Farmer-Based Research on the Productivity of the System of Rice Intensification (SRI)

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1.0 Introduction

For almost 30 years, Oxfam Australia (OAus) has been working to alleviate poverty among very poor families in Sri Lanka through participatory community-based development. In 2003, it recognised the System of Rice Intensification (SRI) as an approach to rice cultivation that could increase the household food security, and possibly income, of poor farming families and reduce their dependence on costly farming inputs. OAus teamed up with Mr. H.M. Premaratne, a SRI farmer, to trial and promote SRI techniques in various parts of the country, primarily through OAus' community-based organisation (CBO) partners. OAus' involvement in the initial years was tentative, small-scale and mostly experimental, itself assessing the feasibility and possibilities of SRI techniques for very poor, mostly women, farmers.

The SRI approach is currently being promoted by OAus through partner organisations in Anuradhapura, Kegalle, Polonnaruwa, Hambantota, Matara and Ampara districts. As OAus' confidence in the potential benefits of SRI cultivation grew, the agency gradually increased its commitment and is now preparing to publicise and popularise the approach in a more considered and strategic manner. It hopes that the Agricultural Department will take a greater interest in SRI. Hence, it was decided to undertake a multi-faceted study that could be used to inform strategies and guide the setting of priorities in the future. This report documents the findings of a farmer-based research project aimed at comparing the yield of the SRI approach with conventional production methods used in Sri Lanka and forms part of the larger study.


Demarcation of 1 m^2 quadrant

The Rice Research and Development Institute of Sri Lanka (RRDI) recently carried out comparative trials of SRI and conventional growing methods (Abeysiriwardena et al., 2005) The study was done under controlled conditions on the research station at Batalagoda and found that SRI (at 6.40 tonnes/ha) did not perform any better than conventional transplanting methods (6.55 tonnes/ha) and broadcasting (6.70 tonnes/ha) when yield was measured in terms of land area. The study acknowledged that SRI was far superior to conventional methods in terms of seed multiplication, but added that the labour required in water management and weed control is significantly less with conventional inundated cultivation techniques. The research concluded that SRI could not be recommended for Sri Lanka where the shortage of land and labour are of more concern than supply of seed. This kind of empirically-supported scepticism by government officials and agricultural extension workers has severely retarded the spread and adoption rate of SRI techniques in the country.

While the findings of this RRDI research are not disputed, they do not mirror OAus' experience of actual productivity. Also, a companion report looking at farmer's perceptions of the SRI approach found that labour is not of major concern for farmers practicing paddy cultivation in groups, where exchange labour is readily available (Perera *et al*, 2007). OAus therefore decided to investigate (actual) productivity levels in the field, rather than (potential) productivity levels under on-station conditions. This led to the decision to implement 'farmer-based research' that would place farmers at the centre of the trials and enable OAus to then compare yields that farmers are actually obtaining under normal field conditions.

2.0 Objectives of the study

The main purpose of the study is to inform OAus' efforts in promoting SRI cultivation techniques among very poor farmers by comparing the production levels achieved by SRI and conventional paddy growing methods at the farm level. The findings may also be of use to others interested in the approach.

The specific objectives of the study are:

a. To compare differences in productivity resulting from the use of SRI, broadcasting, and conventional transplanting methods of paddy cultivation.

b. To convince participating farmers and government extension officers of the comparative advantages of the SRI approach and have them 'independently' validate the results of the experiment.

c. To identify issues and factors that need to be further explored in future studies in an ongoing attempt to influence national agricultural policies and local farm practices with respect to SRI cultivation in Sri Lanka.

3.0 Methodology

The principal methodology adopted for this study was that of farmer-based research wherein selected farmers undertook experiments assessing comparative paddy cultivation or 'stand establishment' techniques on their own properties and actively participated in the observation, measurement, recording, and analysis of the results. District government extension officers also observed the trials and participated in regular monitoring visits and measurements of the crops.

3.1 Sampling and field management practices

The locations for the field-based experiments were selected from among those where OAus has been promoting and supporting the use of SRI techniques over the past few years. The four districts chosen -- Kegalle, Anuradhapura, Matara and Ampara -- are in the central, southern and eastern parts of the country and cover both wet and dry agro-climatic zones.Two farmers who were familiar with both SRI and conventional paddy techniques were purposively chosen in each district to enable validation within as well as comparisons between districts. This duplication was also decided upon to safeguard against a lack of results from a district if any one crop was completely lost or any one farmer withdrew from the research. As it turned out, all of the farmers participated enthusiastically throughout the research period, and only one experimental site was partially compromised by an infestation of rats.

The trials were undertaken during the 2006/07 Maha season, from September 2006 to March 2007. In each district, one farmer was asked to use Samba variety seed (BG-358 or, in Anuradhapura, Pokura) and the other Nadu variety (BG- 352), both of which matured after 3.5 months and were familiar and commonly in use in the region. Samba could not be used in Deniyaya, Matara, because of its susceptibility to bird attacks in the area and because the chosen field was flooded at the time of planting, preventing the use of that particular 3.5 month variety. As a result only seven of the planned eight farmer trials were possible.

All participating farmers were assisted to mark out three adjacent trial plots, each of 25 square metres (usually 5m x 5m), to ensure similar geographical and soil characteristics between the plots. The direct broadcasting method was used on one plot, conventional transplanting methods on the second, and SRI techniques on the third. In Ampara where most paddy fields are irrigated, the trial plots were purposely chosen at the tail-end of irrigation schemes to best represent the lands worked by the poorest farmers. This resulted in there being insufficient water available after 14-18 days for conventional transplanting to occur. However, it was still possible to use the SRI methodology as transplanting could occur at 9-10 days after seeding when the moisture content of the soil was still sufficient.

Table 1: Location and number of plots, by cultivation method and seed variety

Climatic Zone	District	DS Division	Seed variety	Number of Plots Selected		
				Direct Broadcasting	Conventional Transplanting	SRI
Wet Zone	Kegalle	Warakapola	Bg358 Samba	1	1	1
			Bg352 Nadu	1	1	1
	Matara	Deniyaya	Bg352 Nadu	1	1	1
Dry Zone	Anuradhapura	Tambuttegama	Pokura Samba	1	1	1
		Galnewa	Bg352 Nadu	1	1	1
	Ampara	Uhana	Bg358 Samba	1	0	1
			Bg352 Nadu	1	0	1
Total Number of Experiments				7	5	7

All participating farmers were instructed and monitored by the OAus Project Officer to pursue good field management practices for each plot, without bias. This involved the management of water as appropriate to each method, and resulted in the application of the following agricultural inputs.

- Broadcasting. On each of the broadcasted plots, 0.5 kg of both urea and top dressing mixture (TDM) and 1.0 kg. of muriate of potash (MOP) were applied. One ounce of weedicide was also applied to all plots, with 2 ounces used for Samba in Anuradhapura and Nadu in Kegalle. Pesticide was only used for Nadu where either one or two ounces were used on all plots.
- Transplanting. The same mixture and application rate of fertiliser was used for the transplanted plots, but no weedicide was applied. One ounce of pesticide was used on the (Nadu) plot in Matara.
- SRI. For the SRI plots, 0.5 kgs of both urea and TDM, but no MOP, were used everywhere (except the Nadu plot in Kegalle where no chemical additives were used at all), together with between 10-16 kg of organic fertiliser. No weedicide or pesticides were used anywhere but 1.5 litres of neem, an organic pesticide, was applied to the Samba plot in Kegalle.

3.2 Data collection

Measurements were made and data collected by the OAus Project Officer (Mr. Premaratne), always in collaboration with the farmer undertaking the trials. Staff of the host community-based organisation and, on many occasions, the Divisional Agricultural Instructors observed the proceedings and participated in collecting and verifying the information. (See Annex A for list of research participants.) Data were collected from each site on the following:

- Number of tillers/m^2 at 30, 45 and 100 days after planting or sowing (DAP).
- Average plant height at 30 DAP and 45 DAP.
- Average length of roots 30 DAP and 45 DAP.
- Average number of panicles/m^2 at 100 DAP.
- Average number of seeds per panicle at 100 DAP.
- Yields from 1 m^2 and from 25m^2.

4.0 Findings and analysis

Data were collected, disaggregated and analysed by district, by stand establishment (cultivation) method, and by seed variety to identify and isolate relevant factors and enable meaningful comparisons to be made. Both the tabulation and graphical presentations of data were used as methods of analysis. The data on productivity, actually measured in kilograms per 25m^2 plot, are extrapolated to kilograms per hectare to enable easy comparison with government figures and the findings from other research.

4.1 Plant height and root length

Plant height and root length are generally considered to be valid indicators of the vitality of a plant, which enables it to better withstand disease and pest attacks. One plant was chosen at random and measured for both height and root length at 30 and 45 days after planting (DAP). From the table below, it can be seen that the Samba variety (BG-358 & Pokura) initially grew at a slower rate than Nadu, but had outgrown its competitor by the mid-way point. At 45 DAP, there is very little difference in plant height between the broadcasted and conventionally-transplanted methods, but the SRI plants were on average between 14.6% and 45.7% taller than the others.

Table 2: Plant height (in cms), by variety and cultivation method

Seed variety	Location	Broadcasting		Conventional transplanting		SRI	
		30 DAP	45 DAP	30 DAP	45 DAP	30 DAP	45 DAP
BG-358 Pokura	Kegalle	30	46	32	46	35	69
	Ampara	44	64	n/a	n/a	41	93
	A'pura	36	49	41	56	42	61
	Average	**36.7**	**53.0**	**36.5**	**51.0**	**39.3**	**74.3**
BG-352	Kegalle	29	71	29	81	37	82
	Ampara	51	69	n/a	n/a	56	76
	Matara	38	50	40	53	63	67
	A'pura	21	51	39	63	42	76
	Average	**34.8**	**60.3**	**36.0**	**65.7**	**49.5**	**75.3**

The difference in root length between the three methods is also quite marked, with the roots of the SRI plants significantly longer than the others at an early stage, i.e., 30 DAP. Even at 45 DAP, the roots of the SRI plants are between 19.5% and 46.2% longer than the others. This greater root length may well provide the young plant with greater access to soil nutrients and greater resilience to low soil moisture resulting from a lack of rain or irrigation water.

Table 3: Root length (in cms) at 30 & 45 DAP, by variety and cultivation method

Seed variety	Location	Broadcasting		Conventional transplanting		SRI	
		30 DAP	45 DAP	30 DAP	45 DAP	30 DAP	45 DAP
BG-358 Pokura	Kegalle	12	18	10	19	16	22
	Ampara	10	14	n/a	n/a	17	20
	A'pura	13	20	15	20	11	28
	Average	**11.7**	**17.3**	**12.5**	**19.5**	**14.7**	**23.3**
BG-352	Kegalle	13	15	11	18	19	24
	Ampara	10.5	11.2	n/a	n/a	13.5	15
	Matara	4.2	9.6	7	10.6	9	15
	A'pura	9	16	11	16	14	22
	Average	**9.2**	**13.0**	**9.7**	**14.9**	**13.9**	**19.0**

4.2 Number of tillers

The number of tillers per unit area is an indication of the plant density. Initially this reflects the density of seeding but finally represents the density of seed-producing plants. From Table 4 below it can be seen that average densities of 380 and 780 tillers / m^2 from transplanting resulted in 307 and 258 tillers / m^2, a reduction of between 20% and 67%. Conventional transplanting produced an increase of between 17% and 460%, while SRI yielded an increase in tiller density of between 750% and 1,000%. While the SRI spacing of seedlings (25/m^2) was consistent, the higher initial tiller density (36/m^2) resulted from single seeds producing two or more tillers prior to transplanting.

Table 4: Number of tillers / m^2 at 0, 30, 45 & 100 DAP, by variety and cultivation method

Seed variety	Location	Broadcasting				Conventional transplanting				SRI			
		0	30	45	100	0	30	45	100	0	30	45	100
Bg 358	Kegalle	160	192	193	193	78	271	256	256	36	189	191	191
	Ampara	620	418	416	354	n/a	n/a	n/a	n/a	25	98	257	220
Pokura	A'pura	360	340	355	373	430	360	382	335	36	228	333	313
	Average	380	317	321	307	254	316	319	296	32	172	260	241
Bg 352	Kegalle	155	275	159	141	61	210	187	146	25	138	275	244
	Ampara	710	691	430	220	n/a	n/a	n/a	n/a	25	229	317	261
	Matara	1573	1035	663	332	67	275	406	342	36	368	444	306
	A'pura	680	535	339	339	68	360	480	406	25	373	406	324
	Average	780	634	398	258	65	282	358	298	28	277	361	284

While plant density is not, in itself, of much interest to the farmer, it does affect the level of sunlight available to the young (growing) plants and the circulation of air at ground level. The perhaps exceptionally high density of seeding in Matara under broadcasting resulted in a survival rate of little more than 20%. The density of tillers over time is shown graphically in Figure 1 below.

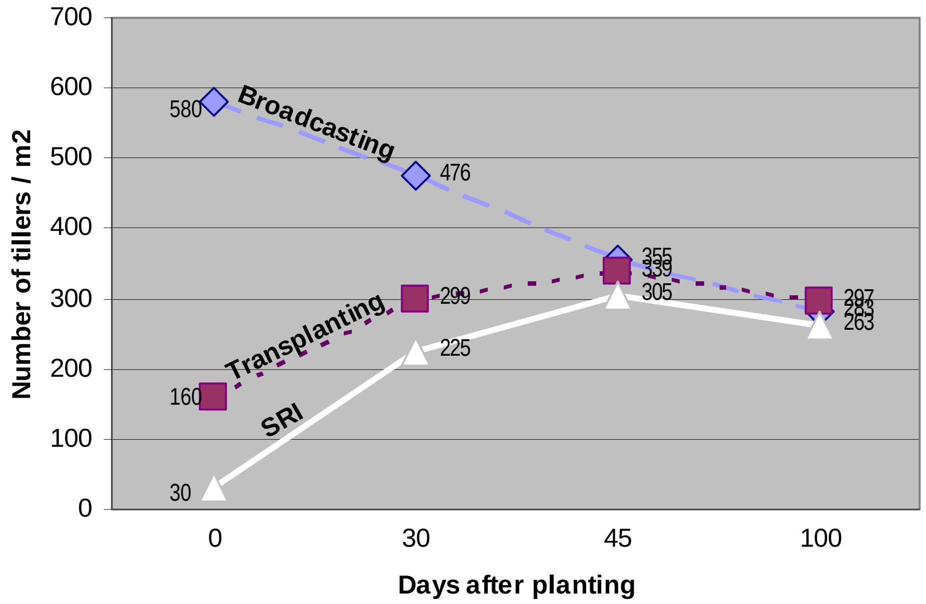

Figure 1: Average density of tillers at 0, 30, 45 and 100 DAP (per m^2)

4.3 Seed production

Figure 2 shows the average number of seeds produced on each panicle. In every case, Nadu produced less seeds than Samba. Broadcasting produced an average of 102-128 seeds per panicle. Conventional transplanting resulted in between 107-175 seeds per panicle, an increase of between 5%-37% on broadcasting. In turn, SRI produced between 185–260 seeds/panicle, an increase of 49%-72% over conventional transplanting. This is a clear indication of the much higher yield of SRI per panicle, and by extension per seed planted.

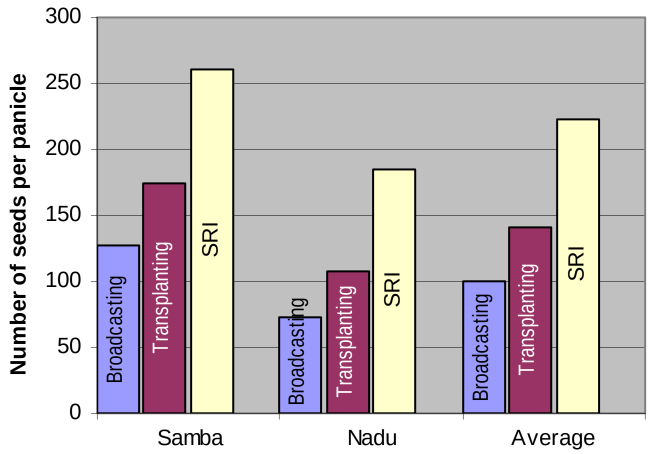

Figure 2: Number of seeds / panicle

Table 5 presents the yield, by weight, as physically measured at the experimental plots using the standard crop-cut survey method.

Table 5: Yield from 1m^2 and 25m^2 trial plots

Seed variety	Location	Broadcasting		Conventional transplanting		SRI	
		Yield (kg/m^2)	Yield (kg/25m^2)	Yield (kg/m^2)	Yield (kg/25m^2)	Yield (kg/m^2)	Yield (kg/25m^2)
Bg 358	Kegalle	0.24	7.16	0.43	9.16	0.55	13.36
	Ampara	0.58	8.00	n/a	n/a	0.75	13.00
Pokura	A'pura	0.78	16.73	0.74	16.81	0.99	19.10
	Average	**0.53**	**10.63**	**0.59**	**12.99**	**0.76**	**15.15**
Bg 352	Kegalle	0.33	7.37	0.23	6.68	0.56	12.13
	Ampara	0.38	8.38	n/a	n/a	0.71	12.71
	Matara	0.04*	1.40*	0.52	11.52	0.58	13.75
	A'pura	0.59	11.74	0.70	13.46	1.11	14.81
	Average	**0.34**	**7.22**	**0.48**	**10.55**	**0.74**	**13.35**

* The very low yield obtained in Matara from broadcasting was the result of rats that decimated the broadcasted plot, but left the neighbouring transplanted and SRI plots largely intact. This could be ascribed to a difference in the health or vitality of the plants, but is more likely to be the result of the very high early density of plants in the broadcasted plot, as seen in Table 4 above, providing the rodents with more cover than in the neighbouring plots.

Table 6 following shows the multiplier effect, i.e., seed output over seed input, for the three approaches. On average, conventional transplanting produced twice that of broadcasting, i.e., 57.1 compared to 25.9, but SRI was almost 18 times better. This resonates with the Rice Research & Development Institute findings (Abeysiriwardena et al., 2005) that conventional transplanting produced twice that of broadcasting, and SRI almost 10 times more. There is no disagreement that SRI produces a much higher yield from a given amount of seed than either of the other two methods.

Table 6: Seed multiplier effect

Seed variety	Broadcasting			Conventional transplanting			SRI		
	Seed (kg/25m²)	Yield (kg/25m²)	Multi-plier	Seed (kg/25m²)	Yield (kg/25m²)	Multi-plier	Seed (kg/25m²)	Yield (kg/25m²)	Multi-plier
Samba	0.344	10.63	30.9	0.206	12.99	63.1	0.031	15.15	488.7
Nadu	0.344	7.22	21.0	0.206	10.55	51.2	0.031	13.35	430.6
Average	**0.344**	**8.93**	**25.9**	**0.206**	**11.77**	**57.1**	**0.031**	**14.25**	**459.7**

4.4 Yield

Extrapolating from the measured yield per 25 m^2, Table 7 below shows that conventional transplanting produced yields per hectare between 15% - 22% higher than with broadcasting. SRI gave 40% more yield than broadcasting, and 10% higher than with conventional methods.

Table 7: Comparison of yields

Seed variety	Location	Broadcasting		Conventional transplanting		SRI	
		Yield (tonnes / ha)	Percentage of base	Yield (tonnes / ha)	Percentage of base	Yield (tonnes / ha)	Percentage of base
BG-358 Pokura	Kegalle	2.86	100%	3.66	127.9%	5.34	186.6%
	Ampara	3.20	100%	n/a	n/a	5.20	162.5%
	A'pura	6.69	100%	6.73	100.5%	7.64	114.2%
	Average	**4.25**	**100%**	**5.19**	**122.2%**	**6.06**	**142.5%**
BG-352	Kegalle	2.95	100%	2.67	90.5%	4.85	164.6%
	Ampara	3.35	100%	n/a	n/a	5.08	151.7%
	Matara	0.56*	n/a	4.61	n/a	5.50	n/a
	A'pura	4.70	100%	5.39	114.7%	5.93	126.2%
	Average	**3.67**	**100%**	**4.22**	**115.0%**	**5.34**	**145.5%**

* The very low yield achieved from the broadcasted plot in Matara was the result of a pest attack. As such it is not representative and was ignored in calculating yield from broadcasting.

Averages of yields from both varieties are presented graphically in the Figure 3, by district and overall.

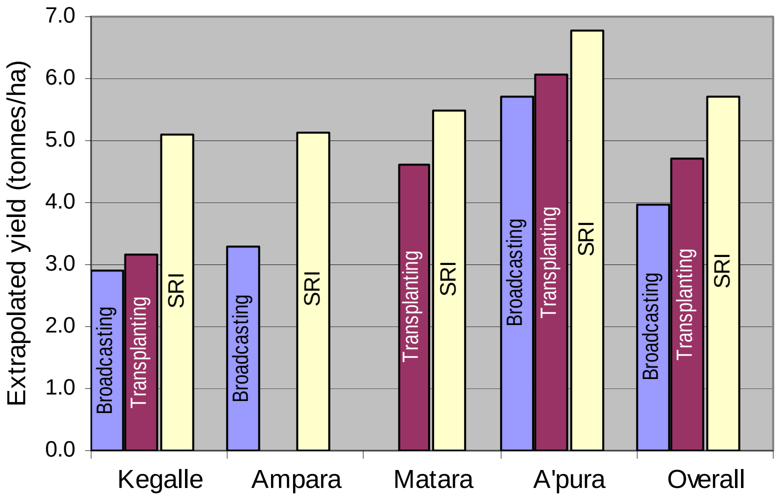

Figure 3: Average yields, by location and method

These apparently very high yields from SRI are still well within those reported by the Rice Research & Development Institute from their 'clinical trials' in Batalagoda where they achieved between 5.30 – 8.20 tonnes/ha, depending on the soil quality. (Table 8 below)

Table 8: Grain yield

Seed variety	Broadcasting		Standard transplanting		SRI	
	tonnes / ha	tonnes / 50kg of seed	tonnes / ha	tonnes / 50kg of seed	tonnes / ha	tonnes / 50kg of seed
BG-300	6.70	3.35	6.55	6.55	6.40	32.00
BG-357 (rich soil)	-	-	8.70	8.70	8.20	41.00
BG- 357 (poor soil)	-	-	6.00	6.00	5.30	26.50

Source: Abeysiriwardena et al., 2005

The Ministry of Agriculture figures for the 2006/07 Maha season give an average yield per acre across districts of 85 bushels in Kegalle, 120 bushels in Ampara, 60-70 bushels in Matara, and 98 bushels in Anuradhapura district. This equates to 4.36 tonnes/ha, 6.15 tonnes/ha, 3.08–3.59 tonnes/ha, and 5.03 tonnes/ha, respectively. From the table above, it can been seen that the broadcasting trial plots produced below-average yield in all districts, other than the Pokura variety in Anuradhapura, whereas conventional transplanting yielded better than average in both Matara and Anuradhapura, but less in Kegalle and Ampara

SRI is showing yields well in excess of the average in all districts other than Ampara, where the very high district average reflects the fact that most of the paddy fields in Ampara are irrigated. The trial plots we evaluated were located at the tail-end of an irrigation scheme (consistent with land usually held by very poor farmers) and may have suffered a lack of water at critical times.

Harvesting of research plots at Deniyaya

Separation of seeds

5.0 Conclusions and recommendations

Productivity trials were conducted in the four districts of Kegalle, Matara, Anuradhapura and Ampara, the first two being located in wet agro-climatic zones and the second two in dry zones. Two farmers were selected in each district to undertake comparative trials with broadcasting, conventional transplanting and SRI cultivation methods of stand establishment using either Samba (BG-58 or Pokura) or Nadu (BG-352) varieties of seed paddy. Due to climatic factors, Samba was not evaluated in Matara district, and transplanting was not used in Ampara.

Oxfam Australia (OAus) decided to use 'farmer-based research' methodology, with field-based trials carried out under normal conditions to ascertain how the three cultivation methods perform in the field. Most existing research into SRI and other paddy cultivation techniques has been based on controlled on-station trials that are useful in comparing potential but not necessarily actual performance. As the three cultivation methods were used on the same field, mostly in adjoining plots, differences in soil, climatic, geographic, social conditions and attacks from pests and disease are minimised. However, comparisons between sites are less reliable.

Nevertheless, findings from the research are unambiguous, and in line with OAus' own experience over the past four years. As would be expected and accepted by everyone, conventional transplanting performed better than direct broadcasting on every count, including plant height, root depth, final tiller density, and yield, with Samba by and large performing slightly better than the Nadu variety. However, the SRI methodology produced results that were significantly better than both broadcasting and conventional transplanting at all locations.

The SRI plants at 45 DAP (days after planting) were between 10%-45% taller than the broadcasted ones and up to 50% taller than the transplanted plants. Similarly the root length of SRI plants at the same stage was between 22%-60% deeper than broadcasted plants and 16%-40% deeper than with transplanting. These can be taken as measures of the plant's health or vitality, and therefore its ability to withstand pests and diseases. Multiplication of seed, a widely accepted strength of the SRI method, showed SRI producing between 8 and 20 times more seed (per seed) than either of the other two methods.

However, the area of disagreement comes in the yield obtained from the various methods. This experiment did not try to establish the maximum or potential yields of any method but simply examined the relative performances of the different methods under same conditions. Again the results are very convincing. SRI performed significantly better than both the other methods at all sites and with both varieties. Average yields from the SRI method were between 14-86 percent higher than from either of the other two methods at every site. However, these results are based on trials conducted during only one growing season (Maha) and may not represent those arising from trials during a Yala season.

Recommendation 1: That OAus undertake similar trials during the 2008 Yala and 2008/09 Maha seasons so that some assessment can be made of any seasonal differences.

Recommendation 2: That OAus share these findings with CBO partners and communities, other NGOs engaged in agricultural rehabilitation and enhancement activities, and the relevant government authorities, particularly at the local level.

The fact that these trials were undertaken in only four districts, using only two varieties of seed, raises questions about the extent to which the findings can be generalised for the whole country. Further trials, conducted under the supervision of respected agriculturalists, are needed across a wider range of geographic and climatic areas before definitive conclusions can be drawn. This will inevitably require the active participation of the government's agricultural officials and extension officers at both the national and district levels.

Recommendation 3: That OAus invite and actively encourage the Ministry of Agriculture, through its research unit and extension officers, to undertake similar farmer-based trials in larger number and variety of locations with a view to eventually generalising results to the whole country.

The current trials were undertaken on adjacent plots, each of 25 m^2. While this plot size is considered adequate to produce valid results, the field management of such small plots is somewhat contrived. In reality, farmers tend to allocate whole fields, if not their entire paddy lands, to one method. Scaling-up is necessary to provide a comparison with government statistics and research findings that mostly use one hectare as the base area. As seen from Table 5, significant differences can occur between the yields obtained in one square metre and those obtained from 25 m^2. For example, broadcasting yielded 0.58 kg from the 1 m^2 plot in Ampara, or 14.5 kg/25 m^2, but only 8.00 kg from the 25 m^2 plot. This is attributable to variations across the plot. Extrapolating from 25 m^2 to one hectare risks the same degree of error.

Recommendation 4: That OAus instigate whole-field trials of the three different methods to reduce the possibility of scaling-up error. This will require the careful selection of neighbouring farmers who are considered equally competent in their methods of cultivation and whose lands are considered to be equally fertile.

No attempt was made during this trial to assess the cost-effectiveness of SRI crop establishment methodology, taking account of the additional labour that is required by this approach. A study into the marketing potential of SRI (Ahamed *et al*, 2007) found a willingness among customers to pay at least 10% more for SRI and a possibility to raise farm-gate prices by between 10% and 25%. The study did not ascertain whether this adequately compensated the farmer for the additional time in pursuing SRI methods, but this is not a simple time vs. income equation. The costs associated with the additional labour are mostly “opportunity costs” and may not be relevant in areas or for farmers where alternative income-generating opportunities do not exist.

Recommendation 5: That OAus use future farmer-based trials to also measure the actual labour required by the different crop establishment methods and then to assess a realistic opportunity cost of this.

6.0 References

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Annex A

List of research participants

Research supervisor	H.M. Premaratne	Oxfam Australia
Kegalle		
Farmer (1)	Mr. D.N.A.D.A. Silva	Ethnawala
Farmer (2)	Mr. M.A. Amartunga	Kukulpone
Agriculture Instructor	Mr. Dammala	Dept. of Agriculture
AP&R Assistant	Mr. Thaaheer	Dept. of Agrarian Services
AP&R Assistant	Ms. N.G. Jeevanthi	Dept. of Agrarian Services
Community-based organisation	Development Communication Foundation (DCF)	
Ampara		
Farmer (1)	Mr. Premarathna	Gonagala
Farmer (2)	Ms. Chandra Maliyadda	Gonagala
Agriculture Instructor	Mr. Thusara	Dept. of Agriculture
Community-based organisation	Foundation for Rural Empowerment in Digamadulla (FRED)	
Matara		
Farmer (1)	Mr. P.G. Siripala	Pallegama
Agriculture Instructor	Mr. Dissanayake	Dept. of Agriculture
Community Member	Mr. P.W. Jayawardhana	Dept. of Agrarian Services
Community-based organisation	Rural United Foundation, Deniyaya (RUFD)	
Anuradhapura		
Farmer (1)	Mr. S.M. Gunasekara	Kuratiyawa
Farmer (2)	Ms. D.A.K. Shanthi	Mudungoda
Agriculture Instructor	Mr. Wejeratna	Mahaweli Authority
AP&R Assistant	Mr. Dissanayake	Dept. of Agrarian Services
Farmer Leader	Mr. Piyasena	Farmer's Association
Community-based organisation	Rajarata Gami Shakthi Nirmana Kawaya (RGNK)	