



**Promotion of System of Rice Intensification
(SRI) in Rainfed Rice Cultivation among the
Farmers of Dangs District of Gujarat:
An Action Research Initiative**

**Patwardhan S. M. and Patel S. M.
BAIF Development Research Foundation
Warje, Pune, Maharashtra**

17 10 2007

The Setting

- ☛ Tribal-dominated district
- ☛ Remote, underdeveloped area
- ☛ Hilly region with altitudes ranging from 200-600 m
- ☛ Sandy loam lateritic soil
- ☛ Average annual rainfall: 1900 mm
- ☛ Majority of the rainfall during period mid-June to mid-September
- ☛ Severe irregularity in the distribution of rainfall
- ☛ A highly variable environment for the rainfed rice cultivation system
- ☛ Nearly 70% of the villagers cannot cultivate enough food from their own land to feed their households
- ☛ Lack of other opportunities for livelihood
- ☛ Seasonal mass migration in search of work

The Scenario:

Very low productivity of rice --
average productivity in district is
only 1000 kg ha⁻¹

Action Research was conducted
during monsoon season of 2007
at Village Sarvar, District Dangs,
Gujarat State

Why SRI?

Need to have sustainable farming practices rather than supporting the agriculture dependent on purchased inputs
SRI is appropriate for promotion among resource-poor tribal farmers who cultivate rice in rainfed uplands as it:

- ☛ Increases productivity,
- ☛ Decreases water requirements, and
- ☛ Decreases input requirements

Objectives

1. To test and promote SRI among farmers in the Dangs district of southern Gujarat
2. To develop necessary adaptations for specific local situations in the Dangs district

Process

- Seventeen farmers were selected for participation
- Each farmer cultivated 0.05-0.10 ha by SRI methods
- A control plot was observed with same variety but traditional practice
- Involvement of all the farmers in monitoring

Details of the conventional practices and SRI practices used and adaptations in the technique

Conventional practice in Sarvar Village	SRI practice promoted by BAIF
<i>Raab</i> seedbeds	Raised seedbeds
Use of little or no organic manure and/ or chemical fertilizers	Use of vermi-compost at the time of puddling @ 5 tons per ha. # Use of organic manure was ensured.
Age of seedlings for transplanting: 25-30 days	Age of seedlings for transplanting: 12-15 days intended # Age of seedlings more than recommended in SRI.

Details of local-specific adaptations in the technique

Continued...

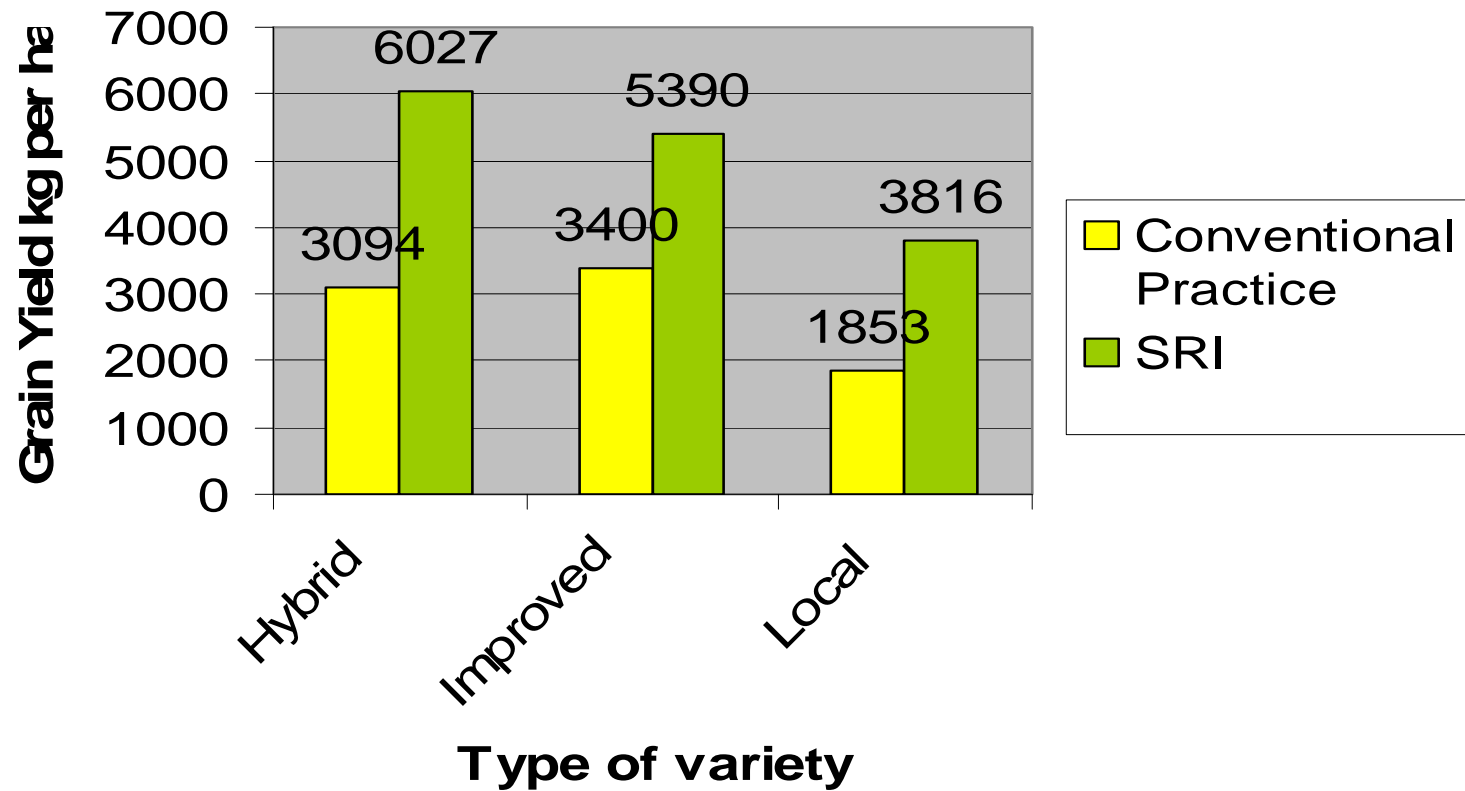
Details of the conventional practices and SRI practices used and adaptations in the technique

Conventional practice in Sarvar Village	SRI practice promoted by BAIF
No of seedlings per hill: 4-6	No. of seedlings per hill: 1
Approximate plant-to-plant distance: 15 cm	Spacing for seedlings: 25 X 25 cm
Little or no weeding	Two manual weedings: first at 15 days after transplanting, and then at 40 days after transplanting

Results and Discussion: Comparison between SRI and Control

Sr	Particulars	SRI	Control
1	Plant height (cm)	90	84
2	No. of plants per m ²	16	32
3	No. of tillers per plant	17	12
4	No. of panicles per plant	13	08
5	No. of roots per plant	299	156
6	No. of seeds per panicle	144	102
7	Grain production (quintals per ha)	53.7	29.5
8	Straw weight per (grams per m ²)	373	316
9	Weight of roots (grams per m ²)	156	134

Performance of various types of varieties of Rice in SRI



Performance during water-stress period,

During dry spell for 10 days starting 5 days after transplanting, major losses occurred in the control plots, but an increase in biomass was observed in SRI. This can be attributed to:

- ✓ Better root growth in SRI plants
- ✓ Organic manure application in SRI plots

Observations by the farmers about SRI:

- ✓ Substantial reduction in seed requirement
- ✓ Absolute necessity for weeding
- ✓ Importance of properly-leveled fields for SRI
- ✓ Lack of practice for use of organic manure

Summary and Conclusions

1. Use of organic manures @ 5 tons ha⁻¹ plus SRI methods resulted in average grain yield of 53.73 quintals ha⁻¹ – which was an 83% increase over conventional practice
2. Use of hybrid varieties of rice combined with SRI can increase the productivity of rice
3. Use of SRI with local rice varieties showed 100% increase in grain yield
4. Use of organic manure alleviated water-stress problem in rainfed rice cultivation

Future Directions

- ☛ Detailed analysis of labour requirements and economics of SRI
- ☛ Standardization of schedule for SRI operations
- ☛ Promotion of organic manure production
- ☛ Study on performance of local varieties with SRI



Raab - Local method of fertilizing seedbed by burning biomass

Vermi-composting promoted to replace Raab method



Extensive root growth
in SRI plant (on left)



Mature harvested
rice plants: control
(left), SRI (right)

Thank You!!!