System of Rice Intensification (SRI) in Wayanad: Experiences of RASTA

C. K.Vishnudas, Research officer, RASTA, Wayanad, Kerala, rasta_k@satyam.net.in

What is SRI ?

The System of Rice Intensification, (Madagasker) method was developed in Madagascar island by the farmers and NGOs under the leadership of a local priest. The concept of System of Rice Intensification (SRI) focuses on managing the soil, water, plants and nutrients in a balanced relationship, enabling maximum growth of rice plants. The SRI method can double the production of paddy per hectare by using only 5% the usual seeds, 50% of usual water, 50% of manuring, and 80% of labour. It is currently being adopted in 25 countries in the world including Cambodia, Vietnam, Sri Lanka and China

Why SRI in Wayanad ?

Wayanad once had nearly 40,000 hectares of paddy cultivation. The name Wayanad itself came from "Wayal Nadu" which means "the land of paddy fields." Today, rice is cultivated only in 17,000 hectares. The remaining area is occupied by banana (12,000 hectares) and arecanut and other non-farm activities. The conversion of paddy fields to banana fields has resulted in many ecological and social problems. Women used to get substantial labour opportunities in rice (27 person-days per acre per season). Due to the conversion to banana, it could be estimated that women lost nearly 150,000 labor-days per season. This is one of the major reasons for poverty and increasing health hazards in tribal communities. The tribes, especially the Paniya and Adiya communities, had been contributing the major part of the labour force in rice. The new cash crops have adversely affected their livelihood and food security.

Banana in paddy fields: Primary culprit for groundwater shortage in Wayanad

Banana cultivation was found to be the reason for falling of groundwater level, which gradually led to the drought situation in Wayanad. Systematic efforts for reviving paddy were lacking until recently. Farmers gave up rice cultivation because of its low profitability due to high labour costs as well as low level of productivity. While the profit from one acre of rice per season is Rs. 3000 to 4000, banana from the same area will give a profit of Rs. 30,000! When the banana price hits its peak, like Rs.12 per kg, the profit multiplies to 50,000!!

Pesticide menace

But these huge profits are earned by destroying the natural ecosystem, at the cost of depleting ground water and loss of local biodiversity due to the intensive application of toxic pesticides like carbofuran (forate), thimate etc. The recent incidences of the death of one child after eating banana at Pulpally on November 16th, and the hospitalization of 24 children after respiratory problems due to inhaling pesticide-polluted air in a school in Kottathara Panchayath in 2003, has opened the eyes of consumers as well as farmers. There was a sudden fall in the price of banana. Some of the farmers turned toward reviving rice.

Relevance of SRI

Technological intervention, innovations and support services are prerequisite to bring back our rice cultivation. This should focus on increasing productivity, reducing labour costs, and developing eco-friendly pest and disease management practices. The System of Rice Intensification as mentioned above has proved to be a technical intervention with the potential to revive the rice cultivation in Wayanad.

RASTA started conducting trials on SRI practices as part of a participatory technology development (PTD) process in 2003 with five farmers. It continued for two years with a larger number of farmers. The experiments have given very promising results for reviving rice cultivation in Wayanad.

SRI Methodology

The SRI (Madagascar) method transplants single plants in hills at a distance of 25x25 or 30 x 30 cm. The uniqueness of this method is that the transplanting is being done between 7th and 9th day after sprouting of the seeds. The current practice is to transplant after 4 to 8 weeks, and often 5 to 10 plants in one clump (hill). This causes trauma to the young plant as its roots take 12 to 14 days to reestablish themselves after transplanting. In the conventional way of dense planting (50 to 60 clumps in a square meter), roots of the plant cannot grow widely and deeply, resulting in lower nutrient uptake from different zones.

Water Management

Water management is an important activity in SRI. Here under Wayanad conditions, we have tried out different ways of controlling water. Except in the swampy fields, the fields are flooded in the morning and drained in the evening, and in some plots vise versa. Water is allowed to remain on the fields for a few hours only.

In *Puncha* (summer) cultivation, in one plot we tried flooding for two days followed by a drying period for 3-4 days. The results of this method are very interesting in that it gave the similar response in yield. We adopted this method to know more about the required periodicity of irrigation.

Income and Expenditure Analysis

Yield has increased up to 65% to 80% in the SRI plots. Tiller production showed up to 256 % increase in different varieties. The profit with SRI methods increased from 50 % to 100% in different plots compared to the conventional plots. The total income per acre from SRI plots varies from Rs.10,000 to 16,000, while that in conventional plots varies from Rs. 4,400 to Rs. 9,600 per acre. On the other hand, total expenses with SRI show a slight increase (5 to 13%) compared to conventional methods. This is because of additional weeding required in SRI. This could be reduced in the coming years with effective water management as well as adopting small weeding machines. This analysis shows that SRI can be very well propagated in the district, and rice farming could also be rejuvenated. Ten farmers participated in the experiments and conducted a total of 30 trials using various seeds. The results are remarkable.

Table 1: Comparison SRI and Non-SRI Practices –Variety: Kanjana

	SRI	Non-SRI	Differ.
Plant height(cm)	130.29	101.57	+28
Yield/acre	3042 kg	1874 kg	+60%
No. of tillers	31.86	8.86	+256
Plants/sq. m.	17 (25 cm)	36 (12 cm)	
Neem cake/ ac.	70 kg	70 kg	
Cow dung/ ac.	4500 kg	4500 kg	

Reaching out..

As noted above, SRI trials started in 2003 with 10 farmers in three villages. These farmers continued their trials for two years, and the results were encouraging. Gradually they converted their entire rice farming into SRI systems. A number of additional nearby farmers joined in the method. The results were shared among farmers as well as with groups of experts and were well appreciated. The lead farmers were also given opportunity to share their experiences in regional agricultural fairs where they could explain to more farmers about the advantages of SRI.

In 2004, one of the lead farmers, Mr. Cyriac, delivered a lecture to 300 farmers in the agricultural fair, so the Agricultural Department noticed these developments. RASTA was asked to do a presentation to the Principal Agricultural Office in Wayanad. The Director of Agriculture for the state also visited the exhibition stall of RASTA held at Bathery. From the stall itself he directed his colleagues to initiate SRI methods under the leadership of Department of Agriculture. Meanwhile, RASTA has been able to present the learning to one of the member of the State Planning Board. Fortunately in the 11th Five-Year Plan guidelines, the Planning Board has given emphasis to promote SRI systems of rice production in Kerala.

At the local level, the Kaniyambetta Grama Panchayath in Wayanad has come forward to replicate the process in the whole Panchayath. For this, they have set apart an amount of Rs.1500 each for one farmer in each ward to do a demonstration farm on SRI. Two farmers from one ward will be selected for this. In this Panchayath, 34 farmers in 17 wards are starting SRI this season.

In 2005, a rice farmer who came to RASTA and saw its PowerPoint presentation on SRI himself started the method and came back to us with excellent results in yield. This is very remarkable as he has not received any additional help from us. 50 to 60 farmers are now practicing SRI in the region, and this number is on the rise.

Table 2: Variety and \Profits

	Profits Rs/Acre			
Variety	SRI	Non-SRI	Difference	% Increase
Kanchana	14376	6455	7921	122.7
Sunadari	10245	2987	7258	243.0
Kanchana	11804	6776	5028	74.2
G.shala	9000	7900	1100	13.9

End note :

For every one acre of rice cultivated, 27 women labor days are generated per season. So the revival of rice cultivation enhances the income level of poor families as well as ensures food security to women of tribal and low income groups. SRI helps them.

About RASTA *: RASTA is a two decade old grassroots development organization working in Wayanad district of Kerala. It work among women, farmers and indigenous communities for*

improving their livelihood. Sustainable agriculture promotion is one of the primary activities of the organization. www.rastaindia.org contact : Ms T.K Omana, Director.