

Increased Food Grain Production through Rainfed SRI

Report from 2005 Season by PRADAN team working in Purulia district,
West Bengal, India, April, 2006

Background:

Purulia district was selected for rural development work by PRADAN because of the poverty situation here. Most of the target households have food security (the number of months when they are sure to get at least two meals a day) for only 6 to 9 months out of the year. For the rest of the year, they have to eat less, migrate, or carry out menial labor for minimal wages. Most are marginal or small farmers who cannot produce enough food from their own land because of lack of knowledge or skill, low quality of land and water resources, lack of access to capital, or their inability to plan systematically due to the uncertainties of life in this area. They do not have reliable irrigation facilities, so the SRI methods used here are a rainfed version of the concepts and practices developed for irrigated rice production.

Given these considerations, growing paddy in the *Kharif* (summer season) was selected as the major activity in the basket of livelihood interventions being introduced by PRADAN in Purulia, a district with mostly tribal population that borders on the state of Jharkand. We wanted to bring sustained improvements in paddy cultivation over the whole area within a span of three years and to facilitate all farmers to adopt the SRI package of practices as adapted to their unirrigated circumstances.

Process Adopted for Dissemination:

We have conducted a large number of exposure visits for 1,380 farming families (58% men participants & 42% women) to see the summer SRI plots. We have also conducted video shows in 108 villages (out of the 132 villages where we work) to show a film on agriculture innovations (SRI, vegetables, etc.). The key intervention points identified were:

- Seed treatment
- Wet bed nursery
- Line sowing
- Timely early transplantation
- Proper spacing
- Weeding & hoeing
- Proper application of inputs

A large pool of service providers (approximately 40) were appointed to ensure the execution of tasks, though the team has decided that the professionals would directly reach each farmer's plot along with the service provider to demonstrate nursery and transplantation.

Experience:

The experience this year was very positive in terms of grounding the technology with a large number of farmers, including marginal ones. Most farmers got yields above what they normally get. But this year there were very widespread problems of pests & disease. It was found that the plots where all the standard fertilizer doses were applied were severely affected with diseases like neck blast and smut and with insects like leaf folders. This appears to be attributable to the increased application of chemical fertilizers this year. Another observation has been that the variety MTU-7029 was more susceptible to such incidences. But in spite of this setback, nearly all the farmers are convinced about the SRI package of practices.

Due to late appearance of rain, many farmers could start seedlings only towards the end of August. Consequently, transplantation was delayed, which in turn created problems for application of the third split dose of fertilizer as by then the monsoon had withdrawn. It has been found that the number of average effective tillers was almost double with SRI (30-35) as compared to other years, but the conversion of panicles to effective tillers was still 50%. Grain filling was also affected due to blast and water crisis during the grain-filling stage.

This time we tried to ensure that the farmers do not submerge their fields as in traditional practise. Through our weekly field visits and with the help of the village SP's, we were able to ensure this. Mostly what we did was to motivate the farmers to keep the drainage channel open during their weeding & hoeing operations with the weeder; these channels were closed to flood the field. After the interculture operations, the channels were again opened. But as this year the rains were scanty, submergence did not turn out to be a big problem.

We had expected that with the application of weeders, the interculture operations would become easier, but because of the poor quality of the instruments available, the farmers were finding it difficult. Moreover, it was planned that farmers would be charged Rs3/ hour for using the instrument. But in all the villages, the SP's could not collect this money. For the coming year, some other mechanism has to be thought of for collecting rent on these instruments.

New farmers have started believing that 500 gm seed is sufficient to plant a crop for 33 decimals of land comfortably. For the first time in their life, farmers have stored their SRI harvest separately to compare the yield with the conventional package. In many villages the SRI paddy plants with grains were uprooted and stolen under the belief that this was a special variety. In some fields the grains were removed just before harvesting, and people had to guard their fields at night.

Learning:

- Looking at the rainfall pattern, we have to shift to variety of 120-130 days.
- Spacing should be determined on the basis of time of transplantation.
- Indigenous varieties should be tried, apart from HYVs.
- The nursery bed has to be in the main field; otherwise, farmers have a tendency to uproot the seedlings as it becomes very cumbersome to carry them.

Results (SRI):

The average productivity was as high: 7.7 tons/hectare average in spite of high incidence of disease and pest attack coupled with dry spell, both during transplanting and in the grain-filling stages of the crop. 90% of the farmers had yields above 5 tons/hectare, which is around 2.5 times the district average. The modal yield range was 7-9 tons/hectare with 60% of the farmers recording yields in the range of 5-9 tons/hectare. The highest recorded yield was 16 tons/hectare.

This year as the majority were new farmers, the average area/farmer was below 16 decimals (one-sixth of a hectare). But it has been documented that with an increase in plot size under SRI, the productivity did not diminish, as had been the general perception among farmers before. This leaves scope for each farmer to bring more land under SRI practices.

Average productivity (tons/hectare)	2.2
Average productivity of SRI intervention (tons/hectare)	7.7

Summary Data on Yield:

Yield Range (t/ha)	No. of families	%
1 to 3	5	3.1
3 to 5	13	8.0
5 to 7	48	29.4
7 to 9	52	31.9
9 to 11	33	20.2
>11	12	7.4
TOTAL	163	100

Per Farmer Area under SRI:

Area Range (decimals)	No. of families	%
<16	88	54.0
16-32	40	24.5
32-48	19	11.7
>48	16	9.8
TOTAL	163	100