CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Cultivation of rice, once a traditional way-of-life for domestic and subsistence purposes, is constantly being transformed into commercial purposes, including export oriented enterprise of rice and rice-based products. Rice production in Vietnam has witnessed several cultural and economical changes under multiple cropping; the labor intensive cultivation has quite significantly changed under fully mechanized operations. The method of planting has also been affected. A practice of direct seeding has evolved rapidly and has become widespread because it saved labors and other resources, resulting in not only decrease of production cost but also increase of rice grower's income. Although on the whole, direct seeded rice is considered to have helped in sustained rice production, it has caused some problems in terms of environment. First, herbicides that were never used in the past in transplanted field rice have to be used to contain weeds because weeds in direct seeded rice were more abundant than in transplanted rice. Second, the outbreak of diseases and insects in direct seeded rice was more and more serious because of high crop plant density. Therefore, the overuse of agro-chemical has been harming human healthy and environment when its residue runs off rivers and canals. The last, the direct seeded rice needs more fertilizer as compared with the transplanted one because direct seeding with modern rice varieties respond with high fertilizer level. As a result, direct seeded rice contributed to an increase of rice production in order to meet the needs of the foods, it also was the sources of non-point pollution.

Row-seeding was considered as among new technologies in order to decrease production cost and protect environment as well as enhancing rice growers' income. Row-seeding, in fact, is among methods of direct seeding. It is wet seeding method, using machine instead of hand

The case study was fulfilled in Can Tho province of the Mekong River Delta, which is known to be the most favorite province in terms of natural condition for rice cultivation in the Mekong River Delta in individual and Vietnam in general. The study was to compare economic efficiency of direct seeding of paddy between row-seeding technology and conventional broadcasting in dry season (2002-2003). On the basis of survey, the case study provides the following results.

The results were based on a survey of 70 household in 2003 in four hamlets of Tan Phu Thanh village, Chau Thanh A district of Can Tho province.

Existing Cropping System

Rice cultivation in Tan Phu Thanh village is under irrigated lowland rice system. Double rice cropping (55%) was the most popular system in Tan Phu Thanh village, following by triple rice cropping (40%) and rice-upland crop-rice cropping occupy the remainder.

Rice Production and Row-Seeding Practice

The crucial problem was ranked first place in three group of farmer that have been militating in diffusing row-seeding practice is a damage of golden snail. Following the first problem, in the poor group unleveled land, lake of embankment to control water, and small-scale of farm-size were ranked second, third, and fourth place, respectively. The fair group pays attention to problems in unsuitability of row-seeding practice in both early and late wet season, soaking and incubating technique, and the risk of weather, ranking second, third, and fourth place, respectively. Last, the rich group issued that bad quality of row seeder, unstable price of outputs, and high price of fertilizers were ranked second, third, and fourth place, respectively.

Most of farmers grew modern rice varieties with high yield and short duration, in which IR576 was a dominant variety occupying 23 percent, following by IR64 (19%), OMCS200 (17%), and MTL250 (16%). The average of seed rate in row-seeding (113 kg/ha) was lower than that in broadcasting (184 kg/ha). Labor that used

for growing rice was 69 mandays/ha in broadcasting and 64.5 mandays/ha in row-seeding.

Most of farmers (100%) applied fertilizer in rice cultivation. The average fertilizer used was estimated at 401 kg/ha, including 132 kg urea, 143 kg NPK, and 73 kg potassium. In terms of basic components, both row-seeding and broadcasting's farmers applied a high rate in basic components (156 kg N-42 kg P_2O_5-35 kg K_2O) in comparison with the above recommendatory formula (100-40-30), especially nitrogen (N).

Eighty-three, eighty-one, and 76 percent of farmer-respondents used herbicides, fungicides, and insecticides to control weeds, diseases, and insects in dry season for rice production, respectively.

Mean yield of row-seeding was 6.3 tons/ha that was higher than broadcasting practice (6 tons/ha). Majority of farmers (82%) sold their paddy immediately after harvesting. About 55 percent of their paddy were sold. The remainder was stored for home consumption and seed stock.

Socio-Economic Information

The percentage of the poor farmers in Tan Phu Thanh village was 11 percent that was a slight higher than the mean proportion of province (10%) at the same time. The proportion of the rich and fair household was 7, and 82 percent, respectively.

The average farm holdings were small, seldom larger than 1.12 ha. The average farm holding of rich farmer' group was the biggest farm size (1.01 ha/household) as compared to others, in which rich group of row-seeding was higher than that of broadcasting by 0.21 ha, followed by fair group (0.82 ha) and poor group (0.415 ha). Small farm size is a constraint to utilize the row-seeding practice at household level.

Farmers had rather high level of formal education, and only more than 3 percent was illiterate. Most of them have only reached to primary school (37.7%) and secondary school (38%). High school and college making up low proportion were 14.6 and 0.9 percent.

The mean experience of rice farmers was 21 years. Mean experience of row-seeding farmers was 3.6 times, but most of row-seeding farmers were only practiced less than or equal 2 times.

Household size ranked from 3 to 9 members or on average of 5.07 members for both broadcasting and row-seeding practice.

Most of men has power in both deciding and doing all activities of rice production such as sowing method, the kind of varieties for next crop, timing for soaking and sowing, the kind of chemical for preventing pest and diseases, the kind of fertilizer for applying, hiring labor for weeding or harvesting, borrowing money from the bank, livestock, and fishing. While, women make decision and carry out only two activities on diary expenditure and buying furniture.

Majority of farmers (71%) did not borrow capital from credit formal sources. The remainder (29%) accessed capital sources, but in which about 10 percent of the poor farmers can access, especially nobody in poor farmers practicing row-seeding can access this credit sources.

About 58.6 percent of respondents had attended training courses on rice production. The remainder (41.4%) did not participated training at all. About 64.5 percent of broadcasting's farmer-respondents attended training courses, compared to 53.8 percent of row-seeding's farmer-respondents. Especially, all the poor group (100%) in row-seeding did not participated any training course, compared to more than haft of poor group (61.5) in broadcasting attended training courses.

Harvesting is commonly by hand, and one hundred percent of farmer-respondents threshed paddy rice by threshers. All farmer-respondents (100%) dry paddy rice under sun sight.

Cost and Return Analysis

Gross returns of broadcasting and row-seeding in dry season (2002-2003) were 9,441 and 9,876 thousand dong/ha, respectively. Gross return of row-seeding was higher than broadcasting by 435 thousand dong/ha.

Total variable costs were 4,080 and 3,456 thousand dong/ha in broadcasting and row-seeding, respectively.

Net Return. In dry season of 2000-2003, net return was estimated at 5,316 thousand dong/ha in broadcasting, and at 6,418 thousand dong/ha in row-seeding.

Benefit-Cost Ratio. Benefit cost of both sowing method was so high, but row-seeding (4.39) had higher value than broadcasting (3.55).

Return over Cash Cost. The return to cash cost (gross value of production minus cash costs) was estimated at 6,783 thousand dong/ha in broadcasting and at 7,629 thousand dong/ha in row-seeding.

Labor Productivity (Return to labor cost). The net productivity of labor (the value of production minus the cost of non-labor inputs divided by labor use) was estimated at 114 thousand dong/manday for broadcasting and at 132 thousand dong/manday for row-seeding.

Average production costs of one kilogram of paddy were at 675 dong/kg in broadcasting, and at 549 dong/kg in row-seeding.

Net return per total costs was estimated at 1.31 in broadcasting, and at 1.85 in row-seeding. Net return per kilogram output of row-seeding was at 1,019 dong/kg was higher than that of broadcasting at 883 dong/kg.

Cobb-Douglas Production Function Analysis. The results of the analysis using SPSS software showed that labors, age, land, education, and experience of decision maker were important variables affecting rice yield growing in dry season of Tan Phu Thanh village of Can Tho province. The remainder variables including cost of fertilizer, chemical, and seeds; training; tillage dummy; and sowing method dummy, using Cobb-Douglas production functions, were not significantly.

5.2 Recommendations

Based on the findings of this study, the positive recommendations can be issued as follows:

- Training courses on basic knowledge of rice production in general and row seeding in individual using participatory method (Farmer Field School approach) and the implementation of demonstration sites, because row-seeding practice is not behavior of most rice farmers and the efficiency of training in this combination will help farmers believe and adopt row-seeding technology. The men should be invited to participate training courses for rice production as well as row-seeding practice because most of them have been responsible for main production activities of rice production and especially in crop establishment phase.
- Rice-duck system and other non-chemical measures should be considered in order to minimize the damage caused by golden snail that has been constraining in diffusing row-seeding practice.
- It is necessary to launch a credit support to rice grower, especially for row-seeding farmers with a low interest rate (from 0 to less than 1% maximum).
- It is essential to propagate the post harvest technologies by introducing dryer machine in order to enhance rice quality. It is better to enhance farmer's perception in paying attention to bad rice quality in using sun sight
- It is necessary to improve the quality and mechanization of row seeder.