

# Learning from farmers

It was an afternoon of 2002 when I first read about SRI. As an extension officer in the District Agriculture Development Office (DADO), I started promoting SRI in the following years in the district of Morang, Nepal. Over this time I observed hundreds of attractive SRI fields and spent some years as a SRI activist. Looking at the results, I've learnt that different farmers face different problems, and that they adapt all techniques to suit their diverse circumstances and needs.

Rajendra Uprety

**T**he media and local “champions” have played a vital role in promoting and disseminating SRI in Nepal. In 2004, SRI was introduced in Morang with the specific objective of increasing yields.

DADO used the Farmer Field School approach to train a range of farmers in SRI techniques; trainees included land owners, share-croppers and farmers leasing land, and farmers with a variety of water sources. During the interactive field meetings, SRI seemed compatible with the reality of the region's resource-poor farmers, the scarcity of fertilizers and their use of different rice varieties. Yet, through working with these farmers over a period of time, researchers and extension staff learnt that their agro-ecological and socio-economic contexts often differ, and that the newly learnt SRI strategies are applied differently, according to context.

The demand for rice has been growing in Nepal because of population growth and the purchasing power of part of the population, and helped by better transport facilities. Rice has become a government priority. However, the very same social and economic changes have also led to new income opportunities for people in the rural areas, and as a result the cultivation of rice is less

attractive. Although the majority of the farmers continue to grow rice to secure their household's food needs, they are also involved in other agricultural and non-agricultural income-generating activities. The new generation of farmers is more interested in high-value vegetables, fruits and cash crops.

A detailed field study in Morang in 2008 showed that SRI does increase rice production, but its adoption was limited. The reliability of access to water, the distance between the house and the field, land ownership, and the availability of labour and training were the main factors determining the farmers' strategies, and hence influencing the dissemination of SRI. Having an unreliable water supply, farming in swampy lowlands, or cultivating rice on rented or distant fields, were all obstacles to adopting SRI. Most SRI farmers used the family as a source of labour, whereas most large-scale farmers, depending on hired labour, were not interested in SRI as its labour requirements are time-bound. Overall, the determining factor was the perceived importance of rice production within the farmer's wider range of agricultural and non-agricultural income-generating opportunities. This study suggested that rice intensification was only attractive to a relatively small portion of land-owning rice farmers with a low dependency on hired labour.



Harvesting time: farmers' knowledge and aspirations are the best determinants of success. Photo: Rajendra Uprety

## Variations in field management

Yet we also saw that farmers employed different field management strategies to incorporate SRI into their farming systems. Few farmers used all six of the SRI practices introduced in the training sessions (young seedlings, single seedlings, wider spacing, alternate wetting and drying irrigation, mechanical weeding and use of compost). But these modified methods appeared to be even more successful than the “standard” SRI system, producing an average yield of 5.7 tons/hectare. By maintaining regular interactions with the farmers, researchers and extension agents learnt what works and what does not. We found that the farmers with most productive fields used younger and fewer seedlings of photo-insensitive varieties, spaced wider apart. The type of land and the availability of water greatly influenced which approaches the farmers chose.

A majority of farmers only used SRI methods in the higher parts of their field. Farmers used younger seedlings in areas where irrigation and drainage can be controlled better, responding to the evidence that transplanting young seedlings in water-scarce areas is more risky. Water availability also determines the timing of land preparation and transplanting. When the rains are late, or when water is not available, the preparation of the

field is delayed while the seedlings continue to grow in the seedbeds.

Secondly, mechanical weeding appeared problematic. Although farmers used fewer seedlings and wider spacings, they were not laid out in the straight lines or square patterns necessary for mechanical weeding. Weed management, manual or mechanical, requires sufficient and skilled labour. Mechanical weeding was found to produce higher yields, but most of the farmers complained about the inefficiency of locally-made weeders. The heavy equipment was not suitable for the predominantly female workers.

Third, many farmers did not follow the advice to use compost (alone or with fertilizer). Sometimes there was not any (or enough) compost available, especially as dung is often used as fuel. Other factors that constrained the use of compost included the distance to the field, land ownership, and the expected yield returns. The use of bullock carts in the area is in decline, limiting farmers' transportation options. Moreover, farmers prefer to apply the available compost on high-value crops such as vegetables and spices. Another notable finding was that the poorly producing farmers in the study area used more fertilizers than required. By contrast, the farmers who had attended the training sessions had reduced their fertilizer use.

Finally, we saw that farmers did not follow the recommendations of the national research systems. Only 22 percent of the rice fields in Morang were planted with the recommended varieties. In well-irrigated (and thus less vulnerable) areas, the recommended varieties performed better and were adopted by farmers. But they were less popular in the more vulnerable fields. In addition, the low straw yield of the recommended dwarf varieties makes them less attractive for farmers who have animals. They prefer the taller varieties which also provide straw that can be used as fodder. Also, while long-duration and low-producing Basmati varieties were grown by some farmers due to the high price they fetch, they were not popular among small-scale and marginal farmers, who cultivate rice for home consumption. The most popular varieties were not recommended by the research system, but had been selected and disseminated in farmer-to-farmer networks.

**Learning from farmers** The introduction of SRI during the DADO training sessions helped both farmers and extension workers to learn from the rice fields and from each other. Extension workers saw that their own recommendations were not followed, and started a process of reviewing the techniques with the farmers. This broke the traditional one-way deliverer-recipient system of learning. After joint trials and learning, mutual interactions became more common. Such interactions helped re-shape the general recommendations of the extension staff. When DADO began making recommendations based on farmers' suggestions, other farmers became more interested in testing and disseminating the new approaches.

SRI was found to be effective – but not necessarily interesting for all farmers and all contexts. Farmers tried to re-shape it according to their agro-ecological and socio-economic conditions, choosing some of the practices best suited to them and their particular fields. This

taught us, as an extension agency, to rethink our technology dissemination process for medium and small-scale farmers, and begin providing them with a set of options. These options are intended to be varied and flexible enough to allow farmers to choose from them according to their particular situation.

If the government and other supporting services want to increase the benefits that farmers can get from SRI techniques, they need to address the issues that influence farmers' decisions. Improving water distribution systems and their reliability can be beneficial for farmers with fields in lowland, swampy or poorly irrigated areas. Another option is to help farmers to access more suitable mechanical weeders. Nutrient management strategies can also be improved by looking at the supply of fertilizers and by providing intensive training on the use of manure. We constantly try to keep in mind that a training package needs to be designed according to local needs. And the production of rice needs to become an economically attractive alternative to other sources of income.

Farmers' knowledge and livelihood aspirations are the best determinants of success in the field. This study found that farmers are the best selectors of varieties: participatory variety selection and dissemination approaches are clearly the best strategy to introduce promising rice varieties. A diversity in varieties and cultivation methods is an essential component of rice farming. Especially in countries like Nepal, where the majority of rice farming is still rainfed, it is important to understand and appreciate the agro-ecological and socio-economic diversity of rice farming systems.

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**Working together with farmers, we all saw what works and what not.** Photos: Rajendra Uprety

