Participatory Extension Approaches in Support of Technology Development and Adaptation

Participatory extension approaches are being developed to introduce animal forages to upland farmers. The Lao Ministry of Agriculture and Forestry (MAF), the International Centre for Tropical Agriculture (CIAT), and the National Agriculture and Forestry Research Institute and extension services are working with farmers, encouraging them to take 'raw technologies' (well adapted and productive forage varieties), and find ways to fit them into their production system. This has led to increased livestock productivity and contributed to the reduction of shifting cultivation.

Through trials with local farmers, MAF and CIAT have been able to identify a small range of broadly adapted and robust forages well suited to the environments and farming systems of the Lao uplands. These varieties, applied in the right way and right place, deliver significant impacts, including:

- Allowing increases in herd size (e.g. from 2-5 cattle to 10 or more).
- Enable fattening of cattle and buffalo for regular sale (e.g. selling one animal every 2-3 months).
- Reduce the time needed to raise pigs to saleable age (e.g. from 12 months to 5-6 months).
- Increasing the rates of twins born and survival of goats.
These impacts have been gained from new systems for raising livestock, where forages are the main feed source, and the animals are managed close to the home for most of the year.

While such new systems have long been envisioned, MAF and CIAT did not begin by trying to define or introduce the improved systems to farmers, but rather focused on trying to solve the 'immediate problems' that farmers had with feed. It was then the farmers themselves who innovated new 'impact-yielding systems' based on forages.

Providing a framework for innovation: extension of raw technologies

1. Site selection
The project selected villages where farmers already spent time collecting native grasses to feed their livestock some of the year. Thus 'cut and carrying' of feed was already part of the system, and forages simply reduced the time and labour for this, without any systems change being required.

2. Identifying the immediate problems
Participatory Rural Appraisal (PRA) tools were used to help farmers identify causes of poor performance in their livestock production. While death from disease was a factor, constraints due to lack of feed were the most common and recurrent problem.

3. Testing options
Forages planted in small plots were presented as a solution to the immediate problem: the time needed to collect feed. Eight forage species were provided for farmers to assess and select those which performed best under local conditions.

4. Follow-up and expansion
District staff visited the farmers regularly to check on forage growing and use. Discussions were held within a focus group of farmers to share lessons learnt. Later, this group related their experience back to the whole village, encouraging expansion of forage use within the villages.

Growing forages solves the immediate problem of lack of time to collect feed. Most farmers were satisfied with the convenience of having feed nearby. This advantage was used to 'sell' the forage idea to farmers. A few farmers, however, began thinking beyond the immediate problems. They noticed a range of other benefits, such as improvements in the condition of their livestock; more rapid weight gain, clearer skin, reduced thirst and higher milk production for suckling. They then sought ways to gain these benefits more consistently through expanding the area of forage grown,
and keeping the livestock closer to their house so that they could eat forages more regularly. There is more than one system for fattening. Some farmers choose to fatten cattle and others buffalo; some buy thin animals and others rotate animals from their upland pastures. The type of forage grass farmers use also varies, depending on the soil and moisture conditions for each farmer. Across the 50 villages where these forages have been tried, a wide range of new impact-yielding systems are now emerging for cattle, buffalo, pigs and goats.

**Initiating a problem solving attitude**

Integrating half a dozen forage species into a livestock production system is by no means a simple matter. The farmers started growing and using forages with a small-plot testing phase. Many did not persist or expand. The 'raw' technologies do not automatically suggest a result: it is only once a few innovative farmers have adjusted their system and gained impacts, that the potential is revealed. Without this step, the raw technologies remain dormant.

Some simple mechanisms used to initiate a problem-solving attitude include:

**Problem diagnosis**: PRA type tools were used to enable farmers to define and then focus on solving immediate problems. Thus the technical interventions, such as forages, were seen not as 'recommendations' to be followed, but rather as potential solutions to be assessed.

**Technology options**: Providing a range of forage varieties immediately placed the farmers in the position of evaluation. Limiting the initial introduction of forages to a small number of farmers, and small areas, also reinforced the sense of a trial to be learnt from. Together these two basic mechanisms engaged farmers in a problem solving process, which led a few farmers to go beyond their immediate problem and think about what further benefits could be gained.

**'Creative follow-up' to consolidate and disseminate innovation**

Technical follow up by DAFO staff during the first year is essential to the success of this process: in the first year, farmers had a number of technical problems with their forage plots. Follow-up by DAFO used these problems as learning opportunities with the farmers. The reasons for poorly-established plots were quickly understood, enabling the farmers to feel confident they could correct them. This technical follow-up meant that farmers could properly establish their plots and begin feeding their livestock. While the plots were small, generally providing insufficient forage to generate impacts among the cattle, the time and labour saved in collecting native grass was sufficient to interest most farmers and to drive expansion in the second year. DAFO staff also carried out 'creative' follow-up, observing how farmers were using the forages and any special benefits that were emerging. Such impacts were noted and passed on to other farmers through ‘farmer-to-farmer’ approaches.
Accelerating impacts

It took three years to move from identifying immediate problems, to identifying new impact-yielding systems through farmers' innovation. With these systems maturing, it should now be possible to shortcut the process and directly introduce these impact-yielding systems to farmers at new sites. Forages are a simple technology but livestock production systems and opportunities are diverse (Pravongviengkham 1988), so farmers may still need to innovate to gain impacts.

Farmer-to-farmer approaches

Focus group meetings within villages: sharing experience among the farmers who made the initial forage trials.

Cross-visits: selected farmers were taken to villages where new impacts had emerged so they could understand the benefits of expanding forage growth and using them as a regular feed source.

Village planning and interest groups: introduced after impact-yielding systems were established, to plan raising livestock according to these new systems.

Disseminating and exchanging these experiences with other farmers helped to stimulate further refinement and innovation within the broader population. Without this, isolated occasions of new impact-yielding systems might have been missed.
As the potential opportunities from forages become more evident, there will be a strong urge to disseminate them as widely as possible. It will be important to understand:

(a) how quickly the use of forages can be scaled-up to new areas; and
(b) how much support will be needed within a site to allow its effective establishment.

The key issues appear to be the following:

**Issue 1: Maintaining farmer innovation**

Maintaining farmer innovation is likely to remain important in the uplands for two reasons:

(a) The highland environment is diverse. If presented with ready made impact-yielding systems, new farmers will still need to adjust and tailor systems to fit their particular conditions.

(b) In existing forage villages, farmers will soon begin to face a set of ‘second generation’ problems, including, managing soil fertility to maintain forage yields; dealing with animal health interventions as livestock become more concentrated, and dealing with community issues when extra stock place burdens on local resources, such as water supplies.

These second-generation problems are not unexpected and a range of options already exists for overcoming them, but farmers will need to be innovative in how they apply these solutions to fit their own situations.

**Issue 2: Levels of support required**

District staff have provided high inputs of time for follow-up to support the development of these impact-yielding systems. With these new systems now proven, it should be possible to reduce this level of follow-up. Some assessment is needed of the degree of follow-up that will be required, and for how long, to ensure that forages are still well established.

**Issue 3: Management of extension**

Extension has previously been conducted in the Lao PDR on a limited scale. Widespread introduction of forages will require effective strategies to manage extension, including staff capacity building, and planning and monitoring of complex activities.

These issues are being researched by a new project, Accelerating Impacts from Participatory Research, funded by the Australian Centre for International Agricultural Research, or ACIAR (Millar et al. 2003).
Conclusions

Real gains are being demonstrated in forage and livestock systems in the Lao uplands. Farmers are beginning to gain genuine impacts, and as a result are finding new livelihoods not based on shifting cultivation. The raw forage technologies, while robust and broadly-adapted, required another stage of development, with farmers creating innovative, new impact-yielding systems.

The technologies were introduced in ways that engaged farmers in a problem-solving process, which is then maintained and consolidated through farmer-to-farmer approaches. Staff had to take on a new role during follow-up, to identify innovations as they occurred and then to quickly communicate these within their own extension group, so that they could be then be used across various sites.

The complex systems and diverse environments in the uplands are challenges that apply to most agricultural programmes. Research produces the initial raw technologies, but these need to go through a further process, to be integrated into new impact-systems, before they can be widely applied by farmers. Rather than attempting to do this within the research sector, this can be achieved more efficiently by working through extension, which will provide the opportunity for unstructured innovation by a broad population of farmers. This innovation then needs to be 'harvested' and further disseminated.

For more information on this topic see:


These are all published in English, Lao, Indonesian, Thai, Vietnamese, Chinese, Burmese and Khmer and are available from CIAT, PO Box 783, Vientiane, Lao PDR.

Selected references


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