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The Factors Affecting the Net Income of the Households for Farming of Crops, Fruit Trees and Shrimps in the Mekong Delta of Vietnam

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Abstract- The study on the factors affecting the net income of the households for farming of crops, fruit trees and shrimps in the Mekong Delta was conducted in 2013. The descriptive statistics and the multivariate linear regression models were used in the study. The study results showed the net income per area of the households growing crops and fruit trees was affected by several factors including land area, participation in associations and unions, animal husbandry, non-agricultural activities and total costs of material inputs while the net income per area of the households raising shrimps was affected by factors as land area, number of labors, non-agricultural activities and total costs of material inputs.

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I. INTRODUCTION

The Mekong Delta (MD) is considered as the region for the main agriculture production of the nation. Over 10 year ago, the region has annually contributed more than 50 percent of the agricultural products, 90 percent of the exported rice products, 70 percent of the fruit products and 80 percent of the exported aquatic products of the country. The achievement helped increasing the income and improving the living conditions of 70 percent of the farm households in MD (General Statistics Office of Vietnam, 2011).

The competitive market of the agricultural products was increasing strongly while some nations were pushing the exported agricultural products into Vietnam (Ministry of Planning and Investment of Vietnam, 2010). Therefore, the households gradually changed in using the agricultural resources and improving their capacities to adapt with the policies for planning and transferring agricultural production in MD (Ministry of Resources and Environment of Vietnam, 2011).

Therefore, the study on "The factors affecting the net income of the households for farming of crops, fruit trees and shrimps in the Mekong Delta of Vietnam" which was conducted to find out the solutions for improving the net income of the households is also a part of the regional development target.

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II. OBJECTIVES OF STUDY

There are three specific objectives of the study, namely (1) Analyzing the main resources of the households; (2) Analyzing the factors affecting the net income of the households; and (3) Recommending the solutions for improving the net income of the households for farming of crops, fruit trees and shrimps in the study site.

III. METHODOLOGY OF STUDY

a) *Methods of choosing study site and sampling*

Choosing study sites was based on the advantages of the various farming systems and the natural ecological conditions in MD. Accordingly, farming of crops, fruit trees and shrimps were selected as following:

- The households doing farming of crop in Vinh Long, Hau Giang and An Giang provinces were selected to collect the data.
- The households doing farming of shrimp in Bac Lieu and Kien Giang province were selected to collect the data .
- The households growing the fruit trees in Tien Giang and Ben Tre province were selected to collect the data.

The total sampling of 189 households was distributed by 84 households for farming of crops ; 48 households for farming of shrimp; and 57 households for growing fruit trees.

b) *Methods of data collection and analysis*

The secondary data were collected beside the primary data, which were interviewed from 189 households through the structured questionnaires, related to the objectives of study in 2013.

Descriptive statistics and the multivariate linear regression were used in the study.

IV. RESULTS OF STUDY

a) *The analysis of the main resource of the farm households*

i. *Age of farm householder*

The age of the farm householders in three production groups was focused on 45 to 55 years old with the average age of 51 years old.

ii. *Educational level of farm householder*

The educational level of the farm householders which was low in the three production groups in 2013 obtained the primary and the secondary school, especially the fruit tree production householders.

iii. *Family member of farm household*

In three production groups, the numbers of the farm household members which occupied at the highest rate in 2013 ranged from 4 to 5 people. The average member number of a farm household was 4.3 people which were higher than that (i.e. 3.9 people per family) in MD (General Statistics Office of Vietnam, 2012).

iv. *Main labor of farm household*

In general, the main labor of a farm household obtained under 4 labors which occupied at the highest rate. The main labors averaged 3.5 labors per household in the three production groups which were higher than those (i.e. 2.4 people per family) in MD (General Statistics Office of Vietnam, 2012). The opinion of the households for farming of crops, fruit trees and shrimps showed that they need more and more main labors in a household involving in doing farming activities.

More than 95 percent of the householders in three production groups practiced in farming based on their experiences. Therefore, the effect of doing farming was not high that leading to the low income and high risk.

v. *Farm land*

In 2013, the farm land was under 1 hectare per household obtained at the highest proportion (64%) while the farm land over 3 hectare per household ranged the lowest one (8%) and the farmland from 1 to 3 hectares per household occupied at 28%. The farmland of the households for farming crops concentrated from under 1 hectare to 3 hectares while the farmland of the shrimp households distributed largely from under 1 hectare to over 3 hectares and the farmland of the fruit tree households almost was less than 1 hectare. The average farm land per household in the three production groups was reasonable; it was about 1.3 hectares in 2013.

Table 1: Farm land of the farm households in three production groups

Farm land	Crops		Shrimps		Fruit trees		Total	
	No. of households	%	No. of households	%	No. of households	%	No. of households	%
<1 ha	48	57,1	17	35,4	56	98,2	121	64,0
1- 3 ha	34	40,5	18	37,5	1	1,8	53	28,0
>3 ha	2	2,4	13	27,1	0	0,0	15	8,0
Household total	84	100,0	48	100,0	57	100,0	189	100,0
Average of land area (ha)	1,2		2,4		0,4		1,3	

Source: Household interviewed in 2013

Farmland was considered as the basic resource for the livelihood activities of the farm households. Moreover, the farmland was also a property of farm households to access the credit from the banks for the production works or their lives. This perception is appropriate to the assertion of Rasmus Heltberg (2001).

vi. *Net income of the farm households*

The main net income (NI) of the farm households was from doing farming, and from non-farm activities. Livestock's NI was an additional part in the farm households' livelihood. Net income total per shrimp household obtained the highest proportion in the three production household groups, then, NI total per crop household reached at the second position while NI total per fruit tree household achieved the lowest proportion.

Table 2: Structures of the net incomes per farm household between different production groups in a year

Source of net income (NI)	Crop household		Shrimp household		Fruit tree household	
	Amount (Million VND)	%	Amount (Million VND)	%	Amount (Million VND)	%
Farming	55,3	48,2	226,9	60,5	55,4	73,0
Livestock	22,8	19,8	0,5	0,1	3,4	4,5
Non-farm	36,8	32,0	147,8	39,4	17,0	22,5
NI-Total	114,9	100,0	375,2	100,0	75,8	100,0

Net income total per shrimp household was higher than those of crop households and fruit tree households because NI of doing farming and non-farm activities per shrimp households contributed more than those of crop household and fruit tree households in 2013.

b) Analysis of the factors affecting the net income of the households for farming of crops, fruit trees and shrimps

For the crop production group, the NI of the household involving in the local associations correlated positively. For instance, the NI of the household who participated in the local associations increased 43.7 millions VND. Besides, the NI of the households raising livestock increased 42.2 million VND and the NI of the households who invested the material inputs increased 1.3 million VND which could be interpreted that the total of production cost reduced from discounting price of the material inputs when the households bought with the largest of amount in 2013. However, the farmland area and the non-farm activities were correlated negatively with the NI of the household. It showed that the NI of the household decreased 65.1 millions VND when the farmland was enlarged by one hectare and reduced 30 million VND when the households participated in the non-farm activity due to their labors unpaid attention to do farming of crops.

In the fruit tree production group, the NI of the household who participated in the local associations increased 63.6 million VND. Investment into material

inputs was also correlated with the NI of the household. It was illustrated that the NI of the household increased 2.3 million VND when the household increased one million VND for the material inputs in 2013. However, the farmland area and the non-farm activities were correlated negatively with the NI of the household. It showed that the NI of the household decreased 254.2 million VND when the farmland was enlarged by one hectare and reduced 96 million VND when the households participated in the non-farm activity due to their labors unconcentrated on doing farming of fruit trees. The NI of the households raising the livestock also reduced 52.9 million VND.

In shrimp production group, the NI of the households investing into the material inputs increased 0.2 million VND which could be interpreted that the total of production cost would reduce from discounting price of the material inputs when the households bought with the largest amount in 2013 and the NI of the household also increased 100 million VND when the the main labors of the households were engaged in shrimp production per year. Nevertheless, the farmland area and the non-farm activity were correlated negatively with the NI of the household. It showed that the NI of the household decreased 24.9 million VND when the farmland was enlarged by one hectare and reduced 130 million VND when the households participated in the non-farm activity due to their labors unconcentrated on doing farming of shrimps.

Table 3: Analysis of the factors affecting the net income of the households for farming of crops, fruit trees and shrimps in 2013

Independent variables	Crop household		Fruit tree household		Shrimp household	
	Coefficient	Value P	Coefficient	Value P	Coefficient	Value P
Constant	166.382	0.002	350.643	0.000	-70.688	0.765
Farmland (ha)	-65.189	0.000	-254.281	0.001	-24.996	0.007
Participating in unions (yes, no)	43.767	0.036	63.696	0.030	-	-
Livestock (yes, no)	42.200	0.018	-52.912	0.074	-	-
Non-farm activity (yes, no)	-30.096	0.096	-96.281	0.003	-130.397	0.020
Investing in material inputs (million VND)	1.320	0.000	2.361	0.099	0.226	0.000

Family Labors (Labor/year)	-	-	-	-	100.936	0.000
Observation number (no.)	84		57		48	
Sig.F	0.000		0.000		0.000	
R	0.652		0.666		0.761	
R ²	0.425		0.444		0.579	
Durbin-Watson	1.670		1.325		1.762	

Source: Household interviewed in 2013

c) *The solutions for improvement of the household net income*

Based on analyzing the main resources of the households and the factors affecting the net income of the households, the solutions for improving the NI of three household groups were proposed for the crops, fruit trees and shrimp production.

i. *The crop production*

The households doing crops should participate in the local associations, raise livestock and invest into material inputs for improving NI of the households. In addition, the crop farming area of 1.2 hectare per household should be remained which is suitable for 3.5 labors of household to produce crops. In addition, the households should balance appropriately between the number of labors and the working time of the household members for crop farming and participate in non-farm activity to enhance the NI of households.

ii. *The fruit tree production*

The households should participate in the local associations and invest into material inputs for improving NI of the households. Meantime, the small farm area of fruit trees per household should be invested appropriately and connected with the other actors in the channels of the production. The commerce should be followed by criteria of Viet GAP and Global GAP to ensure well the relationship between the input investment and the output consumption. Besides, the households should only raise the livestock in small scale of family without investing more labors for home consumption. Moreover, the households should balance harmoniously between the number of labors and the working time of the household members for farming of fruit trees and participate in non-farm activity to improve the NI of households.

iii. *The shrimp production*

The households doing farming of shrimps should invest into material inputs and maximize the use of their qualified family labors for shrimp production rather than non-farm activity to improve NI of the households. However, the quite high shrimp farming area of 2.4 hectares per household should be managed well due to the high investment but more risks to optimize NI of the households.

V. CONCLUSION

The age of the householders was quite high with their low education. The labor force was limited. Farmland was various characteristics in three production groups in which the farmland was at the quite high in the shrimp production households; the medium in the crop production households and the relative low in the fruit tree production households. The source of the households' net income was mainly from farming production.

In the crop production group, there were five factors impacting on the NI of the households. In particular, participating in associations, raising livestock and investing into material input in crop production correlated positively with NI of the crop households while the farmland area and the non-farm activities of the household correlated negatively with NI of the crop households.

In the fruit tree production group, there were five factors impacting on the NI of the households in which participating in associations and investing into material input in fruit tree production correlated positively with NI of the fruit tree households. Meanwhile, the farmland area, raising livestock and the non-farm activities of the household correlated negatively with NI of the fruit tree households.

In the shrimp production group, there were four factors impacting on the NI of the households in which using labor of the household and investing into material input in shrimp production that correlated positively with NI of the shrimp households. Nevertheless, the farmland area and the non-farm activities of the household correlated negatively with NI of the shrimp households.

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