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Reflections from farmer-led trials in India

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• Introduction

Krishi Vigyan Kendra, (KVK), is a leading government organisation in the innovative transfer of technology in India. It is funded fully by the Indian Council of Agricultural Research. This paper shares our experiences of participatory research, particularly farmer-led trials, over the last few years. The objective is to involve farmers in the decision making at all stages. Thus, trials are 'farmer-designed and farmer-implemented' with scientists acting as facilitators. Experiments are targeted towards Complex Diverse and Riskprone (CDR) villages.

Participatory Rural Appraisal (PRA) was first introduced to the Farmer System Research/Extension (FSR/E) programme in 1992/93. The aim was to understand the local agricultural system in Salepali, a CDR village in Orissa, India.

For the PRA, a multidisciplinary team from the KVK moved to the target village. The team was divided into groups and different participatory exercises were carried out. These exercises enabled the scientists to learn about the different agricultural practices, problems and prospects in the village. Night stays were important for understanding village priorities and uncovering examples of community action.

• Shared learning

From the first PRAs, it was decided to concentrate on rice and groundnut as these emerged as the main village crops. Unique farmer innovations were recorded in groundnut cultivation. It was realised that the s

system had not previously been understood by the scientists and extension workers who held different opinions to the farmers. Various practices on groundnut cultivation were discussed among the group members. Table 1 shows how the views of the scientists and farmers differed in groundnut cultivation.

The scientists learned that the success of groundnut in the area depended on three things: sandy soil, timely planting and interculture (weeding) by plough. It appeared that without using the plough to weed, cultivation of groundnut may not continue, as hand weeding is too costly. The scientists also realised that farmers go on modifying the recommended cultivation practices until they become stable, sustainable and profitable for their particular farming system. These are good examples of how the scientists learned from the farmers and shows the importance of participatory research.

Various packages of practices for rice and groundnut were developed on the basis of the participatory trials. Their success depended directly on the ability of the scientists involved to learn from the farmers themselves.

This role reversal, with farmers adapting the researchers' practices, was very encouraging for the scientists. Initially the farmers did not believe that the scientists had come to the village to learn from them. When the farmers were told that the research station cultivated groundnut in a different way to local practices, they became anxious and repeated their cultivation practices. Some of the farmers even suggested coming to the research station to show the scientists how to grow groundnuts!

Table 1. Differing views held by scientists and farmers in groundnut cultivation

| Farmers' practices | Scientists' perspectives on practices) | Farmers' perspectives on practices |
|---|--|---|
| 30 x 30 cm spacing | Normal recommendation is 30 x 10cm. The wider spacing reduces the number of plants and thus yield. | The trailing variety compensates by producing more number of branches and pods to fill the extra space and thus increases yield. |
| Trailing variety | Unsuitable for rain fed condition as uprooting will be a problem if the rain stops suddenly. | The variety gives high yield when sown at the right time. Plenty of family labour to irrigate in case of drought. |
| Cross ploughing for weeding purposes | Forces the farmer to adopt wider spacing which reduces plant stand. | The sunny weather needed for ploughing may only last for 2-3 days. Weeding can be completed if plough is used because it is quicker. Labour saved is diverted for work in paddy fields. |
| Urea topdressing | Urea ineffective, disrupts root nodulation | Yield is reduced if not topdressed. |
| Growing of groundnut and greengram on the same hill | It would reduce yield of groundnut | It meets family requirement of dal. If groundnut plant dies then greengram makes best utilisation of the applied farmyard manure and fertiliser. |

• Farmer-led trials

Following the PRA, the farmers and scientists discussed options for on-farm trials that could address their problems. A first set of 'farmer-designed and farmer-implemented' trials was conducted in 1993/94.

At the end of these experiments, the farmers were impressed by the various treatments. Their stated priorities changed after reflecting on the outcome of these trials. This was encouraged by the scientists. Using the farmers' new prioritisation of problems, the hypotheses, types of trials and treatments were revised. This led to the designing of, and experimentation with, a secondary set of trials during 1994/95 and 1995/96. Thus, all trial modifications over the four year period were made at the request of local farmers.

The changing priorities were a direct result of the interactive trials. For example, the first problems that were investigated with rice were the 'use of poor quality seed mixes' and 'lack of knowledge about fertilisers'. In subsequent years, the rice problems addressed included: use of a urea topdressing, mixed cropping and growing of a longer duration variety.

An important feature of all the trials is that the farmers set the criteria for the way they are carried out (see Table 2).

Table 2. Farmers' criteria for trials

| Activity | Rationale |
|--|--|
| Seeds should be supplied in early June | After onset of rain, when soil moisture is optimum, sowing will be finished within 3-4 days in the whole village |
| Size of each treatment should not be less than 0.15 hectares | This is the convenient size for doing various operations with bullock plough |
| Local method of sowing, interculture etc. should be followed | Other methods may not be suitable or economical |

• Research results

The results obtained and/or adopted on a larger scale by the farmers and for which follow-up programmes are being carried out during 1996/97 include the following.

- *Beusaning* is a common local practice of light ploughing in a rice field 25-30 days after germination. But in rice beusaning reduces the plant stand drastically. It is being replaced by manual weeding or herbicide applications;
- In-row sowing of rice behind the plough is better than broadcasting where the seed is scattered by hand. However, because the difference in yield is small, broadcasting is the better option if labour is short; and,
- For groundnut cultivation, those who do not possess much family labour could grow the erect, rather than trailing, variety (ICGS 44) with 30 x 10 cm spacing, and plough between rows only.

• Lessons learned about farmer-led trials

Scientists working with farmers should be dedicated and not enter the village with a superiority complex. People with skills in both agricultural treatments and participatory farming systems research should be included in the research team. Where possible, experienced lower-level staff (e.g. agricultural overseer) with extensive local knowledge should be brought into the research team.

An important skill for PRA practitioners is to be able to differentiate the information gained into fact, opinion, hearsay and assumption. Cross-checking information with different farmers in different places is one way of verifying information.

During the first year of experimentation both exploratory and repeat trials should be conducted. Scientists should remain present during sowing and application of fertilisers or chemicals because some farmers may apply the materials meant for the experiments in non-experimental plots.

When conducting farmer-led trials, those farmers participating get inputs for their farms. Other farmers, who are not included in the experimentation, may get jealous. Thus, a small village should be selected, so that most of the farmers can be included in the trials over a 2-3 year period. If this is not possible, then some other measures should be taken to involve the rest of the farmers e.g. through community natural resource management plans.

Agricultural officials must be aware of the PRA being undertaken by the scientists and extensionists. In this way, they will not be anxious about getting some important results at the end of only one season or year. They will understand that participatory approaches can take longer to deliver results. They should also not worry if the expenditure targets are not met during the planning phases. They need to understand that hurrying can lead to wrong decision making.

Scientists (mostly research station based), reviewing the progress of such projects should be aware of the objectives of participatory trials. It is important that new criteria are established to evaluate participatory on-farm trials.

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