

# System of Rice Intensification in Jharkhand: Producing More with Less



## Background

In 1960, Fr. de Laulanie conducted experiments on paddy transplantation and observed a system of practices which could substantially increase rice productivity. The System of Rice Intensification (SRI) was practiced by farmers of Madagascar during 1980s but till 1997 it was unknown to outside world until Dr. Norman Uphoff, Director at Cornell University, Ithaca, New York started promoting the technique being used by Madagascar farmers. Currently, SRI is practiced by farmers in China, Indonesia, Cambodia, Thailand, Bangladesh, Sri Lanka and India. The results of SRI appear quite encouraging in rice producing states of Andhra Pradesh, Odisha, Chhattisgarh and Jharkhand.

## System of Rice Intensification

The SRI is an innovative group of practices adopted in paddy cultivation which require significantly less amounts of seed, irrigation water, chemical fertilizers and pesticides. Despite less input use, there is a significant enhancement in the productivity when compared to the traditional method of rice cultivation. The rice is transplanted in the field at regular plant-to-plant and row-to-row distance, which usually is 25cm x 25cm. This distance is quite large as compared to the distance of 15cm x 10cm followed in the traditional method of rice cultivation. Larger space between the plants allows increased sunlight and aeration to each individual plant and also results in less

consumption of water due to lesser plant population. The scattered evidences in Jharkhand point towards 1.4 to 1.7 times crop productivity of SRI as compared to the traditional method of cultivation.

Under SRI, the rice fields are usually kept moist rather than being flooded which help in minimizing the anaerobic conditions. These conditions improve the root growth and support the growth, diversity and activities of aerobic soil organisms. Further, the rice plants are planted singly with optimal spacing between them to promote better root growth and the growth of canopy, keeping all the leaves photosynthetically active. The rice seedlings are transplanted young, less than 15 days old, with just two leaves. The seedlings are transplanted at shallow depth, quickly and carefully to avoid trauma to roots and minimize transplant shock.

Traditional Method Vs SRI Method		
Particulars	Conventional Method	SRI
Spacing	15x10 cm	25x25 cm
No of plants per m <sup>2</sup>	66	16
No. of seedlings per hill	3	1
No. of plants per acre	792,000	64,000
Seed requirement per acre	20 kg	2 kg
<b>Source:</b> <a href="http://www.indg.in/agriculture/agricultural-best-practices/sri/agri-best-sri">http://www.indg.in/agriculture/agricultural-best-practices/sri/agri-best-sri</a>		

## Promoting System of Rice Intensification in Jharkhand

CIPT in collaboration with Society for Promotion of Wastelands Development (SPWD) started promoting SRI in Angara block of Ranchi district in 2014. The promotion is being carried out under the USAID project on Water-Agriculture-Livelihood Security (WEALS) in India. A total of 700 farmers have been targeted which are spread across 20 villages, selecting 35 farmers from each village. There will be one lead farmer for each group of 20 farmers to guide fellow farmers on routine SRI practices and methods. In all, there are 35 lead farmers, who will support in the successful promotion of SRI with 700 farmers during this year. The entire process of promotion of SRI is divided into four phases; 1) identification of farmers and lead farmers, 2) training of farmers, 3) transplantation of rice, and 3) crop management.

## 1. Identification of farmers and lead farmers

To begin with, CIPT and SPWD identified 20 villages where SRI was to be promoted. The villages were identified on the basis of the preliminary surveys and past experience of SPWD's working in these villages. Camps were organized in each village to identify the potential farmers who could opt for SRI and 35 farmers were identified in each village. All the farmers have been organized in homogeneous groups of 20 farmers and a lead farmer was identified for each group in its first meeting. Apart from generating awareness on SRI amongst member farmers, the group meeting also helped in making the lead farmers aware of their responsibilities towards the farmers in the group and their training needs.

## 2. Training of the farmers

The farmers' trainings were conducted in two steps. First, a one-day training programme was conducted for all the 35 lead farmers to equip them with necessary information and skills on SRI and to help them to lead their respective group. The lead farmer training focused on various issues of SRI, package of practices (PoP), integrated pest management, integrated nutrient management and supportive supervision. Apart from that, the lead farmers were also trained on how they could provide regular support to the group farmers and ensure continuous supervision and monitoring of the farmers' activities from transplantation to disease control and finally till harvesting the crop.

After successfully conducting the lead farmer training, 35 farmer group trainings were organized in the respective villages to train the farmers on various aspects of SRI. These trainings helped to further build the capacity of lead farmer, train the member farmers and clarify various doubts on the cultivation and other practices related to the SRI. All the necessary information related to the member farmers was also compiled during these trainings.



## 3. Transplantation of rice

In this phase, farmers transplanted less than 15 day old rice seedlings using SRI techniques under close observation of lead farmers and expert teams. CIPT and SPWD made provisions for rice nursery for the SRI farmers. The farmers were also provided some fertilizers as an incentive to remain motivated throughout the experiment and follow the recommended package of practices for better results.

## 4. Crop management

This is the last and longest phase of the experiment starting after the transplantation of rice in the farmers' fields. The major focus in this phase will be on management of diseases and pests, promote plant health for optimum yield productivity and gather all the relevant information on the experiment from the farmers. Another round of farmers' trainings will be carried out to build their capacity to follow the recommended package of practices and maintain optimal plant health.

## Expected outcome

The success of System of Rice Intensification in Jharkhand is expected to improve rice productivity and bring significant reduction in the use of seed, irrigation water, fertilizers and pesticides. Increase in productivity along with reduction in input use will enhance profitability and will lead to an increase in farm incomes. Reduction in water usage per unit of land may increase the availability of irrigation water and may bring more area under cultivation, which ultimately will add to more food production and farm income. The successful demonstration of SRI during this experiment will feed into a comprehensive strategy to promote the SRI in Jharkhand and other parts of India. The necessary information on all the required parameters for scientific evaluation of the benefits of SRI is of utmost importance and CIPT has devised a comprehensive strategy for this purpose.



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