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Title of Master Thesis:

System of Rice Intensification (SRI) Practices and Promotion in Irrigated and Rain-fed Areas of Cambodia

(カンボジア灌漑水田および天水田におけるSRIの実践と推進)

Keywords: System of Rice Intensification (SRI), Irrigated area, Rain-fed area, Conventional way, Practices, and Promotion

Abstract:

Cambodia has depended heavily on the agricultural sector, especially rice production, for its economic development. The agricultural development has taken over these three decades; however, it has been noticed in slow progress because of two main impeding reasons including (1) Cambodian farmers have still continued practicing their traditional rice growing methods in some areas and (2) most existing irrigation systems are completely or partially destroyed by natural deterioration due to inadequate finance for operation and maintenance. However, at present, farmers are getting familiar with a new method called System of Rice Intensification (SRI) that has been successfully proved to increase the rice yield along with other merits and gets strong support by the Royal Government of Cambodia (RGC) as well as other NGOs working on extension programs for SRI dissemination.

Based on principles of SRI practices, in order to get higher yields, farmers need to manage the water level in the paddy fields well and it is only the irrigated area that can help farmers control the water level well. In Cambodia, the practices of SRI have been disseminated to farmers in both irrigated and rain-fed areas. Therefore, the main objectives of this study are to compare the results of the SRI practices between the irrigated and rain-fed areas of Cambodia in response to the fact that farmers are practicing SRI while irrigation systems do not function well and rainfall patterns are not reliable; to explain the water availability in the irrigated and rain-fed areas; and to explain policies and activities on SRI promotion from stakeholders due to the fact that presently SRI is believed to increased rice yields with less agricultural inputs.

Field observation, household survey and stakeholder interviews were conducted twice, from August to September 2012 and from February to March 2013, in order to collect data from multiple dimensions of SRI practices and promotion from SRI Farmers (SF), Non-SRI Farmers (NSF), agricultural officers and development partners and to get clear directions to meet the research objectives. The irrigated upstream and downstream areas, rain-fed area (1) in Kampong Speu Province and the other rain-fed area (2) in Takeo Province were chosen as the study areas.

It is clear, therefore, that SRI practices in the irrigated and rain-fed areas are not much different. SRI farmers in both areas could get almost the same rice yields. In 2012, SRI farmers including irrigated downstream and upstream ones got the yields approximately 4.08 to 4.59t/ha higher than those of conventional ones yielding only 2.69 to 3.43t/ha. The rain-fed SRI farmers obtained yields about 3.26 to 3.61t/ha which is also higher than those of conventional ones with yields of 2.32 to 2.44t/ha. However, in 2011, SRI yields in the rain-fed areas were from 3.09 to 3.78t/ha higher than those (3.26 to 3.66t/ha) in the irrigated areas. Different yields between SRI and conventional methods were about 1 to 1.5t/ha only. This was because the degree of SRI adoption by SRI farmers was only 69 to 77%. A positive correlation between SRI yield and SRI degree adoption shows that if farmers can increase the degree of adoption, they tend to get the higher yields. Nevertheless, farmers tend to adapt these SRI methods rather than adopt since water situation and geography condition are not favorable.

Total of Water Requirement (WR) during the growing period was approximately 990 to 1169mm/season in the study areas. In the case of one plot with area of 0.70 ha in the rain-fed area (1), besides rainfall, pumped water from nearby stream was used during the rice growing season. Water was pumped 4 times per season and 24 hours per one time with the water pump's capacity of 900 liter/min. Therefore, total water supply of 5184m³/season was provided. It was not enough compared to total demand of 990.4mm/season with water layer of 5cm. Another 1748.8 m³/season was needed. Although less water supplied means that water was saved in order to deal with the water shortage in the rain-fed area, supplying water in the wrong time can cause the stress or shock to rice plants then it can lead to lower yields. Enough water supplies are still strongly needed to avoid the drought and stress or shock to the rice plants. In irrigated areas, although such calculation could not be done, it is observed that farmers still face the water problem but just water accessibility is higher than one in the rain-fed areas. It is said that WR can be decreased by practicing SRI. But, farmers could not practice this principle since rainfall is unreliable and irrigation systems do not function well. It is expected that the amount of WR will be decreased in the short future when SRI farmers can apply Alternative Wet and Dry (AWD), one of recommended solutions to save water, with well operated irrigation systems.

Both internal and external support on the dissemination of SRI in Cambodia is very active. SRI methods have been included in many various agricultural and socio-economic development projects. Nine SRI principles revised by GDA have been implemented with varied promotion methods. Nonetheless, farmers' Mindset, water management and unclear messages delivered during SRI training have become the main obstacles to the promotion progress. In order to sustain SRI as well as to deal with those obstacles, policies and more support from Government, NGOs and donors are indeed required.