SRI Experience in the PHILIPPINES

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In the Philippines, knowledge on SRI came through various channels of information. Some got it through international networks like the International Institute for Rural Reconstruction (IIRR) while others encountered it through agricultural publications, such as the ILEIA Newsletter. Broad Initiatives for Negros Development (BIND), an NGO based in Negros Occidental, began SRI farm trials in 1999 using a draft document from CIIFAD downloaded from an internet website.

The Philippines has mostly maritime tropical climate with temperature variations reflecting differences in elevation. There are two pronounced seasons—wet and dry—with an average of 20 tropical typhoons annually during the rainy season, especially from June to December. Monthly rainfalls average 300–400 mm at the maximum and decrease to 100–200 mm at the minimum. Philippine lowlands usually have clay, sandy clay to sandy clay loam soils, while the uplands have clay to clay–loam.

In the Philippines, current rice yields in irrigated lowland average about 3.5 tons per hectare, using conventional farming methods, with considerable use of HYVs and agrochemicals. The two dominant cultural practices for irrigated rice are transplanting seedlings either 10–12 days old or 25–30 days old, usually closely spaced, and in clumps of 3–4 seedlings per hill.

During the vegetative phase, rice fields are usually irrigated with 10 to 20 cm of water to contain weed growth as well as provide water. Using early-maturing rice varieties is common practice, enabling farmers to attain five crops within a span of two years.

Initial Evaluations

SRI evaluations are just beginning in the Philippines. In one of the first trials, the Consortium for the Development of Southern Mindanao Cooperatives (CDSMC) began evaluating SRI in 1999. The 10 farmers working with this NGO got an average yield of 4.95 t/ha, which compared well with the usual yields of 1.5-2.5 t/ha there. The next year the average with SRI was 4.28 t/ha, but with one farmer reading 13.45 t/ha. In subsequent years, other NGOs including a farmer NGO for use of organic methods of agriculture, MASIPAG, started working with these methods. In 2001, a staff member of the Agricultural Training Institute (ATI) reported a yield of 7.6 t/ha with SRI compared to a previous yield on his field of 3.6 t/ha, using a mestizo hybrid variety (e-mail communication from Edwin Acoba to Norman Uphoff, CIIFAD, March 6, 2002).

BIND Evaluations

BIND has conducted 13 SRI on–farm trials in various farming communities since 1999, both in irrigated lowland and upland areas. As an NGO working at the grassroots to promote sustainable agriculture and food security, the farmers whom we mobilize participate in all stages of program activity. Thus, 26 BIND-assisted farmers have been involved in all aspects of the SRI experimentation—from land preparation and conducting trials to data gathering and data processing. This approach, aside from providing farmers with basic skills in conducting experimentation, aims to broaden farmers' agricultural knowledge of the whole system of food production.

Using randomized design, a method that farmers can easily comprehend and relate with in their farming experiences, BIND has conducted on-farm trials in 8 communities involving three towns and cities in the province of Negros Occidental. Of the 13 SRI on-farm trials, 11 focused on different planting distances that

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ranged from 15x15 to 40x40 cm (see Table 1). Another was a varietal study, and the other was more than a trial, being scaled up on an actual farm, comparing SRI to non-SRI methods, involving 3,044 square meters. For soil fertilization, a gallon of Free-Grow, a seaweed-based organic foliar fertilizer, and two tons of chicken manure were applied, based on soil analysis, to give 60 kg of pure N.

BIND Results

Based on almost three years of on-farm trials with SRI, we can report a maximum yield of 7.5 t/ha and an average of 6.9 t/ha based on trials between November 2000 and March 2001. Further trials from July to November 2001 gave a maximum yield of 7.3 t/ha and an average of 5.4 t/ha. All these trials were planted with M-44, a farmer-bred rice variety (Table 1).

A maximum yield of 7.4 t/ha, with an average of 5.1 t/ha was attained from the comparative study between SRI and non–SRI (Table 2). In the comparative varietal study, both M-44 (VAR 1) and Bordagol-1 (VAR 4) reached a maximum yield of 4.6 t/ha with averages of 4.1 t/ha and 4.5 t/ha, respectively (Table 3).

Reasons Why SRI is Found Interesting

Aside from its yield potentials, SRI works well with organic rice production methods:

1. Using a hand push-weeder for soil oxygenation as well as weed control gives farmers a good alternative to using herbicides.
2. Planting single seedlings in a large square space gives a good response to organic fertilizers, particularly to composted plant biomass and animal manure, in terms of plant growth and yield.
3. SRI requires less water during the season, and fewer seeds for planting, as little as 10%.
4. The wide spacing with SRI is a good way to help manage crop pests. Farmers observed that the conventional spacing in non–SRI fields had rat trails and signs of damaged plants, but they saw none of these in the SRI field. Rats shy away from wide-open spaces.
5. Not only rats were checked, but also brown and green leafhoppers—carriers of the deadly rice tungro virus. Wide spacing in plots allows more sunlight to penetrate even the base of the plant, exposing the hoppers to sunlight, which they detest and avoid.
6. SRI also can promote growing of other food and crops in the paddies, as the use of toxic chemicals—herbicides, pesticides, fungicides and others—is reduced.

Constraints and Learning

Much of the difficulties that most SRI farmer–practitioners have encountered is in transplanting. Planting single seedlings in large square spaces takes about 25 farm laborers to finish one hectare. This has a corresponding labor value of P2,500 ($50) at P100 per person. Possibly this cost will come down with experience, but at present it is an obstacle for starting up SRI.

Another problem can be golden snail infestation and damage, to which young seedlings are vulnerable in a newly transplanted field. This problem is often encountered in not very well leveled paddies where draining of water is difficult. If the paddies are kept dry, this can reduce golden snail infestation.

To reduce seedlings' stress during uprooting from the nursery and their movement to the field, both farmers and BIND research staff have made some modification, like planting the seedlings on lengths of split bamboo instead in a permanent seedbed. This allows farmers to carry the bamboo with the seedlings inside to the field for transplantation.

Prospects

Although SRI has already shown its yield potential, there is definitely ample room for further experimentation to utilize more efficiently the synergy of various factors in the paddies—rice variety, soil fertilization, spacing, altitude, moisture level, etc. Farmers' indigenous knowledge and participation in all levels is critical in realizing this goal.

There is now a planned collaborative effort between BIND and a local government research agency to conduct SRI farm trials in selected towns and municipalities in Negros Occidental. At the national level, a consultation workshop on SRI was planned for April 12, 2002 to involve NGOs and farmer organizations from all over the country. This workshop, among other efforts, should consolidate and share various research findings of SRI practitioners in the country where there is growing interest in these methods.

Table 1. SRI yield comparisons of different spacing trials, 1999–2002, calculated in t/ha

				Yield (in t/ha)											
				Minimum				Maximum				Average			
Dates of Trials	Rice Variety	Area (sq m)	Soil Type	15 cm	25 cm	33 cm	40 cm	15 cm	25 cm	33 cm	40 cm	15 cm	25 cm	33 cm	40 cm
Nov 01– Jul 02	M-44	150	CL[2]	4.6	**4.7**	3.5	2.7	5.0	**5.6**	3.9	3.1	4.7	**5.1**	3.5	2.7
Jul 01–Nov 01	M-44	150	C[2]	4.1	**4.3**	**4.3**	3.0	**7.3**	5.4	4.7	4.0	**5.4**	5.1	4.4	4.0
Jul 01–Nov 01	M-44	80	C[1]	**2.8**	**2.8**	2.5	2.3	5.8	**6.5**	4.5	3.5	3.8	**4.4**	3.4	2.7
Jul 01–Nov 01	M-44	90.25	CL[1]	4.7	4.8	**4.9**	4.7	5.0	5.0	**5.3**	5.1	5.5	4.9	**5.8**	4.5
Jul 01–Nov 01	M-44	150	SCL[2]	2.2	2.5	**2.9**	1.8	4.2	3.4	**5.7**	2.7	2.2	4.9	**5.8**	4.5
Jul 01–Nov 01	M-44	150	SCL[2]	3.2	3.3	**3.7**	3.2	**6.2**	5.0	5.7	5.0	**5.3**	4.1	4.7	4.3
Nov 00–Mar 01	M-44	80	CL[1]	3.1	**4.2**	4.0	4.0	4.2	5.0	**5.2**	5.0	3.6	4.4	**4.6**	4.4
Nov 00–Mar 01	M-44	80	CL[1]	4.0	2.9	**6.0**	2.5	5.5	7.0	**7.5**	5.3	5.0	5.7	**6.9**	4.4
Nov 00–Mar 01	M-44	80	C[1]	2.2	2.0	2.2	**2.3**	2.5	3.3	**4.3**	3.2	2.3	2.8	**3.0**	2.6
Nov 00–Mar 01	M-44	150	SCL[2]	1.4	2.6	**5.1**	3.0	2.7	3.1	**6.1**	4.6	2.2	2.9	**5.6**	3.6

Note: Highest yield in each set is **bold-faced** *for easier comparison.*
Legend: C=clay, CL=clay loam, SCL=sandy clay loam.

Table 2. Comparison of SRI vs. non–SRI Methods in lowlands, calculated in t/ha

				Yield (in t/ha)					
				Minimum		Maximum		Average	
Dates of Trial	Rice Variety	Area (sq. m.)	Soil Type	SRI	Non-SRI	SRI	Non-SRI	SRI	Non-SRI
Jul 01–Nov 01	M-44	3,044	SCL	**3.8**	3.0	**7.4**	5.6	**5.1**	3.1

Legend: SCL = sandy clay loam.

Table 3. Study of SRI Methods with varietal variation in uplands, calculated in t/ha, with spacing 33 x 33 cm

			Yield (in t/ha)											
			Minimum				Maximum				Average			
Dates of Trial	Area (sq m)	Soil Type	Var 1	Var 2	Var 3	Var 4	Var 1	Var 2	Var 3	Var 4	Var 1	Var 2	Var 3	Var 4
Jul 0–Nov 01	90.25	CL	4.3	2.5	2.5	4.3	4.6	3.8	3.3	4.6	4.1	3.4	3.4	4.5

Legend: Variety 1 = M–44, Variety 2 = Bingawan, Variety 3 = 99–C, Variety 4 = Bordagol–1; CL = clay loam.