More

When it comes to SRI (the System of Rice Intensification), scientists cannot seem to agree on exactly what makes it work, or even whether it works. This has not stopped farmers from widely applying the technique. Farming Matters looks at how SRI has become such a popular technique over the last 25 years, and what is stopping it from becoming an even greater success. | Text Mireille Vermeulen

from less, from less to more

Producing more from less, that is the essence of the System of Rice Intensification (SRI). What started as a small experiment by the French Jesuit priest Henri de Laulanié in Madagascar in 1980, has now grown into a technique widely adopted by farmers in 36 countries who cultivate rice on areas of between 0.5 and 20 hectares. SRI is a set of principles, like wider spacing, early transplanting, using organic fertilizer and better water management. The combination of these principles leads to a better rooting system and stronger plants, resulting in bigger yields (at least double of the world average of 3.8 tons per hectare). The inputs are low-cost, especially compared to the regular Green Revolution paddy rice, where expensive hybrid seeds and chemical fertilizers are used in high dosages.

Walking on two legs

Norman Uphoff is Emeritus Professor at Cornell University in Ithaca, New York, and one of the most energetic and persistent promoters of SRI. After three years closely and critically watching farmers experimenting with SRI in Madagascar in the 1980s, Uphoff became convinced by the results in the field: "It didn't make sense to me in the beginning, but I saw farmers' yields go up from 2 to 6 tons and they were working on hard soils in harsh conditions. I had to believe it."

Even though Uphoff's background is in socio-economics, he is very interested in the scientific basis of SRI. According to him, the process of upscaling agricultural successes must "walk on two legs": empirical and scientific evidence. Farmers need practical information, they will see from the results in the field if new techniques taught by extension workers work or not. But scientists need scientific proof. Harro Maat from Wageningen University in the Netherlands explains that despite the enthusiasm of NGOs working with farmers, their non-scientific ways of measuring SRI results clashed with the research institutes' methods. They work more from a distance and conform to formal scientific procedures: "The NGOs claimed high yields without information on measurement methods, and then scientists disqualified these results," Maat says.

Further research

So the relationship between NGOs and scientists, and even among different schools of scientists, is difficult. SRI has caused a lot of controversy, with opponents accusing each other of practising voodoo science and believing in UFOs (Unconfirmed Field Observations). Big institutions, like the International Rice Research Institute (IRRI) in the Philippines have been critical about SRI from the beginning. "It's often a question of personalities," knows Uphoff. "Some people have had difficulties accepting that a social scientist like me is so convinced of this technological innovation which is breaking with all agricultural rules. Think of the consequences: we have always been taught that continuous flooding is the best way to cultivate rice because it is an aquatic plant, and now we admit it doesn't work like that. What other agricultural laws in which we so firmly believe can be overthrown by the experiences and insights of independent creative farmers? Is it really good to plough the soil, for instance?"

But these days, IRRI is more open to SRI and other techniques that make less use of chemical fertilizers and pesticides. The energy crisis, but also repeated questions and critiques from NGOs and scientists have pushed IRRI in this direction.

IRRI now supports a research programme on SRI at Wageningen University, that has just started. The programme focuses not merely on the technical performance of SRI but includes the distribution and adaptation process of SRI: how it works differently in different places, the organisations involved and the linkages with other agricultural institutions, networks and donors. Other research, by Thakur in India for instance, focuses more on the physiological agronomic explanations for higher yields by SRI.

Learning from SRI For Norman Uphoff, the most important lesson from the upscaling process of SRI is that members of the scientific community should be open-minded. They should not be self-referential, but listen carefully to the questions and experiences of farmers. The same counts for policymakers and politicians: the degree of their real involvement with farmers determines whether rural problems are solved or not.
But scientific institutes and governments are still very "top down" and not really organised in a way to automatically take farmers' interests into consideration. Their collaboration with other organisations may be seen as a step in the right direction.

Members of a self-help group see their own results.
Photo: Edwin van der Maden

Harro Maat attributes part of the success of SRI to the increased attention given to the crop: more time and attention leads to better yields (as you can even observe in your own vegetable garden). SRI is successful in cases where farmers really devote time to farming, on nearby fields, where they easily weed and transport manure. The principles of SRI are in fact a little counter-intuitive to regular farmers' knowledge on crop density: you increase fertility but reduce plant density. "Not new as such," says Maat, "there are different descriptions of techniques for rice improvement in sources from before the 1960s, when the Green Revolution started. That shows there was a lot of thinking and experimenting similar to SRI". Both Uphoff and Maat hope that a better understanding of the technical and organisational aspects of SRI may lead to more scientists being "converted" and more research on how farmer experimentattion can match with scientific research. This is an area with a lot of potential. Experiments with wheat, finger millet, vegetables and onions show that yields can significantly increase when farmers adopt SRI techniques. By putting the lessons of successful upscaling into practice, farmers might gain a lot.

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The World Bank has recently decided to spread information on SRI through a special website and training videos. A how-to guide for farmers and practitioners is available, as well as a more general overview of SRI for policy and decision makers. See more at: info.worldbank.org/etools/docs/library/245848/index.html.

More profit from small water streams

The use of simple sprinklers for irrigation in the Andes is another example of the quick and widespread adoption of low cost improvements by farmers. Because of the difficult geography, agriculture in the Andes is mostly rainfed – and limited to three or four months per year. Using the gradients and altitude differences, simple pipes and sprinklers mean that farmers can efficiently use water from streams running downhill. With these small amounts of water they can grow crops and forage all year round. The sprinklers are easy to make (in some cases just from old plastic bottles) and cost approximately US$ 40 per hectare. So implementing the system is cheap, especially when compared to the benefits. Water availability means higher yields, more products during the year, more consumption, better nutrition and higher incomes. This is what Carlos Paredes, the man behind their introduction in many Peruvian villages, sees as a "productive revolution". Not surprisingly, sprinkler irrigation is being copied all over the place, with a huge impact. ▮