

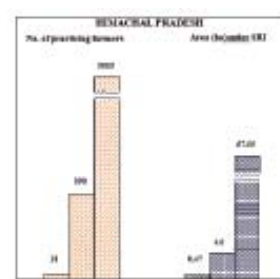
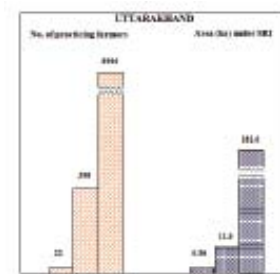
# Scaling Up Innovation

## SRI Promotion in Uttarakhand & Himachal Pradesh

The mission of People's Science Institute (PSI) commits it to enabling rural communities to achieve food and livelihood security. In 2006 the Institute identified the System of Rice Intensification (SRI) as a potential method of achieving food security in the mountain states of Uttarakhand and Himachal Pradesh. Starting with an experiment on 40 farmers in 2006, PSI enabled 12000 farmers to try the SRI method in 2008.

### Background

The mountain states of Uttarakhand (UK) and Himachal Pradesh (HP) are characterized by inaccessibility, fragility, marginality and diversity. These features limit the scope for sustainable development based on intensive resource use. In the mountains villages, farm holdings are usually small, about 0.4 ha (1 acre) per family. As rice is the staple food in the mountain region, enhancing its productivity through the SRI method can lead to greater food security for farming families. The stalk volume in the SRI method is also much higher, providing more fodder for cattle, more farmyard manure for fertilizing fields and also increasing milk yields. Hence there is a need to promote the widespread use of the SRI technique in Himachal Pradesh and Uttarakhand.



In 2006 PSI heard about the potential of SRI and its experiences from the southern states and invited Mr. Kishan Rao, an experienced SRI practitioner from Andhra Pradesh to demonstrate the technique in a few farms of UK and HP. WASSAN, Hyderabad extended technical and financial support for the initial efforts. The SRI system was introduced in 40 paddy farms in UK and HP to study its potential. Farmers were asked to plant paddy by the conventional and the SRI methods on adjacent fields. Under SRI, 12 to 15 days old seedlings were transplanted at 25 cm spacing, with recommended weeder use after 10, 20 and 30 days of transplanting, and alternate wetting and drying of fields. The results showed an average increase of about 66 per cent in paddy yields from the SRI plots compared to the conventional plots. In HP, the average productivity of paddy went up from 3.2 t/ha to 5.0 t/ha (56%). In UK, it jumped about (77%) from 3.1 t/ha to 5.5 t/ha.



In 2007, PSI organized 30 capacity building workshops on SRI cultivation, (with the financial support of NABARD, Dehradun and SRTT, Mumbai) covering more than 1000 farmers. Finally about 600 farmers (in five districts each of UK and HP) adopted SRI in 2007. The results from the farms showed that while the non-SRI yields were about 2.8 t/ha, the SRI yields were around 5.3-5.5 t/ha, an average increase of 89 per cent. Farmers who tried SRI expressed immense satisfaction with the results. Nine district level experience sharing workshops were conducted in October 2007 during harvesting of the paddy crop to share the results of SRI with farmers, scientists and policy makers to evolve a strategy for further promotion of SRI.



### **The following steps were taken by PSI in 2008 to promote SRI in UK and HP**

- Extend SRI experiment to at least 10,000 plots in UK with the financial assistance of Sir Dorabji Tata Trust (SDTT), Mumbai and the Agriculture Directorate, Government of Uttarakhand (GoU).
- Extending SRI amongst 3,000 farmers of HP with the financial assistance from ICRISAT-WWF.
- Selecting 30 Partner Organisations (POs) in UK and 10 POs in HP to cover all the 13 districts of UK and five districts of HP (Bilaspur, Chamba, Kangra, Mandi and Sirmour).
- SRI promotion through the print and electronic media. Advertisement spots on SRI were introduced on ETV channel.
- 81 master trainers were selected and trained.
- The master trainers conducted 334 two-day orientation workshops with 15,110 farmers during March - May 2008.
- A user-friendly manual on SRI (in Hindi) was prepared and distributed.
- One marker and weeder pair was provided to groups of 10 farmers in each of the selected villages.



- Field support was extended to the master trainers on a monthly basis throughout the cropping period. Agricultural extension officers and trainers from local KVKs were invited to visit the SRI fields during the cropping season.
- Just before harvesting, exposure visits of farmers from adjoining villages of the same valley were organized.
- Orientation workshops and exposure visits for Agricultural Officers of different districts of UK and HP were organized.
- A Programme Advisory Committee (PAC) has been constituted in both the states consisting of a panel of experienced scientists and government officials to regularly appraise the SRI programme.
- Eighteen one-day district-level experience-sharing workshops were organized in September-October 2008 when the paddy crop was being harvested.



## Performance Assessment

The initial evaluations in farmers' fields have shown a 56 to 77 percent yield increase. Analysis of results of the trials in 2008 is underway by gathering yield data from the farmers and comparing the yields by the SRI and conventional methods. The data obtained in 2007 are presented in Table 1.

**Table 1: Comparison between SRI & conventional paddy for Uttarakhand and Himachal Pradesh in 2007**

S. No.	Parameter	Uttarakhand		Himachal Pradesh	
		Conv.	SRI	Conv.	SRI
1.	No. of total tillers (min-max)	1-14	4-13	6-13	12-21
2.	Plant height (cm.)	96	105	102	111
3.	No. of panicles/ plant (min-max)	4-13	14-21	6-11	9-18
4.	Panicle length (cm)	14	19	20	20
5.	Average no. of grains/panicle	94	147	116	142
6.	Average grain yield (t/ha)	2.8	5.5	2.9	5.3
7.	Average straw yield (t/ha)	5.5	7.5	5.5	7.2

An important factor contributing to the yields is the seed sowing time. The recommended seed sowing time for paddy under SRI for mountain regions is:

**(i) High Altitude** (> 1500m) – 1-7 June, **(ii) Medium Altitude** (1000-1500m) – 10-20 June, and **(iii) Low Altitude** (<1000m) – 25 June - 5 July. Another crucial factor affecting the paddy yields is the transplanting age of the paddy seedlings. The grain yields reduces if older paddy seedlings are transplanted. The average grain yields obtained under different transplanting time are (i) 10-15 days : 7.0-7.5 (t/ha), (ii) 16-23 days : 5.5-6.0 (t/ha), and (iii) > 23 days : 4.0-4.5 (t/ha).

Farmers who operated the weeder only once got fewer tillers than farmers who properly operated the weeder two or three times. The average grain yields obtained under different uses of weeder are (i) Three times : 7.0-7.5 (t/ha), (ii) Twice : 6.0-6.5 (t/ha), and (iii) Once: 5.0-5.5 (t/ha).

Participating farmers have expressed immense satisfaction with the results. They perceived the benefits in terms of savings in seeds, water, women's workload and higher grain and straw yields. They also realized that SRI requires time bound operations like sowing, transplanting, weeding, etc. for better results and is labour intensive due to the need for regular interculture operations. Another major feature of the SRI intervention has been the adoption of organic farming practices by the SRI farmers.

Some of the constraints which need to be addressed while promoting SRI in the mountain regions include (i) design modification of the Mandava weeder, especially for small terraces and different soil conditions, (ii) farmers' accessibility to quality weeders and markers, (iii) capacity building of farmers in the adoption of SRI technique, and (iv) availability of water under rainfed conditions, especially during transplanting and after the milking stage.

### Way Forward

In December 2008, two state level workshops will be conducted in UK and HP where senior state level officials and policy makers, farmers' leaders and representatives of research institutions will participate. In the workshops, farmers' experiences from the fields will be shared. The discussions will focus on future plans for extension of the techniques cross the two states.

PSI is also undertaking intensification of other crops like wheat, finger millets (mandwa) and pulses (rajma). It is constituting a federation of SRI farmers at the district and state levels. Some other institutions which are undertaking trials on intensification of different crops in their research farms include 1) Vivekanand Parvatiya Krishi Anushandhan Sansthan (VPKAS), Almora, 2) GB Pant University of Agriculture and Technology (GBPUAT), Pantnagar, and 3) Rice and Wheat Research Centre (RWRC), Malan, HP.



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