System of rice intensification: exploring the level of adoption and problems of discontinuance

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The system of rice intensification (SRI), especially adopted in the states of Andhra Pradesh, Tamil Nadu, and Karnataka in India, uses lower external inputs, less water, and less seed than the conventional rice production system. SRI, being a set of recommended practices, is thus considered more of a system than a technology. Reports indicate that SRI can increase farmers' current rice yield two- or threefold (Uphoff, 2002). In Tamil Nadu, adaptive research trials on SRI were conducted in the Tamiarabarani River Basin and the Cauvery Delta Zone under a state government-funded scheme during 2003-04. A 27% yield increase over the conventional method was achieved (Budhar et al 2006). However, farmers faced some difficulties during on-farm evaluation and large scale adoption of SRI. This led to the discontinuance/nonadoption of the practice in some areas. A survey was thus conducted to determine whether the recommended SRI techniques are followed by farmers and to describe the level of adoption and constraints faced by them.

Data were collected from rice farmers in Krishnagiri and Hosur *taluks* of Krishnagiri District, Tamil Nadu. Agriculture is the main source of livelihood of the people in this area and rice is grown on about 30,000 ha in three distinct seasons. The rice farmers were selected randomly from different villages (about 25 farmers from each taluk). Most of the cultivators are small farmers (with holdings of 0.1-1 ha); some who have more land (>1ha) live in clusters. Through a well structured interview schedule, data on the adoption of different SRI components—seedling age, number of seedlings per hill, use of conoweeder, use of a leaf color chart, and feedback with respect to nonadoption—were collected. The levels of adoption for the different components of SRI are given in the table. Under SRI, the use of 12–15-d-old seedlings is recommended. Only 30% of the respondents had adopted this recommendation, whereas 56% transplanted 16–20-d-old seedlings. The conventional method of using 25-d-old seedlings was used by 14% of the respondents. For number of seedlings planted, 86% of the farmers transplanted a single seedling per hill, while 14% planted two seedlings per hill. The recommended spacing of 22.5 × 22.5 cm was adopted by 42% of the respondents and 14% used 20 × 20-cm spacing. About half (44%) adopted different spacing schemes. Uphoff (2003) stated that the success of SRI depends basically on the use of a conoweeder, which enables plants to grow larger root

systems. It also results in better soil aeration and increased soil organic matter due to the incorporation of weeds, thereby producing more tillers and panicles. Weeding through a conoweeder was adopted by 42% of the respondents who planted the seedlings at a spacing of 22.5 × 22.5 cm; the rest used human labor for weeding. Twenty-eight percent of the respondents were aware of the leaf color chart and its importance in nitrogen nutrient management.

Percentage of adoption of SRI components.

SRI Component	Farmer respondents (no.)	Adoption (%)
Knowledge of SRI		
Aware	50	100
Not aware	–	–
Age of seedling (d)		
12–15	15	30
16–19	28	56
25	7	14
Seedlings per hill (no.)		
Single seedlings	43	86
Two seedlings	7	14
Spacing		
22.5 × 22.5 cm	21	42
20 × 20 cm	7	14
Different spacing	22	44
Conoweeder operation		
Use of conoweeder	21	42
Not used	29	58
Use of leaf color chart		
Aware	14	28
Not aware	36	72

Farmers were asked how many seasons/times they continued the SRI technique. Only 18% of the respondents adopted the technique for more than five seasons, whereas 24% adopted it for three to four seasons. More than half (58%) adopted the SRI system for one to two seasons. It was interesting to note that all the respondents said that they will follow the technology in the future.

The reasons for the discontinuance of the practice were elicited through multiple-response analysis. In the order of priority as perceived by the respondents, these were lack of skill in handling 15-d-old seedlings (i.e., difficulty in pulling and transplanting small seedlings); shortage of skilled labor for mat nursery preparation; coverage of planting area/labor was poor; importance of the conoweeder not fully appreciated (i.e., advantages of soil stirring, aerating the root zone, as well as incorporating the weeds);

nonavailability of conoweeder; nonavailability of leaf color chart; and lack of skill in interpreting leaf color chart/conoweeder operation.

In spite of efforts made by extension agents, wide adoption is hard to achieve because farmers lack the knowledge to implement certain SRI components. Hence, there is a need to train the farmers and provide them with more information about the advantages of each SRI component. To ensure fast and full adoption of SRI, more extension personnel and farmers should be trained on the following aspects: production of healthy and robust seedlings through mat or conventional nursery, use of the recommended spacing with the square method of transplanting young seedlings, encouraging the use of the conoweeder by having it available at a reasonable price and conducting demonstrations of its operation, and motivating farmers to apply sound nitrogen management through the use of the leaf color chart. These measures will make SRI more interesting and attractive, thereby enhancing farmers' yield and income.

References

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