

AGRICULTURAL DIVERSIFICATION IN CAN THO: FARM LEVEL

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ABSTRACT

Under change of market price and physical environment, the crop diversification index has been reducing over the period 1995/96, 1997/98 and 2000/01. This affects household income per capita and sustainability in agriculture. There is a tendency of reducing income per capita from 1997/1998 to 2000/2001. The household size, and education of head and spouse are important factors that influenced on income from some components in the diversification system. The association of market price and government strategies with the choice of farm components is strong. This implies that policy makers have a major role in the maintenance of diversity on farm.

INTRODUCTION

Intensive rice monoculture has been practised over the past two to three decades, stagnant yields and /or declining trends in productivity (partial or total) are being observed (Pingali 1994). Consequently, diversification out of monoculture could have significant positive environmental effects on rice resource base and simultaneously lead farmers out of an income squeeze caused by stagnating yields and increasing cost of production (Jirstrom 1996). Farmers are principle actors in management of diversity. Farmers' making decision in choice of component for their farms are influenced by environmental, socioeconomic, and cultural factors as well as political climate (Morin et al. 1998). The accessibility of markets or market integration, affects on diversity by influencing farmers to buy of to sell goods in the market. Market and environmental problems are decreasing the diversity in farming system. Moreover, government food policy may simultaneously encourage and restrict the process of agricultural diversity. In rural development, the off-farm and non-farm options are important in the formulation in the production strategies. There is a need to develop suitable strategies for sustainable agriculture in the rural sector. Thus, investigation of diversification at farm level is necessary in

enhancing and maintaining the agricultural diversity.

METHOD OF DATA COLLECTION AND ANALYSIS

Direct interview was employed to collect data and information from two hundred and ten farmers at Thoi Lai Town, Thoi Long and Phuoc Thoi villages of O Mon district, Can Tho province. The interview was conducted by using structured questionnaire. The data analysis was based only from 202 farmers, the rest of farmers shifted their living to other provinces.

Data were summarized in forms of frequency, mean and percentage. Multiple regression analysis was used to examine factors affecting income from different enterprises in the diversification system.

RESULTS AND DISCUSSION

1. Demographic characteristic and land use: Majority of household heads are male (88 %). The education level of more than half of the household heads (62%) is primary school. One fourth of them (25%) reached secondary school and few of them (9 %) reached high school. Most of heads (92 %) are farmers. Majority of spouses (70%) only studied in primary school (1-5 years in schooling). Most of households (99 %) accessed to land for agricultural cultivation. The average land size

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per household is 0.82 ha. The land area for triple rice cultivation is 38.6 %, double rice system 15.3 %, double rice plus upland crop 14.5 %. Mixed fruit tree orchards occupy 11.4 %.

Table 1. Land use

Cropping models	Frequency	%
Triple rice	136	38.6
Double rice	54	15.3
Double rice + upland crop	51	14.5
Triple rice + upland crop	8	2.3
One rice + upland crop	3	0.9
Rice + fish	8	2.3
Triple rice + upland crop + fish	1	0.3
Fruit tree + fish in canal	3	0.9
Fruit tree	22	6.3
Mixed fruit trees	40	11.4
Fruit tree + fish in pond	14	4.0
Upland crop	10	2.8
Fruit tree + upland crop	1	0.3
Wood tree + upland crop	1	0.3
Total	352	100.0

2. Income generating activities: On-farm operations are important activities of the household. Most of agriculture products as rice and upland crop, fish, pork and duck eggs were sold to middle – man, fruits and chicken were sold to consumers to have money for other needs of the household. Most of products. However, off-farm and non-farm activities contributed the important part to the household income (53.3%). Rice made up 30.9 % income of the household, followed by income from husbandry and fishery (10.2%) . There were only 4 % of the household received remittances from their children, brother or sisters, and from parents.

3. Factors affecting income: Household size positively and significantly affected gross rice income and net income from rice/ha. This indicates that household members assisted in rice production to have higher profit for the needs of large family size. Education of the household head positively and significantly affected net income from fruit trees. On the

other hand, net income from animal husbandry and fishery was influenced positively significantly by education of wife. A study on gender use of technologies in farming system in Omon district, Can Tho province shows that women are mostly involved in animal production rather than men, especially pig and chicken rearing (Chi and Yamada, 2002). This may be the reason for the relation of education of spouse (mostly wives) to the income from this activity. In this study, gender participation in animal production also has similar trend. Women also control the product selling. Net income from off - farm and non - farm activities positively and significantly affected by household size and education of spouse. This proves that the more members in large family size contributed for household income through their involvement in off - farm and non - farm activities higher than those with smaller family size.

Table 2. Gender participation in agriculture (%)

Activity	Labor input in %		Who started the activity		Who is in control of the sale of product		Who has access to information about production	
	Man	Woman	Man	Woman	Man	Woman	Man	Woman
Rice cultivation	64	36	92	8	12	88	93	7
Upland crop	58	42	95	5	10	90	93	7
Fruit tree	74	26	100	0	18	82	95	5
Fishery	74	26	98	2	17	83	93	7
Husbandry	33	67	64	36	0	100	68	32

4. Diversification before 2000/2001: Majority of farmers (77%) planted upland crops before 2000/2001 (such as soybean, mungbean, ...) and 16.3 % of them still continue to plant these crops until now. However, the other farmers discontinued to plant upland crops because of lack of labor, hard work, low price, difficulty in water management, low yield, and attack of insect pest. They also planted perennial crop before 2000/2001 (66%). They discontinued to plant perennial crops because of disease, low price and high flooding. Seventy four percent of farmers had fish rearing. Mostly, they raised Mekong catfish in a small ponds in gardens. Only 16.3 % of them still continue to raise fish in ponds. The others stopped raising because of no profit, difficulty in water, lack of labor, capital and technologies. Regarding animal raising (mostly pigs and ducks), majority of farmers (81%) had pig and duck rearing at household level before 2000/2001. The most important reason for discontinuing of big and duck raising is low profit because of low of price.

5. Credit information: More than half of farmers (58%) could obtain loan, and most of them received loan from the government bank (91%). The purposes of getting loan include rice production (57%), animal raising (13%), fruit production, small trading, buying instrument, fish raising, ... It was not a problem in access to loan from the government source (90%) because they have collateral from the land property. The rest of 10 % found difficulty in accessing loan because of landless and no land ownership. The private source of loan also caused farmers certain problems and they were not able to access because of high rate of interest, not be known by the money lenders, not able to pay back and landless

6. Changing: The longitudinal survey in 1995/1996, 1997/1998 and 2000/2001 shows that the average size of household reduced from 5.9 in 1995/96 to 5.4 in 2000/01. The average land holding was reduced from 1,09 ha to 1.0 ha between period of 1997/1998 and 2000/2001. This was affected by the policy of the government in allowing transfer the land ownership from one to another. Farmers can transfer the land use right of a piece of land to another to obtain money. This has led to reducing of sown area, mostly sown rice area.

Regarding to land use, agricultural land reduced from the year 1997/1998 to the year of 2000/2001. This happened because of shifting agricultural land to other use, such as homestead. The sown rice area, sown upland - crop area, and fruit tree area reduced dramatically.

Crop diversification index is the ratio of sown area over the land holding area. The crop diversification index was decreased from 1.29 in 1995/96 to 1.24 in 1997/1998, and only 1.18 in 2000/2001. The most important factor that influenced on reducing crop diversification index is market price. The price of crop products are low meanwhile the price of materials for inputs are high. In addition, rural labors seek for non-farm and off-farm activities to have additional income because low price of crop products. Thus, though all farmers have rice income, the most contribution to household income is from off-farm and non-farm activities.

The household income per capita was decreased from 3976 thousand dong in 1997/1998 to 3463 thousand dong 2000/2001 because the prices of rice and upland crop and fruit reduced dramatically between these two points of time. Many farmers sold a piece of rice field or garden leading to reduction of

sown crop area. In addition, the number of households rearing pigs and Mekong catfish decreased between two periods because of their low contribution to the household income.

CONCLUSION

Under change of market price and physical environment, the agricultural diversification was affected. The land price was increasing mean while the price of agricultural products as rice, soybean, fruits, pigs were decreasing from 1997/1998 to 2000/2001. In addition, high flood and disease incidence had strongly affected on farmers' crop change. Farmer's tendency is pursuing what is beneficial to them in terms of income. Thus, the diversification index was reduced. This also affects on

household income per capita and sustainability in agriculture. There is a tendency of reducing income per capita from 1997/1998 to 2000/2001. The household size, and education of head and spouse are important factors that influenced on income from some components in the diversification system. The process of change may still continue. There is a tendency of change again by alternative ways to increase household income. The local government and farmers are trying the model of rice fish and rice – shrimp in some farms. The association of market price, government strategies with the choice of farm components is strong. This implies that policy makers have a major role in the maintenance of diversity on farm.

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SUMMARY IN VIETNAMESE

Sự đa dạng nông nghiệp tại Cần Thơ: phạm vi nông hộ

Dưới sự thay đổi của giá cả thị trường và điều kiện môi trường sản xuất, chỉ số đa dạng cây trồng giảm qua các thời kỳ 1995/96, 1997/98 và 2000/01. Điều này đã ảnh hưởng đến thu nhập/nhân khẩu và sự bền vững trong sản xuất nông nghiệp. Thu nhập /nhân khẩu có chiều hướng giảm từ năm 1997/98 đến 2000/01. Số nhân khẩu/hộ và trình độ văn hoá của chủ hộ và vợ là những yếu tố quan trọng ảnh hưởng đến thu nhập từ các hoạt động trong hệ thống đa dạng. Có mối quan hệ mạnh mẽ giữa giá cả hàng nông sản và các biện pháp của nhà nước với sự chọn lựa loại hoạt động cho hệ đa dạng nông nghiệp của nông dân. Điều này ám chỉ rằng các nhà làm chính sách đóng vai trò quan trọng trong duy trì sự đa dạng trong nông nghiệp.
