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More rice from less seed

The Madhya Pradesh
Rural Livelihoods Project

An ally in eliminating poverty in India





Growing more rice with less seed

Paddy is the main crop in the eastern districts of Madhya Pradesh. This is the most important rice-growing area in the state and, even in rainfed tribal areas, paddy has replaced millet as the main crop. But tribal farmers reap poor harvests because their landholdings are small, they sow inferior seed and their conventional farming methods are inefficient in terms of production. Farmers with less than two acres produce hardly enough rice to feed their families, let alone a surplus to sell.

Madhya Pradesh Rural Livelihoods Project (MPRLP) is helping to change this. Already many tribal households are much more food secure. Families that had to buy rice for three to four months now have enough to last them through the year.

A revolution in paddy farming

Tribal farmers in Dindori, an eastern district of Madhya Pradesh, find themselves locked in a cycle of poverty. Their harvests are poor but the costs of production, such as the price of seed and fertilizer, are rising. MPRLP is encouraging a revolution in paddy farming that promises to break this invidious cycle of poverty and hunger.

A simple way to double rice yields

A French priest in Madagascar sparked a paddy farming revolution when he invented a simple way of doubling rice yields. His invention is called the System for Rice Intensification (SRI).

It's quite easy for farmers to change to SRI. Instead of planting seedlings haphazardly, farmers plant them in rows. They space the seedlings much further apart, 25 or 30 centimetres rather than 10 centimetres, and they plant them when they are one week old rather than leaving them in the nursery for up to a month.



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Just by making these simple changes, farmers can harvest twice the amount they harvested previously, but need to sow only one-tenth of the seed. That makes SRI much more efficient than the traditional method.

Although it's simple for farmers to change from traditional paddy farming to SRI, most Dindori famers are reluctant to give it a go because growing rice in an unfamiliar way would be too much of a risk. MPRLP went about encouraging them to change their attitudes in a tried and tested way, first working with more progressive farmers and then sharing their successes so as to persuade others.

Encouraging farmers to try SRI

MPRLP started by talking to village farmers in Dindori district, while the Gram Sabhas helped pick out progressive farmers who might be interested in trying SRI and arranged for MPRLP project staff to meet with them to introduce the idea. Project teams organised the showing of demonstration videos explaining SRI to farmers because project staff knew that seeing is believing – that villagers would be more likely to try SRI if they saw for themselves how it doubles harvests than if they were just asked to believe what they were told.

Amar Singh leads the way

Amar Singh, a villager in Dhanoli, farms five acres. He was the first farmer in the Panchayat to experiment with SRI. Through the Gram Sabha, MPRLP had heard that Amar was one of the more progressive farmers who might be interested in farming rice intensively. The Project Facilitation Team invited Amar to their office, where they showed him a video about SRI. Amar was surprised when he saw farmers planting seedlings 30 cm apart: "Paidavar kaise niklegi? Paudhe bahut kam hain," he said (How will you get the yield? There are so few plants.) But he was amazed when he saw how many tillers each seedling produced and how many ears of grain they carried.

Even so, Amar was hesitant when MPRLP asked him if he would like to try SRI on his own farm. But he agreed and MPRLP and the State Agriculture Department provided him with one kilogram of seed for a 0.1 hectare (ha) trial plot, trained him on his farm and helped solve problems as they arose.

Amar was thrilled to harvest 400 kg of rice from just 1 kg of seed; previously he would have sown 10 kg of seed and harvested only 200 kg of rice. Three years later, Amar is fully converted to SRI and his farm has become a model for other farmers planning to switch from traditional paddy farming to the intensive method.

Starting with the more progressive farmers

Once project teams had found progressive farmers who were willing to give SRI a try, they arranged for them to attend training courses and demonstrations. MPRLP and the State Agriculture Department provided seed and helped these farmers get started with SRI on small plots, regularly checking on how they were doing and trouble shooting any problems that came up.

...then small groups...

In the first year, the progressive farmers got very good results and started converting their entire paddy to SRI. This paved the way for MPRLP to roll out SRI to more farmers through Gram Sabha meetings, where it invited the pioneer farmers to share their experiences and assuage villagers' doubts. As more farmers decided to try SRI, MPRLP regularly checked how they were doing and helped them overcome any problems. The first batch of farmers played an important role, guiding those who took up SRI later. Their paddy fields serve as open-air classrooms where other farmers can learn.

Lakhan quickly follows on

Lakhan, a young man from a hamlet near Dhanoli, followed Amar's switch to SRI with interest. Impressed with what he saw, Lakhan decided to try SRI himself on 0.3 ha. He approached the Gram Sabha and, through MPRLP, was provided with seeds and helped to visit other farmers who had already switched to SRI. If Lakhan gets good results, he will convert all his 2.4 ha to SRI. He says that so far he's found that SRI saves labour: "Is baar labour kam lagi hain," he said (This time the labour required was less [than before]).

...then larger groups

The next step was to take SRI to as many farmers as possible in Dindori district. To do this, the Gram Sabhas, MPRLP project facilitation teams and the State Agriculture Department organised meetings in each village cluster to make sure all farmers in the district knew about SRI. MPRLP also trained all livelihood promoters and one member of each project facilitation team in SRI so that they could provide day-to-day support and backup.

Farmers themselves are now spreading the word about SRI and are excellent advocates for the new method. At the last count in 2010, 23,418 farmers in 940 villages were growing paddy intensively on 4865 ha and earning an average of R. 20,300 per hectare.

Not all plain sailing

Introducing SRI to tribal farmers hasn't all been plain sailing. They're not easy to convince when it comes to changing the way they farm. The suggestion that they could double their harvests by sowing only a tenth the amount of seed met with suspicion. The belief that 'more seedlings = bigger harvests' was deeply embedded.



SRI requires wider spacing of seedlings than conventional methods.

Women, who usually transplant most of the seedlings, also believed that 'more plants = more rice' and that seedlings should be planted close together. But to get high yields, it's critical to space seedlings more widely, 25-30 cm between plants and rows so that they have room to tiller properly.

Getting the plants transplanted at the right spacing and keeping the rows straight can initially take time. Farmers need to keep a close eye during transplanting to check that it's done correctly; this is especially the case if they hire daily labourers as they are inclined to cut corners to get the job done quickly.

The unpredictability of the southwest monsoon was yet another challenge. Planting in Dindori traditionally starts when the rains arrive, and farmers customarily keep seedlings in the nursery for up to a month, which allows for some flexibility if the rains don't arrive on time. But SRI requires seedlings to be transplanted when they are one week old, and until the seedlings become established, they are vulnerable to dry spells, so SRI lacks some of the flexibility of traditional methods.

SRI makes a big difference

MPRLP livelihood promoters helped overcome these challenges so that now, growing rice more intensively is starting to make a big difference in Dindori. Farmers' production costs have fallen as less seed is needed and their yields have doubled.



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Lower production costs

Farmers need only one-tenth of the seed for SRI than for traditional paddy farming. This is a significant saving for farmers with meagre resources.

Govind hopes to harvest a tonne of rice

Although in his sixties, Govind was the first farmer in his village to try SRI. He heard about growing rice intensively from MPRLP and the State Agriculture Department at a village meeting. When he expressed interest, MPRLP arranged for him to learn about SRI from a farmer in Khitgaon who had already switched to growing paddy intensively. Govind has sown only 0.75 kg of seed on his trial plot of 0.2 ha, whereas before he would have sown 20 kg. Already he is seeing three times as many tillers on rice in his trial plot as in the fields where he's still doing traditional paddy farming, so Govind has high hopes of harvesting a tonne of rice.

Bigger harvests

Better harvests have made a big difference to food security in Dindori too. Now that harvests have doubled, not only do households have enough rice to last all year, but some also have a surplus to sell.

Farmers can raise yields even more by growing varieties of paddy that ripen quickly, shortening the time between planting and harvesting. Early-ripening rice early is especially important for farmers who cannot irrigate their fields. The earlier they can reap the paddy and plant a follow-on dry season crop, such as mustard, linseed, lentils and peas, the more residual moisture there is in the soil to help the latter crop germinate and get off to a good start.

Here again Gram Sabhas, MPRLP and the State Agriculture Department work together to provide quality, early-maturing paddy seed to farmers.

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Benefits of the System for Rice Intensification

- Cuts the amount of seed required by 90%
- Plants produce three times as many tillers, doubling grain yields
- Grain ripens and can be harvested earlier, allowing the following dry season crop to take advantage of residual moisture in the soil
- Needs less labour as wider spacing and straight rows allow plants to be hoed, weeded and fertilized more easily
- Produces enough rice on 0.4 ha to feed a household for a year

The way ahead

Now that farmers in Dindori are converting to SRI of their own accord, MPRLP is using the same tactics with farmers in Shahdol, Mandla and Anuppur. The results are encouraging.

Meanwhile, the progressive farmers of Dindori are now in their fourth season. Many other farmers, who were initially distrustful, are seeking help from Gram Sabhas to switch to SRI, and MPRLP has stepped up efforts to train as many farmers as possible. This will help more households not only become food secure, but also help some set foot on the road out of poverty by selling surpluses.



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