

論文の内容の要旨

論文題目 Effects of the System of Rice Intensification (SRI) on
Farmers' Livelihood in Cambodia
(カンボジアにおけるSRI稲作の農家生計に与える影響)

氏 名 チェツ ソピー

Unlike the development revolution in the last few decades; the trends of current development paradigm, especially in the developing countries, have been shifted to focus on the environmental conservation and sustainability. For example, in the agricultural field, the development of eco-friendly farming techniques is being focused in a bid to reduce the bad impacts on the environment and human well-beings. Toward this same goal, the System of Rice Intensification (SRI) has been introduced and practiced in most countries in Southeast Asia in a belief that it increases the paddy productions with less input. Although some claim SRI practice increases yields and saves water, others are still arguing in the opposite and demanding more clarifications on its merits. Besides controversies on the yields between SRI and conventional methods among practitioners, scientists, and researchers, there are also some debates on the labor requirement.

Cambodia is also known as an agrarian country, which heavily depends on agricultural sector as the core of economic growth. Rice is one of the main agricultural products for trade and staple food for the Cambodian. It is reported that since 1995 Cambodia has produced a rice surplus and been able to export paddy to neighboring countries; while rice market in Cambodia is still immature and inaccessible. With rice surplus, it does not mean that all rice producing farmers can make themselves self-sufficiency. One of the main reasons that causes the food shortages is the low productivity. Therefore, SRI has also been introduced to Cambodia and included in National Strategic Development Plan to raise the productivity in the rice sector and also in many agricultural projects. On the other hand, irrigation expansion is also seen as the Government priorities in poverty alleviation and economic growth since principally irrigated agriculture is of importance to address poverty by achieving food security and promoting income generation in rural areas. Moreover, labor and irrigation play important roles in increasing of yield and in response to the fact that irrigation systems in Cambodia do not function well and rainfall patterns are not reliable. Hence, the main objectives of this research are: (1) to study the detailed labor requirement and the irrigation application; (2) to explain the contribution of SRI farmers to rice market which is believed to be inaccessible; and (3) to analyze the livelihood improvement of farmers at village based.

For the methodology in this research, various data collection methods had been employed such as field observation, household survey, follow-up activity, daily activity record, tracking location device, and document review. Primary data collection was conducted in irrigated upstream (g), irrigated downstream (h) and rain-fed (c) villages in Kampong Speu province; rain-fed (a) and (b) villages in Kampot province; rain-fed (d) village in Takeo province; and rain-fed (e) and (f) villages in Prey Veng province.

The research found out that in the study areas the average family members in each household is 4.48; however, the full availability of members who can help during rice growing is only 2.20. This is because the family members, especially the young ones, can help the farming only at weekends or during free times from study or work. Regarding the labor distribution, farmers hire people during land preparation, nursery preparation, transplanting and harvesting times. For the irrigation, two types of irrigation have been found: plot-to-plot irrigation and by-pumping irrigation. So far, irrigation fee has been priced and collected under the operation of Farmer Water User Community (FWUC) which exists in irrigated upstream (g). However, the fee collection has not been working well. In rain-fed areas, there is no FWUC to collect the irrigation fee. Farmers still depend on rain for their farming. In case of water shortage due to the drought or insufficient rain, farmers in both irrigated and rain-fed areas need to find other sources for irrigation such as stream, river, or ponds nearby. However, with longer drought, farmers will miss or delay their farming; especially in rain-fed areas.

Moreover, by practicing SRI, most of farmers have increased their products up to 200% while the lowest increased ratio ranges from 0% to 11%. Therefore, it was concluded that farmer zeal and careful attention play important factors on improving SRI production since the availability of family members and distance from plot to home have no correlation with the increase of the SRI degree adoption. In addition to self-sufficiency for consumption, farmers are able to contribute their surplus to the markets from 17% up to 83% of their total production. Regarding the market situation, farmers normally agree on the price offered by the middle men even it is cheaper than the price set at the markets because farmers do not need to spend on the transportation and labor fee. Another interesting finding on this market issue is the benefit of collective sale. Farmers can get the higher price with collective sale than the individual sale. Based on the expenditures and incomes analyses, hired labor cost became the highest one followed by chemical fertilizer and irrigation; then the concept of "Sharing-hand" can help farmers save their expense on labor cost. Since, the most of farmers could share their productions to markets; they were defined as Net Buyers, according the concept of agricultural household. Only two farmers who practice conventional method are defined as the Net Buyers because they failed to produce enough for their self-consumption.

Based on intensive follow-up with six main farmers among the selected farmers on their farming records for two years, the results showed that there is no much difference in labor requirement between SRI and conventional practices. Although SRI requires a little bit more labors in water management, these labors can be reduced for a provided better irrigation system and proper water distribution. Moreover, owing to the two case studies in details on the income and expenditure of the two farmers selected from the above six main farmers, the results prove that SRI really can improve farmers' incomes and livelihood. According to the increased production of SRI farmers and the number of SRI farmers in each village, it is found that paddy productions in villages or communities increase with the increasing number of SRI farmers, and this in turn can lead to the increase in the national country productions. The result in this study shows that SRI could lead to the increase in country production about 22.5% in 2009.

Based on the discussion of SRI practices from the results of this research, SRI can be defined as one of the sustainable agricultural systems because it can fulfill the four elements of sustainability concept and two components of sustainable agricultural systems as explained in details in the discussion chapter.