Institutional | Dysfunctional government extension system | Reliance on local human resources and farmer to farmer collaboration |
| Financial | Lack of money for technical support | Collaborative approach amongst farmers from the same settlements |

## Participation and decision making

**Target groups**

Land users

**Approach costs met by:**

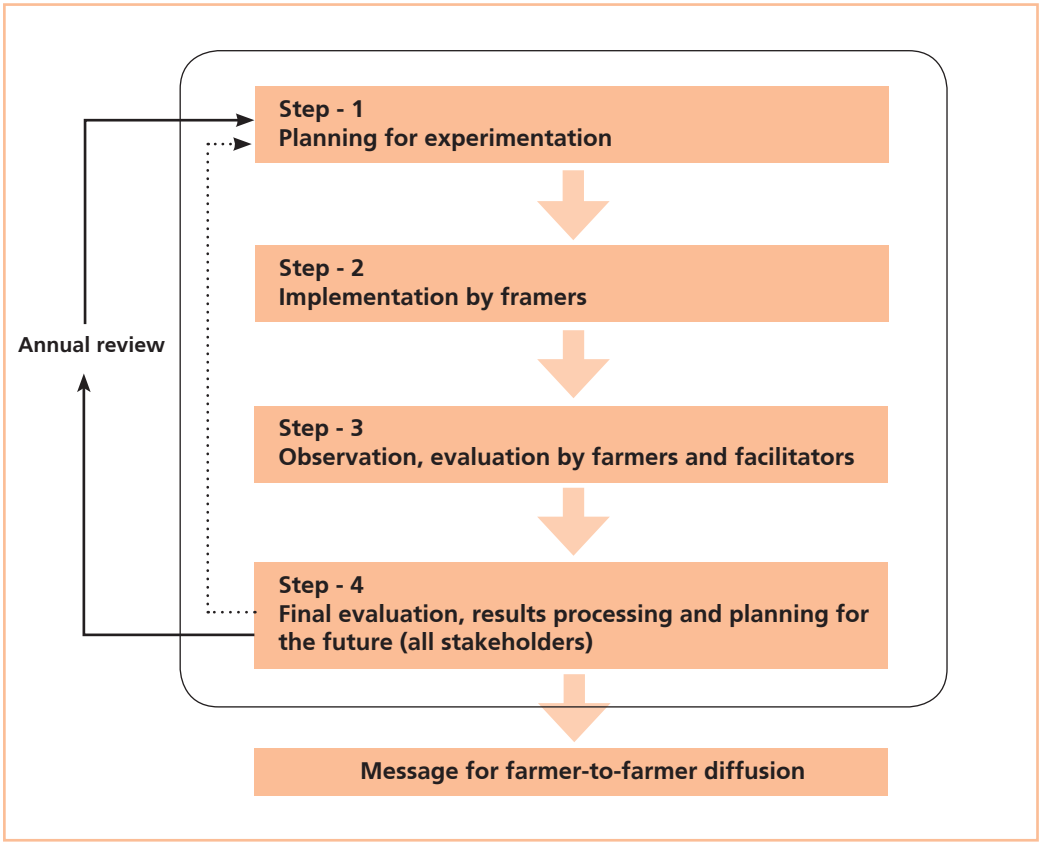
| | |
|---|---|
| Development project (inputs, external resources) | 50% |
| Farmers group (local resources, labour, land) | 50% |
| **TOTAL** | **100%** |

**Decisions on choice of the technology:** Made collectively by farmers in group facilitated by organisation working with them
**Decisions on method of implementing the technology:** Made by farmers in group
**Approach designed by:** Sustainable Soil Management Programme (SSMP) on the basis of experiences from the literature and implementing other agencies' projects

**Community involvement**

| Phase | Involvement | Activities |
|---|---|---|
| Planning | Interactive: participatory discussions and exercises, field visits, farm maps, farming and labour calendar | Identification of topics for experiment based on needs and priority<br>Identification of technological options (indigenous and external)<br>Farmers developing simple and appropriate experiments<br>Decision on management approach (overall management of experiment, implementing, recording, disseminating)<br>Action plan development by farmers<br>Record-keeping sheet designed by farmers<br>Identification of technological successes, seed sources<br>Commitments and assignment of responsibilities |
| Implementation | Interactive: follow-up visits, discussions | Farmers implement according to the design for comparison with a control (= existing practice)<br>Farmers note relevant observations on recording sheet<br>Farmers note other important observations based on their needs and interests<br>Technical support and discussions with farmers during follow-up visits<br>Farmers discuss performance/experiences from trial and seek outside support if there is any problem |
| Monitoring/ evaluation | Interactive: field visit to experimental site by other farmers, participatory discussion and evaluation | Experimenting farmers and other farmers jointly discuss and evaluate based on direct observations of the trial and from the record sheet<br>Discussion on the lessons learned and identifying possible modifications to overcome identified problems<br>Discussion on the promotional aspect of the technology if it is found appropriate |
| Research | - | - |

**Differences in participation of men and women:** Farmer-led experimentation is equally suitable for both men and women. However, if farmers groups are mixed, an eye has to be kept on the equal participation of both genders.




**Organogram of farmer-led experimentation**
This approach has four key stages:

1) planning
2) implementation
3) observation
4) final evaluation

If promising results come from the experimentation, the message can be further diffused to other farmers in the area through farmer-to-farmer diffusion (QA NEP1). If results are not suitable, a new farmer-led experiment can be planned with an improved layout.

## Extension and promotion

**Training:** Initially training was provided to staff from collaborating institutions and lead farmers on how to carry out farmer-led experimentation, explaining its principles and its practical application.
**Extension:** Implementation and field coaching is done by local resource persons together with farmers. Observation and data recording is jointly done by implementing farmers and staff of the collaborating institutions. First, the results are shared and discussed with group members. Sound results that are supported by the group members are then shared with a wider audience at the project's quarterly district meetings The District Agricultural Development Office and the Nepal Agricultural Research Council's regional research stations are invited to monitor and evaluate the experiments and learn from them for wider diffusion in other parts of the district and the region.
**Research:** Various options for addressing farmers' crop growing problems are tested and the results compared with existing practices. No basic research is done with this approach.
**Importance of land use rights:** The trials are carried out on privately owned land. For groups with a good common understanding, experiments could also be conducted on community land.

## Incentives

**Labour:** Participating farmers
**Inputs:** Provided by the project for testing purposes
**Credit:** Not applicable
**Support of local institutions:** Technical support provided by project
**Long-term impact of incentives:** Where a technology is perceived to be suitable and applicable, incentives have not hindered its adoption except where large investments are needed such as for improving cattle sheds (see technology fact sheet on urine collection (QT NEP1)

## Monitoring and evaluation

| Monitored aspects | Methods and indicators |
|---|---|
| Biophysical | informal farmer observations only |
| Technical | informal farmer observations only |
| Sociocultural | not applicable |
| Economic / production | informal farmer observations only |
| Area treated | informal farmer observations only |
| No. of land users involved | informal farmer observations only |
| Management of appraoch | informal farmer observations only |

## Impacts of the approach

**Changes as a result of monitoring and evaluation:** The adoption of certain technologies has occurred as a result of farmer-led experimentation. For example, a farmer-led trial of two varieties of groundnut (local and B4), in Ghadgaon, Surkhet, led to farmers starting to grow the B4 variety in an area where previously only local varieties had been grown. The adopting farmers saw the benefit of planting the new variety (higher yield, easier to harvest) and are convinced they will earn more profits from growing it. Other examples, such as farmer-led experiments comparing the results of applying urea or cattle urine as fertilisers, and comparing of traditional versus improved farmyard manure have demonstrated the advantages of using the new technique.

**Improved soil and water management:** Great impacts on soil fertility and yields have been reported after the adoption of sustainable soil management tested through farmer-led experimentation.

**Adoption of the approach by other projects/land users:** Several farmers in the project area have started to do farmer-led experiments on their own, including on intercropping different vegetables and spices, and on urine application through drip irrigation.

**Sustainability:** As mentioned above, some farmers are implementing the approach on their own initiative. This is possible because of the low costs and limited technical requirements of the approach. Farmers exposed to the approach will be able to apply the approach again to problems that arise in their fields without the need to consult outside agencies.

## Concluding statements

| **Strengths** and →how to sustain/improve | **Weaknesses** and →how to overcome |
|---|---|
| Experiments are conducted on the basis of farmers' priorities and according to local conditions. This means that farmers develop ownership of the experiments and the derived results. | Experiments are not carried out in a scientifically rigorous way and therefore only have limited scientific value for evaluating technologies. → if scientific proof is required, farmer-led experiments should be closely supported by technicians (per se not a farmer-led experiment anymore!) |
| Once farmers are exposed to the approach, they can apply it on their own initiative. This is possible because of the low costs and technical requirements of the approach. | Documentation of the activities and results for wider sharing is often poor and inadequate → clear guidelines are needed for documentation with clear instructions on what, when, and how to record important information. This is necessary so that the results can be more widely used. |
| The approach serves both as a local test for suitability and adaptation potential as well as for demonstrating an already tested technology. | In some cases a lack of research equipment for better documentation and observation inhibits better understanding. |

**Key reference(s):** Paudel, C.L.; Regmi, B.D.; Schulz, S. (2005) 'Participatory Innovation Development – Experiences of the Sustainable Soil Management Programme in Nepal.' In Kolff, A.; van Veldhuizen, L.; Wettasinha, C. (eds) *Farmer-centred Innovation Development – Experiences and Challenges from South Asia,* pp. 109-126. Bern: Intercooperation ■ SSMP (2001) *Implementation Guideline on Farmer Led Experimentation* (in Nepali). Kathmandu: Sustainable Soil Management Programme

**Contact person(s):** Director, Soil Management Directorate, Department of Agriculture, Harihar Bhawan, Lalitpur, +977 1 5520314 or
Team Leader, Sustainable Soil Management Programme (SSMP), GPO Box 688, Kathmandu/Nepal, +977 1 5543591, ssmp@helvetas.org.np