

Rice production in the Family Food Production project

Introduction

The rice planted in July in the Kampong Chhnang Province of Cambodia has been harvested. Many of the farmers in the province agreed last summer to try the new SRI (System of Rice Intensification) method in some of their rice fields. This is the method taught by CEDAC (Center for Study and Development in Agriculture).

Earlier experience with the method indicated that the SRI method would be a significant improvement over the traditional rice planting method. This technique is an important part of the Family Food Production project, which formally began in October 2006. Some of the farmers got a head start on the project by planting some crops in July. This year's yields support the decision to use the SRI method. This report is intended to show that the SRI method is successful.

The SRI method

Cambodians have been raising rice for centuries. During that time they have developed well established methods of raising this very important food commodity. A mistake or unsuccessful experiment could mean starvation, so it was with some reluctance that some of the farmers agreed to follow the advice of CEDAC and try SRI. Figure 1 shows Hang Hein with his wife and child. She was skeptical. He was confident and planted his entire farm by the SRI method. As we see below, he had the largest SRI plot of any of the participating farmers. He also obtained the largest yield increase of any of the farmers that had records from the previous year.

Table 1 lists some of the features of the method and compares it to the traditional method of planting rice. We see from this table that there are many differences between the SRI and traditional methods. Most of these differences make it easier for the farmer if he uses the SRI method. The farmer uses much less seed, less water, less labor, no commercial fertilizer and no insecticide. Figure 2 shows an important feature of SRI. Only one or two seedlings are planted



Figure 1: Hang Hein with his wife and child.



Figure 2. Yi Kim Than, CEDAC, showing how much is transplanted in the SRI method.

Table 1
Comparison of SRI with Traditional Rice Planting

Activity	Traditional Method	SRI Method
Plant and germinate	Plant densely in seed bed	Plant sparsely (5-10% of TM)
Water in seed bed	Continuously flooded	Minimal water-just keep moist
Time to transplant	One month or more after planting	Less than 15 days after planting
Cut tops off seedlings	Yes	No
Care in extracting seedling for planting	Shake dirt of roots—much root damage results	Carefully remove seedling—avoid root damage
Depth of water at transplant	~10 cm	1-2 cm
How many seedlings?	~20 weak and strong plants	1 or 2 only vigorous seedlings
Planting depth	~10 cm	place lightly on surface
Arrangement of plants	Random, close together	Straight rows about 20 cm separation
Weeding	Late, infrequent and irregular	Early and often to improve soil aeration
Fertilization	Farmyard manure and commercial fertilizer	Liquid or solid compost
Insecticide	Yes	No

As we see in the table, much less labor is required to transplant the rice. The next two photos show the difference. The three sons of Hang Hein, standing in their father's SRI field (Figure 3), transplanted the entire rice field in a single day. The many workers in Figure 4 are working all day using the traditional method.



Figure 3. Hang Hein's three sons.



Figure 4. Transplanting traditional a plot.

Within a few weeks of transplanting the differences are apparent. The SRI rice does much better. Figures 5 and 6 show the difference.



Figure 5. SRI rice.



Figure 6 Traditional rice.

As the fields mature the SRI rice continues to do better than the traditional. We see the excellent SRI field of Suon Sen in October (Figure 7). The harvest was excellent as we see the home of Hang Hein after the harvest and after selling much of the rice. (Figure 8) There is still hardly room for his wife to stand by the bed.



Figure 7. Suon Sen in his SRI field at Vat.



Figure 8. Hang Hein's wife in there home full of rice.

Results of the Harvest

We now have the information about the harvest of this year's rice crop. The yield is from 39 villages in the districts of Kampong Tralach and Samaki Meanchey. Some villages had no SRI rice results and some of the farmers did not supply yield data. Table 2 is all of the information for SRI rice yields. The table lists the farmers name, sex, village, commune and district. The numbers are the SRI plot size in hectares, the yield in kilograms, and the yield per hectare. The average yield was 4019 kg/hectare. When the Family Food Production started CEDAC did a baseline survey and found the that average rice yield last year was 1060 kg/ha. This year's yield per hectare was almost four times that of last year. We see from Table 2 that **ALL** of the SRI farmers exceeded the average yield from last year. The lowest SRI yield per hectare was 2000 kg/ha (#42, Table 2). But we are sure that even poor Tich Sen will be happy with his rice crop.

Figure 9 shows Sok Sarom (#7, Table 2) standing in that plot at Ouk Nhapang shortly after it was transplanted. He told us in September that he was cautious and only used the SRI method in one small plot. His SRI rice yield was 5000 kg/ha, so next year will be different.



Figure 9. Sok Sarom in his SRI plot shortly after transplanting.

The key farmers told CEDAC representatives that based on the good results of experiment on SRI techniques, the number of farmers applying SRI will be increased in the next season.

Table 2
SRI data of ILFARM-KTL&SMC 2006-2007

Kampong Trolach District							
No	Name of farmer	Sex	Village	Commune	Size (ha)	Yield (kg)	Yield (kg/ha)
1	Yem Sokha	M	Chambok	Long Vaek	0.19	1045	5500
2	Rit Chhuon	M	Chambok	Long Vaek	0.01	50	5000
3	Suon Sen	M	Vat	Long Vaek	0.026	139	5346
4	Nuon Pisey	F	Vat	Long Vaek	0.04	200	5000
5	Long Phally	M	Ouk Nhapang	Long Vaek	0.11	550	5000
6	Hang Hein	M	Ouk Nhapang	Long Vaek	0.9	4500	5000
7	Sok Sarom	M	Ouk Nhapang	Long Vaek	0.01	50	5000
8	Sok Chea	M	Ouk Nhapang	Long Vaek	0.03	130	4333
9	Pich Sen	M	Ouk Nhapang	Long Vaek	0.003	10	3333
10	Chab Chhorn	M	Ouk Nhapang	Long Vaek	0.25	875	3500
11	Nuon Nam	M	Tropaing Samroung	Long Vaek	0.02	100	5000
12	Pich Soeun	M	Tropaing Samroung	Long Vaek	0.02	75	3750
13	Pann Huon	M	Tropaing Samroung	Long Vaek	0.06	186	3100
14	Hang Chenda	F	Snang Mom	Thmar Edth	0.0028	27	9643
15	Ros Sokha	M	Snang Mom	Thmar Edth	0.05	180	3600
16	Muon Sok Na	F	Snang Mom	Thmar Edth	0.0036	10	2778
17	Tes Sopheap	M	Snang Mom	Thmar Edth	0.05	312	6240
18	Kong Lim	M	Snang Mom	Thmar Edth	0.02	80	4000
19	Peov Hay	F	Dem Popel	Thmar Edth	0.07	495	7071
20	Long Chea	M	Dem Popel	Thmar Edth	0.1	360	3600
21	Saom Sam At	M	Dem Popel	Thmar Edth	0.04	240	6000
22	Soeung Savy	F	Dem Popel	Thmar Edth	0.012	39	3250
23	Kong Sokhom	F	Dem Popel	Thmar Edth	0.012	60	5000
24	Sor An	M	Dem Popel	Thmar Edth	0.03	144	4800
25	Nal Tong	F	Dem Popel	Thmar Edth	0.035	144	4114
26	Nut Saret	M	Thmar Edth	Thmar Edth	0.04	312	7800
27	Chea Choeun	M	Thmar Edth	Thmar Edth	0.0264	160	6061
28	Kim Ren	F	Thmar Edth	Thmar Edth	0.01	45	4500
29	Yab Saret	F	Thmar Edth	Thmar Edth	0.8736	2140	2450
30	Phork Hak	M	Thmar Edth	Thmar Edth	0.04	280	7000
31	Pal Thoeun	M	Thmar Edth	Thmar Edth	0.03	205	6833
32	Kim Vanna	F	Thmar Edth	Thmar Edth	0.03	185	6167
33	Tom Sophal	M	Kor	Thmar Edth	0.028	91	3250
34	Saing Yoeun	F	Kor	Thmar Edth	0.0054	13	2407
35	Em Samet	M	Kor	Thmar Edth	0.018	40	2222

36	Chhem But	M	Kor	Thmar Edth	0.0045	20	4333
37	Khuon Sok	F	Kor	Thmar Edth	0.02	90	4500
38	Prak Rorn	M	Tropaing Kdar	Thmar Edth	0.04	110	2750
39	Uch Sambit	M	Tropaing Kdar	Thmar Edth	0.01	60	6000
40	Krouch Chhim	M	Tropaing Kdar	Thmar Edth	0.01	39	3900
41	Mann Sann	M	Andoung Tromoung	Chhouk Sar	0.01	50	5000
42	Tich Sen	M	Andoung Tromoung	Chhouk Sar	0.05	100	2000
43	Sos Ly	M	Andoung Tromoung	Chhouk Sar	0.06	208	3467
44	Mat Ouman	M	Chhouk Kra Nhas	Chhouk Sar	0.02	60	3000
45	El Sen	M	Chhouk Kra Nhas	Chhouk Sar	0.01	35	3500
46	Sin Yisa	M	Chhouk Kra Nhas	Chhouk Sar	0.01	30	3000
47	Chu Min	M	Chhouk Kra Nhas	Chhouk Sar	0.02	70	3500
48	Lek Koub	M	Chhouk Kra Nhas	Chhouk Sar	0.01	25	2500
49	Tin Pas	F	Tuol	Chhouk Sar	0.04	120	3000
50	Nes Sen	M	Tuol	Chhouk Sar	0.02	58	2900
51	Sann You	M	Tropaing Chrov	Chhouk Sar	0.02	75	3750
52	Ly Taim	M	Tropaing Chrov	Chhouk Sar	0.01	60	6000
53	Ngau Thea	M	Stoeung	Peany	0.03	128	4267
54	Tit Sean	M	Stoeung	Peany	0.01	48	4800
55	Yin Phat	F	Stoeung	Peany	0.03	68	2267
56	Yi Taim	M	Peany	Peany	0.02	78	3900
57	Chuch Phoy	M	Peany	Peany	0.1	358	3580
58	Yi Sarim	M	Peany	Peany	0.004	15	3750
			Samaki Meanchey District				
59	Hao Savuth	M	Spean Dek	Thlork Vien	0.04	240	6000
60	Tub Thet	F	Spean Dek	Thlork Vien	0.018	96	5333
61	Keo Sophea	M	Spean Dek	Thlork Vien	0.01	60	6000
62	Yem Saroeun	F	Spean Dek	Thlork Vien	0.0032	19	5938
63	Nhem Nhin	M	Chhouk	Thlork Vien	0.03	78	2600
64	Chaim Horn	M	Chhouk	Thlork Vien	0.02	58	2900
65	Rit Sok	F	Chhouk	Thlork Vien	0.015	48	3200
66	Mok Neang	M	Chhouk	Thlork Vien	0.01	39	3900
67	Em Savuth	F	Chhouk	Thlork Vien	0.02	75	3750
68	Em Savath	F	Chhouk	Thlork Vien	0.017	48	2824
69	Chum Pha	F	Chhouk	Thlork Vien	0.005	26	5200

70	Rit Sao	F	Chhouk	Thlork Vien	0.02	78	3900
71	Lim Ra	M	Taing Tbeng	Thlork Vien	0.0105	30	2857
72	Kim Von	M	Sre Krao	Thlork Vien	0.015	90	6000
73	Yin Dak	M	Sre Krao	Thlork Vien	0.0625	375	6000
74	So Nam	F	Sre Krao	Thlork Vien	0.007	30	4286
75	Ou Vy	M	Sre Krao	Thlork Vien	0.0169	101	5976
76	Yin Phat	M	Sre Krao	Thlork Vien	0.0225	135	6000
77	Nou Born	M	Sre Krao	Thlork Vien	0.0166	101	6084
78	Ouk Noeun	M	Sre Krao	Thlork Vien	0.0169	101	5976
79	Yang Sam Phors	F	Sre Krao	Thlork Vien	0.004	24	6000
80	Vong Vanna	F	Sre Krao	Thlork Vien	0.0324	194	6000
81	Chhun Nang	M	Thlork Vien	Thlork Vien	0.05	275	5500
82	Kim Kean	M	Thlork Vien	Thlork Vien	0.035	150	4286
83	Cheam Oun	F	Thlork Vien	Thlork Vien	0.002	20	10000
84	Heang	M	Thlork Vien	Thlork Vien	0.01	58	5800
85	Hem Sarun	F	Torb Bos	Thlork Vien	0.008	32	4000
86	Meas Dany	F	Torb Bos	Thlork Vien	0.004	10	2500
87	Ses Sem	M	Torb Bos	Thlork Vien	0.01	50	5000
88	Mao Phat	M	Torb Bos	Thlork Vien	0.01	60	6000
89	Ouk Laim	F	Torb Bos	Thlork Vien	0.008	40	5000
90	Mok Nim	M	Braklot	Thlork Vien	0.045	180	4000
91	Sum Horn	M	Braklot	Thlork Vien	0.02	65	3250
92	Kheav Khen	M	Braklot	Thlork Vien	0.0068	40	5882
93	Sem Phal	F	Braklot	Thlork Vien	0.03021	100	3310
94	Ouch Chem	M	Doun Keo	Sethey	0.02	57	2355
95	Mok Saron	M	Doun Keo	Sethey	0.03	69	2379
96	Press Sout	M	Kraing Siem	Sethey	0.06	416	6933
97	Orb Kem	M	Boeung Leach	Sethey	0.01	30	3000
98	Leng Nay	F	Pea reach	Sethey	0.01	29	2900
99	Chek Sim	F	Ang Krang	Sethey	0.06	200	3333
100	Tem Yim	F	Ang Krang	Sethey	0.05	200	4000
101	Yuos Yan	F	Ang Krang	Sethey	0.05	182	3640
102	Nob Kem	F	Ang Krang	Sethey	0.03	130	4333
103	Sok Soeun	F	Ang Krang	Sethey	0.02	104	5200
104	Ouk Sim	M	Ang Krang	Sethey	0.01	52	5200
105	Aok Kem	F	Thlok Resai	Sethey	0.03	100	4000
106	Loung Thach	F	Thlok Resai	Sethey	0.01	40	4000
107	Oum Rom	F	Thlok Resai	Sethey	0.02	100	5000
108	Em Ul	F	Thlok Resai	Sethey	0.03	150	5000
109	Chan Ry	F	Thlok Resai	Sethey	0.01	30	3000
110	Va Tha	F	Thlok Resai	Sethey	0.01	30	3000
111	Nut Thy	M	Thlok Resai	Sethey	0.02	150	7500
112	Chhay Chrem	F	Thlok Resai	Sethey	0.05	300	6000

113	Nget Voeun	M	Thmar Sar	Khnar Chhmar	0.01	30	3000
114	Nget Phun	M	Thmar Sar	Khnar Chhmar	0.01	35	3500
115	Chhuon Phorn	M	Thmar Sar	Khnar Chhmar	0.01	30	3000
116	Tuy Nen	F	Thmar Sar	Khnar Chhmar	0.01	45	4500
117	Huy Hom	M	Khnar Kandal	Khnar Chhmar	0.08	180	2250
118	Meas Yim	F	Chrey Kaong Ket	Khnar Chhmar	0.01	48	4800
119	Chea Chim	M	Chrey Kaong Ket	Khnar Chhmar	0.01	35	3500
120	Khem Makara	M	Chrey Kaong Lech	Khnar Chhmar	0.06	180	3000
121	Soeung Sit	M	Chrey Kaong Lech	Khnar Chhmar	0.05	125	2500
122	Un Thy	M	Chrey Kaong Lech	Khnar Chhmar	0.03	90	3000
123	Norn Chanthy	M	Chrey Kaong Lech	Khnar Chhmar	0.015	45	3000
124	Pha Hom	F	Chrey Kaong Lech	Khnar Chhmar	0.01	25	2500
125	Phae Lay	M	Chrey Kaong Lech	Khnar Chhmar	0.06	140	2333
126	Sao Van	M	Trodok Pong	Khnar Chhmar	0.01	38	3800
127	So Sam Oeun	M	Tropaing Sra Ngae	Khnar Chhmar	0.02	45	2250
128	Sin Sophal	M	Tropaing Sra Ngae	Khnar Chhmar	0.01	28	2800
129	Nuon Sopheap	M	Tropaing Sra Ngae	Khnar Chhmar	0.05	125	2500
130	Lem Kun	F	Vat	Khnar Chhmar	0.045	150	3333
131	Khork Lai	F	Vat	Khnar Chhmar	0.02	60	3000
132	Yang Yav	F	Vat	Khnar Chhmar	0.025	75	3000
133	Keo Sitha	M	Vat	Khnar Chhmar	0.015	38	2533
134	Tat See Chann	F	Thnal	Kraing Lvea	0.07	450	6429
135	Choy Mony	F	Thnal	Kraing Lvea	0.05	200	4000
136	Kong Hae	F	Thnal	Kraing Lvea	0.015	50	3333
137	Kong Saroun	F	Chum Teav Chraeng	Kraing Lvea	0.1	250	2500
138	Chheab Kamsot	F	Chum Teav Chraeng	Kraing Lvea	0.015	68	4533

139	Saom Kruon	F	Chum Teav Chraeng	Kraing Lvea	0.015	58	3867
140	Soum Sarim	F	Chres	Kraing Lvea	0.002	8	4000
141	Kheav Khoy	M	Chres	Kraing Lvea	0.5	1800	3600
142	Khun Yong	M	Chres	Kraing Lvea	0.02	50	2500
143	Hoa Nun	M	Khnar Tey Mork	Kraing Lvea	0.03	68	2267
144	Em Thol	F	Khnar Tey Mork	Kraing Lvea	0.05	120	2400
145	Heang Cham roen	F	Khnar Tey Mork	Kraing Lvea	0.003	12	4000
146	Ven Vuthy	M	Khnar Tey Mork	Kraing Lvea	0.002	12	6000
Total			39	8	6.37	25585	4019

A few of the farmers, had records of the rice yield from last year. In Table 3 we can see the improvement for a few of the individual farmers with the SRI method. With this information we see that the average SRI yield was 288% of last years. This is a little lower than the 379% improvement using the baseline survey. Some of the individual improvements were well in excess of that average. Hang Hein (No. 12 and Figures 1, 3, and 8) had the best improvement with more than a 4-fold increase.

Table 3
S.R.I Experiment Results from Some Individual Farmers
Harvested on Dec and Jan 2006-07

No	Farmer	Village	Farm /Ha	Previous crop/ Kg	SRI crop/Kg	SRI Increase
1	Peov Hay	Dem Popel	0.07	234	494	211%
2	Tat See Chann	Thnal	0.07	280	450	161%
3	Kong Saroun	Kraing Lvea	0.10	80	250	313%
4	Ouch Chem	Donn Keo	0.02	42	57	136%
5	Mok Saron	Donn Keo	0.03	40	69	173%
6	Press Saut	Kraingsiam	0.06	295	416	141%
7	Orb Kim	Boeunglearch	0.01	15	30	200%
8	Leng Nay	Peareah	0.01	13	29	223%
9	Mann Sann	Ondoung tromoung	0.01	19	50	263%
10	Mann Sei	Ondoung tromoung	0.06	161	208	129%
11	Mat Omann	Chhoukranhas	0.02	30	60	200%
12	Hang Hein	Chhoukranhas	0.09	1080	4500	417%
13	Soum Sarim	Kraing Lvea	0.01	10	16	160%
		Totals	0.56	2299	6629	288%

Conclusion

The first year's rice harvest shows that LDSC made an excellent choice in selecting the SRI rice planting method taught by CEDAC to be a major part of this initial Family Food Production project. The farmers are very happy with the new method and will expand their use of it next year.

Elder John Lyman
Sister Jean Lyman
Som Rasmei
Latter Day Saint Charities
Cambodia Phnom Penh Mission

Yi Kim Than
Lang Chanthea
CEDAC