

18 Lessons for out-scaling and up-scaling from *Plant breeder and farmer partnerships*

Background

The Plant Sciences Research Programme (PRSP) completed 17 participatory plant breeding (a technique now more appropriately known as client oriented breeding) research projects in Asia and Africa. Their experiences show the importance of taking the needs of farmers into account in the uptake of new and improved varieties—which means understanding what farmers need and then designing programmes that meet those needs.

These projects found that one way to speed up the process of breeding new varieties is to get farmers to test the early outputs of breeding programmes, and that the speediest way to get farmers to grow new varieties was just to give them the seed to test for themselves. Doing this in Nepal and Ghana spread new varieties rapidly. But, getting hold of the seed of a good choice of new varieties is a real barrier to uptake.

Key points

The following key points are raised by this research:

- Participatory Varietal Selection and Client Oriented Breeding can speed up the spread of new varieties.
- Regional and local preferences influence the acceptability of new varieties.
- Poor farmers quickly adopt the best new varieties when given seed, provided it has a combination of traits that the farmers like.
- In developing countries, farmer-to-farmer and informal seed networks are the most important ways by which nearly all new varieties spread.
- Farmers in developing countries are rarely consulted in breeding, selecting and testing new crop varieties. Traits that are important to farmers, such as ease of threshing (in Nepal and Ghana), have never been considered in traditional breeding programmes.
- A wide variety of partners should be involved in the innovation system.

Lessons learned

Participatory Varietal Selection (PVS) and Client Oriented Breeding (COB) can speed up the spread of new varieties.

PVS and COB created new varieties of rice that thrive in drought-prone, infertile regions in eastern India and in the Himalayan foothills in Nepal. Farmers harvest up to 50% more grain from these new varieties than from the ones they used to grow. The quality is better and the rice fetches higher prices.

In Nepal in 1997, farmers had a very limited choice of varieties. By 2003, their choice had increased as a result of PVS and COB.

These varieties are spreading rapidly in the more than 1 million hectares that make up the most important rice growing regions in Nepal, as a result of the participatory techniques being used. For example, PVS greatly accelerated the spread of a variety (Swarna) introduced from India, and BG 1442, which had been introduced into Nepal but never released.

PVS is both a research and an extension tool. The varieties tested (which can include not only crops, but trees and shrubs for animal fodder and fuel) can spread rapidly from farmer to farmer. Farmers can also mix and match the varieties that fit in their particular cropping system. For example, those who grow vegetables and rice in a mixed cropping system prefer varieties that they can harvest early to allow them to plant vegetables, because the vegetables will then also be early and fetch higher prices.

In Lunawada, India, between 1997 and 1999, the area of one old variety of wheat grown by farmers participating in the project fell from 89% to 20% because farmers rapidly adopted six to eight new varieties brought in using PVS.

In COB researchers take cultivars chosen through PVS, but which don't quite fit the bill, and cross them with varieties that can contribute the characteristics the original variety lacked but that farmers want. Scientists collaborate with farmers to jointly identify potential new varieties with the desired traits from the material produced by the cross. These are tested by the scientists for disease resistance on research stations and by farmers in their fields in PVS trials, from which the best ones spread from farmer to farmer.

Regional and local preferences influence the acceptability of new varieties.

In Ghana, farmers and rice traders in villages near urban markets preferred rice that had long slender grains similar to imported rice, whereas further away from urban markets, people liked rice that is sticky when cooked. In western Ghana, however (where people soak, steam and dry rice before milling), they preferred rice which expands a lot.

Participatory methods can show whether a variety is likely to be rejected because people don't like it because of its look, taste, smell or other quality. Eliminating the 'no-go' varieties at an early stage makes it more likely that those that survive the elimination round will be acceptable and will spread more rapidly when out-scaled.

Poor farmers quickly adopt new varieties when given seed.

Research findings from Lunawada, India, showed that poor farmers—those with least land—will adopt new varieties as quickly as richer farmers when they are given seed to test. The amount of land owned by farmers made no difference to the proportion of land on which they adopted new varieties. In Jharkhand, Orissa and West Bengal, new drought tolerant varieties of rice are

increasingly grown throughout the upland rice area, with the farmers adopting them often expanding their area of upland rice.

The speed at which the seed of new varieties can spread from farmer to farmer or through informal seed networks is impressive. In India, a Participatory Varietal Selection programme introduced a new rice variety that spread from three villages to over 100 villages within three years. In Ghana, the seed of eight upland rice varieties was given to farmers in six villages in the Volta region. By the following year, it had spread to 22 villages up to 40 kilometres away (Box 18.1).

Ways of giving the seed of new varieties to many farmers or letting them have it very cheaply may be important for getting uptake.

Box 18.1

Want a new variety to spread? Give it away.

In 2000, researchers gave the seed of eight new upland rice varieties to different people and different groups of people in six villages in the Volta region, Ghana. These were: (i) farmers who had participated in Participatory Varietal Selection evaluations, (ii) a seed production group, (iii) the chief farmer, (iv) the extension officer, (v) people categorised by wealth, and (vi) a mobilisation officer who was also a local politician.

By the following year, the seed had spread to 22 villages up to 40 kilometres away.

People first gave seed to their relatives. Then they sold it to farmers in nearby villages where it fetched 20% to 30% more than local varieties. Some who were given seed kept it all and multiplied it for themselves.

But the champion seed distributor was the mobilisation officer who set up a village seed committee to run a seed fund. The seed fund operated on the basis of 'borrow 1 kilo of seed and return 2 kilos'. After the first year, members of the original seed committee set up similar committees in other villages.

Involve a wide variety of partners. Projects found that they needed to partner with a wide range of different types of organisations involved in some way with putting new varieties within the grasp—economically and physically—of poor farmers.

In Nepal, rice quality is assessed not just with farmers but with consumers and the purchasers of grain—the rice millers. A network of research organisations, non-governmental organisations, government extension agencies, farmers and farmer groups then test and out-scale the varieties. As part of this, community-based groups for various agricultural enterprises form the basis of new, private-sector seed enterprises that are linked throughout Nepal to agricultural input suppliers, civil society, government organisations and donor-supported development projects.

This synopsis of lessons learned for up-scaling and out-scaling research into use is drawn from:

Stirling, C.M. and Witcombe, J. R. 2004. *Farmers and plant breeders in partnership*, Second edition. Bangor, UK: Centre for Arid Zone Studies (CAZS).

See

<http://www.research4development.info/pdf/ThematicSummaries/RLPSRleaflet1.pdf>