

# Flexible experiments

*"What is the best way for farmers to raise teak in home nurseries?" In this article a very flexible, "relaxed" approach to help farmers answer this question for themselves is described.*

**Steve Connelly and Nikky Wilson**

In Mahaweli System C, Sri Lanka, recently settled farmers are developing new farms from scratch. This involves a lot of learning from their own experiences, particularly since many are unfamiliar with the local climate and soils. Using participatory techniques, Promoting Multifunctional Household Environments (PMHE) Project works with groups of farmers to help them overcome some of the early problems of settlement. As part of this, the agroforestry section assists families in establishing homegardens. These are small (0.2 ha), tree-dominated homestead plots where many subsistence and cash crops are grown.

## Farmers decide

Many farmers wanted to raise teak in their home nurseries, but did not know how to germinate it. A few had heard of the traditional burning method, but since this gives very low germination we suggested two other methods for people to try out. At this point the idea of experimenting to find the best method arose spontaneously. We encouraged this by providing seed, but did nothing to enforce an experimental design. Farmers were free to choose how much seed they wanted, and which method(s) to use. To get as much information as possible from the experiment, we asked farmers to keep records, using sheets designed and provided by us.

The farmers were organised in small groups. At the end of the planting season we held group evaluations, in which everyone presented and discussed their results. The big advantage of this was that it enabled learning from collective experience, without everyone having to try all the treatments. It was also more fun for everyone. The disadvantages were that sometimes individuals dominated the group, and other people's experiences were discounted, or people were unwilling to accept anyone else's results. Finally we took all the results and farmers' conclusions back to the office, and used them to come up with extension advice for the following season.

## Advantages

For the farmers the objectives were to answer the question "What is/are the best method(s) of germinating teak seed in small scale nurseries?", and to grow some teak. Our objectives were to increase the

farmers' confidence and skills, both in raising tree seedlings and in experimenting. We recognised that most recently settled farmers innovate of necessity, but many do not consciously experiment. Our aim was to help them cross this bridge, without frightening them with all the details of scientific experimental methodology. The relaxed approach had some big advantages:

- It was inclusive. By combining development with experimentation (rather than having a separate experiment) anyone who wanted to grow teak could participate. Nobody had to do more experimenting than they wanted to, while everybody contributed to the results.
- Having no fixed experimental design and predetermined "treatments" gave scope for farmers' innovation and improvements on methods we had suggested.
- The "design" was very robust against the inevitable deviations from plans discussed at the outset. With farmers in complete control, they often did not do what they said they would. This generated extra information, but for a rigid experiment it could have been disastrous.
- We feel that introducing experimental methodology as a new "technology" brought by experts risks devaluing and undermining farmers' existing experimental skills. By starting with a simple experiment, under their control, we hoped to strengthen their skills in a non-threatening way.
- Finally, the real-life setting allowed the farmers' exact question to be approached: "What is the best way for us to raise teak?" How easy the treatments were to carry out was almost as important as yield. Insisting on standardised treatments would have given us better yield data, but we would have lost most of the other information.

## Challenges

- Farmers' innovations left us and them comparing 12 different treatments,

The Mahaweli System "C" is an irrigation scheme in eastern Sri Lanka, settled 1982-93. Main crops are irrigated rice, with non-irrigated homegardens, combining tree crops (coconuts, fruit and timber trees) with chillies, eggplant etc. Climate: 1300-1600 mm rainfall, 75% falling in October-December. Temperature: 25-35°C. Soils: reddish-brown/non-calcic brown earths. Mainly shallow, waterlogged in the wet season.

developed from the three we had discussed.

- Two other variables became confused with the germination techniques. One of these was farmers' differing levels of skill, and the care they took with the treatments. The other was the use of polythene bags or nursery beds, which made a huge difference to germination.
- There were no untreated controls. Everybody wanted to get teak seedlings, so everybody treated their seed.
- Since people took as many seeds as they liked, it was hard to standardise results so that they could be compared. Additionally, some people used very small seedlots.
- Monitoring by farmers was usually poor. They did not perceive its importance until too late, and their memory was sometimes inaccurate.

What can be done about these problems?

- The complexity and confusion of variables can be unravelled through discussion with farmers, possibly using diagrams or matrices. The complexity was a direct result of farmers running the experiment and not something to be avoided. Varied skills are recognised by farmers and were dealt with easily in discussion.
- For office-based analysis graphical methods were very useful - patterns in the results could be seen, even if they could not be "proved".
- The problems of no controls and small samples probably could have been avoided, if we had emphasised them more at the beginning.
- We might have improved farmers' record keeping by taking continued interest in it, rather than only at the end of the experiment.

## Towards improvement

The success of the experiment in generating information and encouraging innovation and participation was largely due to its great flexibility. Everyone enjoyed it and felt they had learned from it - us as well as the farmers. We believe that as a first step in involving farmers in participatory technology development this is a useful approach. However, getting results which could be interpreted was difficult, although not impossible. The next steps are to encourage simplification, standardisation and better record keeping. But these are refinements. In this first year the crucial issue was to capture farmers' interest in the experimental process.

**Stephen Connelly and Nikky Wilson,**

4 Grena Gardens, Richmond, Surrey TW9 1XP, UK.