

## Less seed, more harvest

The System of Rice Intensification may provide small and marginal rice farmers a way out of their perennial worries - for water, better yields, and the preservation of soil health. Rajeev Natarajan reports on one farmer in Tamilnadu, whose tentative beginning has now turned into a strong conviction.

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December 2004 - In the little village of Alandur, about 300 kilometers south of Chennai, Perumal (a local farmer) is experimenting with a path-breaking approach to growing paddy, known as the System of Rice Intensification. SRI is path-breaking not only because of the record yields that it generates but also because while its principles are powerful in crops grown with chemical inputs, they are even more productive when applied to organic farming.

The System of Rice Intensification (also known as the Madagascar method) is a collection of principles - and not a technique - derived from over three decades of experiments with rice growing farmers by Fr. Henri de Laulanié in Madagascar (hence the name). Its key principles (listed below) are easily understood, and appropriately practising them in local environments has been proven to be successful repeatedly.

- Rice seedlings are transplanted early.
- Each seedling is planted individually, and not in bunches with others.
- Seedlings are planted with wide spacing - at least 25 cm apart.
- The crop is grown in moist conditions, but flooding is avoided.
- Weeding is important.
- Organic inputs are preferable to chemical ones.

For a fuller explanation of SRI and its advantages, click below.

SRI Explained ([www.echotech.org](http://www.echotech.org)).

Perumal is new to organic farming. But he has been experimenting with various techniques over the past ten years, many of them quite significant to the practices of SRI. SRI recommends that transplanted

seedlings be widely spaced (50 cm, typically) using the single-seedling technique, whereas conventionally much closer spacing is followed, (even as little as 10 cm) and 2-3 seedlings are often bunched together. Perumal noticed that when he used 15 kg of seed per acre (as opposed to the government-recommended 50 kg/acre), he obtained better results! Encouraged, he started using even fewer seeds and planting them further apart, and the yields rose even further! Now, he uses 0.25 - 0.5 kg an acre, and gets 4 tons.

He then wanted to experiment further, but when he brought his findings to the Agriculture Department, officials there were dismissive and advised him not to proceed further. Scientists at the Tamilnadu Agricultural University declined his invitation to visit his field, and see the results for themselves. Fortunately for Perumal, he soon met Nammalvar, the father of the organic movement in Tamilnadu, at a public meeting; there he learned that he was in fact moving in the 'right' direction.



In the conventional method of growing paddy, the plants are bunched very close to each other. Also note that the number of tillers ('shoots') in each plant is about 10-15.

Perumal was also convinced that alongside his successful planting techniques, he had to go organic. So he began interacting with various organic farmers in the region and reading up on organic farming practices as well. He soon came across the Madagascar Method in the literature (and from Nammalvar) and was inspired to try out the new approach. Still, he was unwilling to chance his entire three acres as a test-bed, especially as he didn't know anyone else who had made the change successfully, and his fellow farmers who stayed with conventional methods were also discouraging.

Scientists at the Tamilnadu Agricultural University discouraged Perumal, and even declined his invitation to visit his field. Luckily, his encounter with Nammalvar reassured him he was on the right track.

- Growing paddy with less water
- System of Rice Intensification

He began with a 5 cent plot (about 1/20th of an acre). He transplanted the seedlings 50 cm apart (four seedlings in a square metre) and maintained only a thin layer of water. He fed the field basic organic manure. He noticed that he now had enough space to actually walk and observe each individual plant and could, in the process of walking, remove the weeds by hand. He could also notice and remove the eggs of pests from the tillers. He soon found that his plants were tillering beyond his imagination. While the plants in the rest of field would give out 50-60 tillers at most (the closely bunched ones yielded only 10-15) the ones in his experimental field averaged 100 tillers.

His harvest was bountiful; an average of 250 g. per plant, around 4 tons an acre (compared to 2 tons in conventional methods), and this without using any organic growth promoter! He notes that SRI practitioners have been known to harvest up to 10 tons an acre, and is eager to push his efforts even higher. (Eds. note: the table below shows typical comparisons of costs and income between the conventional practices Perumal once followed, and the SRI methods he now favours.)

<b>Expenses</b>		
<u>Need per acre</u>	<u>SRI (in general: Single Sapling)</u>	<u>Conventional farming</u>
Seed	Rs. 8 (0.5 kg)	Rs. 360 (24 kg)
Removing seedlings from nursery	Rs 80 (2 x Rs. 40)	Rs. 600 (8 x Rs. 40 and 8 x Rs. 35)
Transplant	Rs. 210 (6 x Rs. 35)	Rs. 700 (20 x Rs. 35)
Weeding	Rs. 350 (10x Rs. 35)	Rs. 525 (15 x Rs. 35)
Fertilizer	Rs. 200 (preparing organic manure)	Rs. 1125 base ( <i>adi uram</i> ), potash, urea.
Pesticide	Rs. 100 (preparing bio-pesticide)	Rs. 1000
Harvest	1/7th of harvested grain	1/7th of harvested grain
<b>TOTAL</b>	<b>~ Rs. 1000</b>	<b>Rs. 4310</b>
Men earn Rs. 40 per day and women Rs. 35 per day		
<b>Income</b>		
	~ Rs. 18000 (Farmer keeps 6/7th of the grain - 4 tons an acre at Rs. 5000 per ton)	~ Rs. 9000 (Farmer keeps 6/7th of the grain - 2 tons an acre at Rs. 5000 per ton)

SRI also offers other benefits. The absence of flooding helps prevent the release of methane, one of the major greenhouse gases. Also, reduced demand for water frees up this precious resource for other uses; this is especially noteworthy at a time when there is a large focus directly linking productivity to increased availability of water (one of the stated reasons for the proposed interlinking of the nation's rivers, for instance). Moreover, the soil has higher biodiversity, as it is not kept saturated. Since SRI is also effective in small land-holdings, it can be very useful for small and marginal farmers, who are the majority of cultivators in India.

While SRI does require that the farmer understand the techniques and adapt them to the local area, these techniques are rather easily understood. Experience shows that the biggest roadblock is to convince farmers to start practising some of these techniques which appear counter-intuitive to many of them (especially the practice of planting seedlings further apart). Not only that, many scientists for a long time dismissed SRI as too good to be true. Now, SRI is slowly but surely catching on, with even the Agriculture Department showing interest (see here). ⊕

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December 2004

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