

System Of Rice Intensification (SRI)

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Introduction

The system for rice intensification (SRI) was developed by French Priest Father “Henri de Laulani” in Madagascar in the 1980’s in an effort to find sustainable agricultural practices which lead to higher productivity, optimum use of capital, labour, less input cost and less requirement of water. SRI is a way of harmonizing the elements of soil, water, light and plant to allow the plant to achieve its fullest potential, which is often hidden when inappropriate techniques are used.

However, unlike other rice-growing nations, India had a rather delayed start in SRI. TM Thiyagarajan of the Tamil Nadu Agricultural University, Coimbatore was the lone Indian representative at the 2002 International conference on SRI. He first heard about SRI in 2000 from Dr. Ten Berge of Wageningen’s Plant Research International and was interested in the soil aeration aspect of SRI, and its water-saving potential. The ‘modified’ SRI practice that was evaluated by TNAU used three of the SRI principles (single seeding, wider spacing and use of weeder) but it used water and fertiliser in excess of normal SRI recommendations. The results indicated considerable water saving through modified SRI and a reduction of seed costs, but no significant increase in yields.

A. Types of SRI

1. **Basic SRI:** Same menu as originally proposed by Fr. Henri de Laulani in 1983, to transplant single young seedlings at wider spacing and apply intermittent irrigation.

Chemical fertilizer is used, but occasionally some organic matters are used to improve soil structure.

- 2. Organic SRI:** Similar menu as Basic SRI, but no chemical fertilizers to be used. Organic materials, compost or manure to be applied for improving soil fertility and enhancing biological activity. This is most preferable and ideal SRI.
- 3. Partial SRI:** This is a type of SRI to apply a part of menu of SRI, though SRI effects will be decreased. It will be caused by farmer's preference and/or local conditions. For example, a set of practices to transplant "not young" seedlings at wider spacing is considered as a partial SRI. Rainfed SRI will be categorized as a partial SRI due to difficulty to control soil moisture.

B. Key elements of SRI

1. Young seedlings between 8-12 days old (2-3 leaf stage) are transplanted to preserve potential for tillering and rooting ability
2. Careful planting of single seedlings rather than in clumps that are often plunged in the soil
3. Plants are spaced wider apart instead of close, dense planting, with seed rates of 50-100 kg/ha, in square pattern, 25x25cm or wider spacing. If the soil is very good, seed rate can be reduced by 80-90%, netting farmers as much as 90-95 kg of rice per hectare
4. Use of cono-weeder/rotary hoe/power weeder to aerate the soil and controlling weeds
5. Alternate wetting and drying method rather than continuous flooding of the field
6. Use of organic manure or vermicompost/FYM.

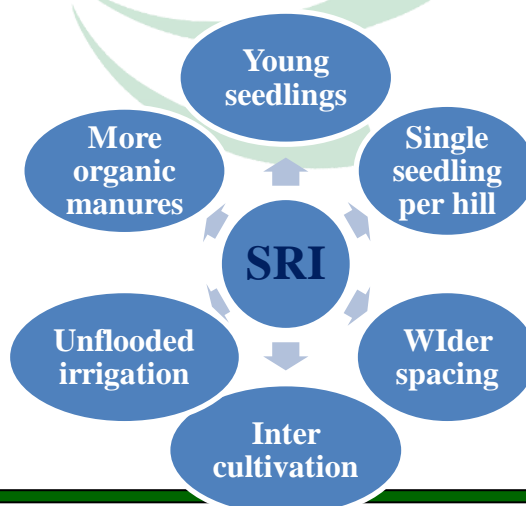


Fig:1 SRI Hexagon

C. SRI in contrast to conventional methods

Table: 1 SRI V/S conventional methods of rice cultivation

Practices	Commonly recommended methods	Farmer's practices	SRI methods
Seed rate (kg ha ⁻¹)	20	50-75	5-7.5
Seedling age (days)	25- 30	25-40	8-14
Plant spacing (cm)	15x10/20x10	Usually random	25x25(square planting)
Number of hills m ⁻¹	50-66	Varying	16
Number of seedlings hill ⁻¹	2-3	3-6 or more	Single
Water management	Irrigate to 5 cm depth one day after disappearance of previously ponded water	Continuous flooding to various depths	Only moist conditions with shallow flooding
Weed management	Hand weeding twice at 15 and 35 days after planting or application of herbicide plus one hand weeding	2 -3 times hand weeding herbicides also used by farmers	Weeds are turned back into the field by some mechanical hand weeder
Intercultivation	No	No	Weeder is used 3-4 times in between rows in both directions (perpendicular)
Nutrient	Integrated nutrient	Use all	Emphasis on more

management	management using organic manures, bio-fertilizers and chemical fertilizers at recommended levels and timing	recommended manures and fertilizers but doses and timing vary according to farmer's resources	application of organic manures
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Note: There may be more variations in the recommended and farmer's practices across the country. Only an example of farmer's practices is given here.

D. Benefits of SRI

- Higher yields of both grain and straw
- Reduced duration (by 10 days)
- Lesser chemical inputs
- Less water requirement
- Less chaffy grains %
- Grain weight increased without change in grain size
- Higher head rice recovery
- Withstand cyclonic gales
- Cold tolerance and
- Soil health improves through biological activity

E. Disadvantages

- Higher labour costs in the initial years
- Difficulties in acquiring the necessary skills and
- Not suitable if irrigation source is not available