



The System of Rice Intensification (SRI): Assessment on SRI Farmers' Contribution to the Rice Markets

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Abstract One of the main reasons of food shortage in some areas of Cambodia is low productivity. Conventional farming practice is believed to cause the low yield. The System of Rice Intensification (SRI) proved to increase the yield has been introduced and practiced in Cambodia. Therefore, it is very interesting to research whether SRI farmers are able to share their contributions to the market since SRI can provide higher yields. This study aims to assess whether SRI farmers can contribute their products to the markets that are still immature and inaccessible. A households survey and field observations were conducted in three rain-fed villages in the southern part of Cambodia: two in Kampot Province and one in Kampon Speu Province. Findings revealed that besides the sufficiency of self-consumption, most of selected farmers are able to sell products to the markets and based on the expenditure on agricultural input and income analyses, farmer could earn profits although labor is the highest cost. It was also found that prices set by middlemen in the village are slightly cheaper than the one set on the market. However, farmers agree to sell to middle men because they would spend more on transportation and labor fee if they wanted to sell directly to the market. Importantly, collective sale in a large amount helps farmers to get higher prices compared to an individual sale. Results also indicate that practicing SRI positively increases the household's production and leads to the increase of village production, possibly also to national level production, therefore, the surplus can be contributed to the rice markets.

Keywords system of rice intensification (SRI), conventional practice, rice market, collective sale, farmers' contribution

INTRODUCTION

Cambodia is known as an agrarian country, which heavily depends on its agricultural sector as the core of economic growth. According to records, since 1995 Cambodia produced a rice surplus (Hang Chuon and Suzuki, 2005) and has been able to export paddy to other countries such as Thailand, and Vietnam. However, most of the exporting activities are conducted in informal ways. The middle men or brokers determine the price and demand for products since farmers do not have adequate access to market information (CDRI, 2014). Although Cambodia could produce a rice surplus, it did not refer that all rice producing farmers could make themselves at subsistence level. Farmers are still facing shortage of food resulting from low production. IFAD in Cambodia (n.d.) said that 1.6 million rural households face seasonal food shortages every year and conventional farming practice causes low yields. In 2009 about 110,530 Cambodian farmers with area of 59,785 ha were practicing a new method that can improve their rice yields (Chhay, 2010). This renewed system is called the System of Rice Intensification (SRI). This technique can increase yields up to 15 to 20 t/ha when farmers can apply the methods well and improve the soil (Uphoff, 2004).

OBJECTIVE

It is very interesting to know whether SRI farmers are able to share their contribution to the rice markets since SRI can increase the yields. Therefore, this study aims to assess whether SRI farmers can contribute their products to the markets that are still immature and inaccessible.

METHODOLOGY

The fieldwork was conducted during February and March, 2014 in Kampot and Kampong Speu provinces of Cambodia. Farmers including SRI and Non-SRI Farmers were selected from each village (A1-A3, B1-B3, and C1-C3) for the household interviews. Farmers were selected randomly among other farmers assigned by village chiefs upon the requests of the author.

Field observation and document review: Village resources, farming land and the status of agricultural practices in the village can be noticed in order to create real images for the research. Journals and reports on SRI practices and promotion were also reviewed in order to understand the current SRI practices in Cambodia.

Data analysis: It was done by using both qualitative and quantitative approaches. Data are condensed and critically discussed in order to respond to the above-mentioned objective.

RESULTS AND DISCUSSION

Village Based Information

In village A (Trapaing Russey), six farmers of total household farmers are practicing SRI; while in village B (Khnheay Khang Lech) there are 86 out of 198 and 42 out of 84 households in village C (Mohaleap). Data on land use is not available in village B, even the village chief has still availed any confirmation from the upper level. About 50% and 94% of total area in village A and C, respectively, are used for agricultural activities. Selected farmers got the SRI trainings from same local NGO. Farmers in Village A and B started to practice SRI in 2004 or 2005; while farmers in Village C in 2006.

Table 1 Village based information for 2013

Description	Village A	Village B	Village C
No. of Total Household	181	200	86
No. of Farmer Household	181	198	84
No. of SRI Household	6	86	42
Area (ha)	216.9	-	193.8
Agricultural Area (ha)	132.9	-	145
Available Jobs	Farmers, businessmen, factory and construction workers, NGO staff, etc.	Farmers, businessmen, factory and construction workers, NGO staff, etc.	Workers, farmers, tailors, handmade craft makers, etc.

Based on the field observation, there is a disparity between villages A and B and village C in terms of the location of residential houses. In villages A and B, houses are scattered far from one to another. There is a long distance between one house and another due to innumerable paddy fields in between. Farmers have their own personal small ponds. In village C, also a rain-fed area, residential houses are gathered in one place. Paddy fields are outside the residential areas. With few ponds in the village, rainfall is stored at the reservoir.

Information on Selected Farmers

Majority of selected farmers have more than one farming plots. Therefore, some farmers can grow rice twice per year. It is impossible for a farmer possessing one plot to grow rice twice on the same

plot since water is available only in the rainy season. Normally, the main source of water is rainfall. The average plot size is about one hectare, which included both conventional and SRI practices. The production difference between SRI and conventional practices are shown in Table 2. Majority of SRI farmers are able to increase their yields after practicing SRI although some still get the same amount. It is believed that poor water management might be one of main constraints causing SRI yield having no significant different from the conventional yield. Proper water management is difficult to be conducted in these rain-fed areas where rainfall is unstable and there is no irrigation system. Still, at least SRI can help farmers increase their yields with their own adaptive conditions.

Table 2 Information on selected farmers

Farmer	Area (ha)	Varieties	Practice	Conv. Production (t)	2013 SRI Production (t)	Increased Production by plot in %
A1	(a) 0.70	LRV (Korchor Chab)	Conv.	2.50	-	-
A2	(b) 0.15	LRV (Car51)	SRI	0.32	0.32	0%
	(c) 0.10	LRV (Korhorm)		0.30	0.30	0%
A3	(d) 0.60	LRV (Korchor Chab)	SRI	1.00	1.30	+30%
	(e) 0.48	LRV (Korhorm)		0.60	0.80	+33%
B1	(f) 1.00	LRV (Korhorm)	Conv.	1.30	-	0%
	(g) 1.00	ERV (Jasmine)	SRI	1.00	2.00	+100%
B2	(h) 1.00	ERV (Jasmine)	SRI	0.80	1.00	+25%
	(i) 2.00	LRV (Korhorm)		2.00	2.00	-
B3	(j) 0.06	LRV (Korchor Chab)	SRI	0.10	0.20	+100%
	(k) 0.40	ERV (Jasmine)		-	0.80*	-
C1	(l) 0.88	LRV (Chhmarprum)	SRI	1.50	1.75	+17%
	(m) 1.98	ERV (Jasmine)		2.00	3.00	+50%
C2	(n) 1.00	LRV (Chhmarprum)	SRI	1.20	1.62	+35%
C3	(o) 0.50	LRV (Riangchey)	SRI	0.70	1.00	+43%
	(p) 0.50	ERV (Jasmine)		0.80	1.00	+25%

Source: Ches and Yamaji, 2014

LRV: Late Ripening Varieties; ERV: Early Ripening Varieties; Conv.: Conventional

* No past data available because just started growing ERV in 2013

Total Expenditure on Rice Growing in 2013

The main items of expenditure include seed, fertilizer, irrigation and hired labor. Seeds, local varieties exchanged among inside or outside villagers, have been stored from previous harvesting. Then, farmers do not spend on seeds. However, farmers spend more on hired labor; followed by chemical fertilizer and irrigation (Table 3). The cost of hired labor varies based on the working condition. The land preparation work costs about 20,000Riel to 30,000Riel and transplanting work costs from 10,000Riel to 15,000Riel per day per person. Harvesting work is paid based on the amount of the harvest. Farmers stated that the costs keep increasing due to less labor in the village. People leave the village for other non-farming jobs. The costs of hired labor can be negotiated. However, some farmers did not spend or spent less on hired labor cost because they could get help from neighbors or worked with their family members. Although water is important, most of the farmers did not spend money on it; they strongly depend on rainfall. The cost of irrigation was the expenditure on fuel for pumping machines. Water was pumped from small streams, reservoirs or from ponds nearby their farms or houses. In case of village C, acquiring water from the reservoir is limited because the same water source is also used for raising animals.

Most of the farmers spent a lot of money on chemical fertilizers to add up on amount of the organic ones. Normally, chemical fertilizers are used during the land and nursery preparation. Some farmers did not spend on them because they used only organic fertilizers; compost which they produced by themselves or some farmers just collected and applied the animal wastes and leaves to the field. However, farmers have tried to reduce or kept the same amount of chemical fertilizers. They understand the adverse impacts of chemical fertilizers on the soil quality and on their health.