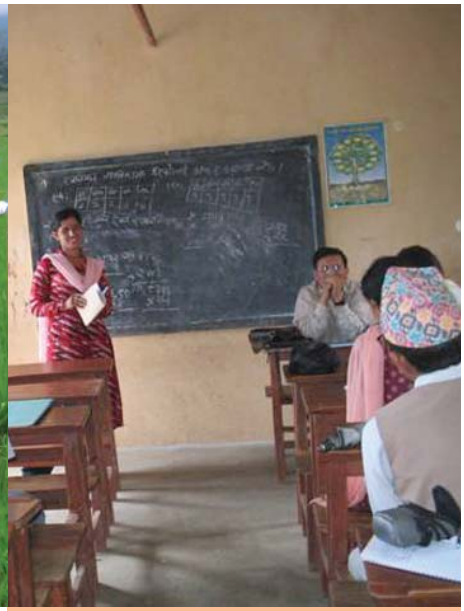


Left: Farmers and technicians observing an SRI field as part of a farmer field school (Madhav Dhakal)
Right: A farmer sharing her field experiences at a farmer field school (Madhav Dhakal)

Evaluation of the System of Rice Intensification (SRI) through participatory research and development

Nepal: सहभागीतामूलक अनुसन्धान र विकासद्वारा धान उत्पादन वृद्धि गर्ने तरीकाको मूल्यांकन

Conducting participatory action research with farmers and district level line agencies for demonstrating, disseminating and scaling up SRI

PARDYP pilot tested SRI in the Spice Crop Development Centre (SCDC) at Tamaghat, Kabhrepalanchok in 2002. The positive results led the technique to be tried out in 25 farmer's fields in 2004 to evaluate whether SRI was technically feasible in the Himalayan middle mountains. Based on farmers' interests and to promote SRI systematically, PARDYP organised interaction programmes between farmers who had and had not used SRI, village level group discussions, farmer-to-farmer visits and farmer-led on-site monitoring and evaluation in 2002, 2003 and 2004.

In 2005, the emphasis shifted to carrying out research with groups of farmers in a more systematic way and participatory rural appraisal methods and tools were used. The approach was called the SRI farmer field school (FFS) approach. Lead farmers (13 male and 6 female) were trained as SRI trainers and then facilitated village level farmer field schools for testing and promoting SRI. In 2005, SRI farmer field schools were run in 15 villages for about 100 farmers. Each school carried out hands-on training sessions to help farmers understand (1) the basic concepts of SRI and its practices, (2) methods for comparing traditional practices with SRI, and (3) how to observe, analyse and present findings more systematically. Monitoring and evaluation gathered both men's and women's perceptions. This also helped establish an informal farmer-learning network in the watershed. Village level discussions, farmer visits, and interaction with staff from the district agriculture offices continued. At the end of the on-farm experiments, a district level farmer's day was organised to share the experiences gained.

To promote wider understanding of the action research and encourage farmers to continue developing and adapting SRI, the project disseminated information about SRI through information, education and communication (IEC) materials aimed at community-level users, and a multi-media package on a CD ROM for the global audience and Nepali policy-makers and administrators. A national exchange workshop was held to share experiences from across the country on the use of SRI.

WOCAT database reference: QA NEP15
Location: Jhikhu Khola watershed, Kabhrepalanchok district, Nepal
Approach area: 111 km^2
Land use: Annual cropping
Climate: Humid subtropical
Related technology: System of rice intensification (SRI), QT NEP15
Compiled by: Madhav Dhakal, ICIMOD
Date: August 2006

The technology was documented using the WOCAT (www.wocat.org) tool.
ICIMOD
Swiss Agency for Development and Cooperation SDC
WOCAT

Problem, objectives and constraints

Problem

- Lack of systematic on-farm research for developing a technology that takes into account farmers' needs
- Weak institutional collaboration for technology development, dissemination and scaling up
- Poor soil fertility, limited crop production, and poor irrigation facilities

Objectives

- To demonstrate and evaluate the innovative SRI technique under local conditions with land users' participation
- To inform farmers about the basic concepts, associated principles, and technical know-how related to SRI
- To share knowledge gained on SRI with a wider audience
- To scale up the innovation across larger areas

Constraints addressed

Major	Specification	Treatment
Technical	It is not a priority area of line agencies	Sharing of technical know-how with concerned stakeholders
Institutional	Lack of coordination among land users	Informal SRI farmers' network established with trained human resources
Minor	**Specification**	**Treatment**
Financial	Government incentives lacking	The innovation is cost effective and doesn't need additional inputs
Other	Lack of awareness	Trainings, group discussions, field visits

Participation and decision making

Target groups


Land users


Extension workers


Planners

Approach costs met by:

International donor funded project (PARDP)	90%
Community/local	10%
TOTAL	**100%**

Decisions on choice of the technology: Mainly national soil and water conservation (SWC) specialists in consultation with land users, including women farmers

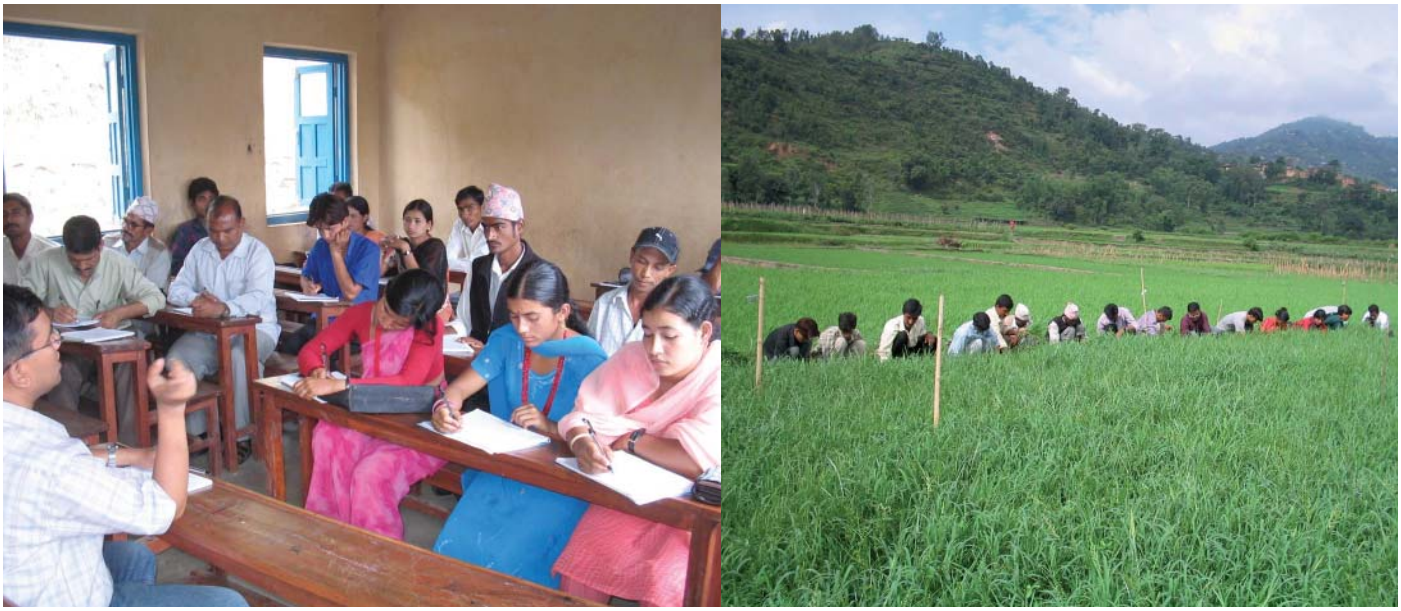
Decisions on method of implementing the technology: Mainly SWC specialists in consultation with land users. It was tested first at a research station to build confidence of project staff and surrounding villagers, and was then taken to interested farmers' fields

Approach designed by: National specialist together with land users

Community involvement

Phase	Involvement	Activities
Initiation	Passive	First year's on-station demonstration with results shared at public meetings
Planning	Interactive	Public meetings organised in different villages; villagers selected lead farmers for the training, and orientation meeting held to plan activities
Implementation	Interactive	Farmers themselves implemented the activities; the project facilitated the research and arranged logistics
Monitoring/ evaluation	Interactive	Measurements, observations and reporting were carried out once a week. At the end of the project, results were evaluated through interviews using questionnaires. Public meeting organised to share results with district level stakeholders
Research	Interactive	On-farm and on-station research conducted; information from research station collected by technicians; farmers themselves collected information from their fields

Differences in participation of men and women: There was 30% women's participation



Left: Public meeting: an orientation meeting to plan and implement SRI activities (Madhav Dhakal)
Right: Lead farmers in the demonstration field – an activity of a farmer field school (Madhav Dhakal)

Extension and promotion

Training: The training courses covered the principles associated with SRI, participatory research procedures, and farmers' concerns (men and women). On-station and on-farm plots were established to compare the results from SRI and traditionally grown rice. Farm visits were run regularly for ordinary SRI farmers to interact with lead farmers. Public meetings were organised to share SRI principles and experiences with non-participating farmers. Most of the trainings were effective.
Extension: The approach focused on the farmer-to-farmer extension of SRI by involving local farmers as facilitators. The trained farmers facilitated and shared their experiences with new SRI farmers. Local meetings (farmers days) and national workshops were run to scale up the SRI method and share lessons learned. These events were very important to raise awareness and to promote SRI, with different stakeholders taking part and sharing their views. The extension was quite successful and a large number of farmers are now able to confidently implement SRI. However, the awareness of decision makers and politicians needs to be improved.
Research: Participatory research at the farmer field schools was a key element of the approach. The schools compared the inputs and outputs of the traditional and SRI methods including the differences in grain and biomass production, the costs and benefits, and the advantages and disadvantages. Research helped participating farmers understand better the principles and practices of SRI in a real field situation.
Importance of land use rights: The individual land use rights helped in implementing the technology as there were no conflicts among land users.

Incentives

Labour: Labour was voluntary with farmers working either as trainees or volunteers.
Inputs: The project provided seed, fertiliser and biocide for on-station and on-farm demonstration plots; nothing was provided to the individual SRI farmer's fields.
Credit: No credit was provided.
Support of local institutions: None
Long-term impact of incentives: The necessary incentives (especially training) for implementing SRI in the long term helped enormously in wider SRI adoption.

Monitoring and evaluation

Monitored aspects	Methods and indicators
Biophysical	ad hoc observations on soil condition and irrigation facilities
Technical	regular measurement (weekly) of number of tillers, tiller height, climatic conditions
Socio-cultural	ad hoc observations on farmers' (male and female) preference for rice varieties
Economic/production	regular measurement of grain and biomass production, cost of production
Area treated	ad hoc measurement of area of SRI cultivation
No. of land users involved	ad hoc observation of frequency of farm visits and record keeping
Management of approach	regular observation of the training management by farmer field school management sub-committees

Impacts of the approach

Changes as a result of monitoring and evaluation: The recommendations of external evaluation led to research designs being adjusted to better address farmers' needs, for example: 1) plant spacings of 25cm x 25cm and 50cm x 50cm tested under rainfed conditions and with irrigation over dry spells; 2) 10-15 day old seedlings transplanted; 3) different varieties of monsoon rice tested; 4) full dose (NPK 100:30:30) chemical fertiliser and half dose (NPK 50:15:15) chemical fertiliser with half dose compost tested; and 5) rice intercropped with soybean.

Improved soil and water management: The approach has helped participating farmers to improve soil and water management. They started to apply the recommended dose of chemical fertiliser and improved farmyard manure. The frequency of irrigation was reduced and there were less cases of terrace-riser failure caused by stagnant water. The SRI method consumed 50 to 75% less water, 75% less seeds, 50% less labour for transplanting, 50-60% less labour for irrigation and less costly pesticides than the traditional method.

Adoption of the approach by other projects/land users: A similar approach was used to promote SRI by a few projects in the same district.

Sustainability: The approach can be continued without external support. By 2005, about 35 local land users had adopted the SRI method and previous adopters were continuing to use SRI. However, some more time may be required for its wider adoption.

Concluding statements

Strengths and →how to sustain/improve	Weaknesses and →how to overcome
Action research was conducted with farmer groups and individual households. The group approach was more systematic and helped to build confidence of land users in the technology → It should be maintained and continued on a regular basis to strengthen land users' involvement	Due to time limits, not all SRI adopters' opinions and experiences could be covered during interaction workshops. The scattered farmer field schools (distance-wise) and the difficult political situation meant that exchange visits could not be organised for all schools → Allocate enough time for such programmes
Action research was conducted through farmer field schools and lead farmers were trained in training of trainers programmes. These served as platforms for farmers to share their immediate concerns. Besides analysing and presenting, farmers' skills were also developed → Implement the farmers field school approach during technology implementation to build confidence of land users and empower them in soil and water conservation	Women's participation in the village level workshops was poor (2% at one location and 5% at another) → Encourage women to participate, and adapt programmes to suit their interests
Lead farmers served as key resource persons in the village-level farmer field schools. Data from test plots were analyzed by farmers on a weekly basis. This was very effective for promoting the sustainability of SRI → Encourage district level agriculture offices to use the skills of lead farmers as resource persons to expand SRI in their districts	Agro-ecosystem analysis, as used at the farmer field schools, became a time-consuming process as participants had to spend much time in preparing presentations → Pre-planning and pre-preparation of presentation format should reduce the time length
Participatory methods and tools were applied repeatedly. Farmer visits and village level group discussions were very effective for evaluating SRI → Use participatory tools and methods widely during the technology implementing period	A long dry spell meant that the SRI observation plot could not be established near to the lead farmers' field school site, and only 15 facilitators were able to establish observation plots in their villages → This was due to natural causes (late arrival of monsoon), it can be improved easily if monsoon arrives on time
Through farmer-to-farmer field visits, farmers had an opportunity to observe others' fields and see the performance of SRI in different locations and conditions → Continue such visits as farmers learn much more from farm visits and from sharing experiences with other farmers	

Key reference(s): ICIMOD (2007) *Good Practices in Watershed Management, Lessons Learned in the Mid Hills of Nepal.* Kathmandu: ICIMOD ■ Dhakal, M.P. (2005) *Farmers' Evaluation of System of Rice Intensification in Middle Mountains of Nepal.* Cornell International Institute for Food, Agriculture, and Development (CIIFAD) SRI.URL: http://ciifad.cornell.edu/sri/countries/nepal/index.html ■ IRRI International Rice Research Institute, www.irri.org.

Contact person(s): HIMCAT/WOCAT Coordinator, International Centre for Integrated Mountain Development (ICIMOD), GPO Box. 3226, Kathmandu, Nepal, himcat@icimod.org