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Abstract- The study on the factors affecting the net income of the households for mono rice production, rice-upland crop and rice-aquaculture in the Mekong Delta was conducted in July, 2013 which aimed to (1) Assess the main resources of the households; (2) Analyze factors impacting the net income and (3) Propose solutions for improving the net income for rice production, rice-upland crop and rice-aquaculture of households in the Mekong Delta. The analysis method was based on the descriptive statistics, and the multiple linear regressions. The study results showed that: (1) The educational levels of the household heads were low; (2) The farmland was large with 1.95 hectare per household; (3) There are three groups of household having the main net income from agricultural production, and the second net income from the non-agricultural activity; (4) The net income of the mono rice production households was affected by the participation association of the household heads and the farmland area;

Keywords: household, mekong delta, mono rice production, net income, rice - aquaculture, rice –upland crop.

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The Factors Affecting the Net Income of the Households for Mono Rice Production, Rice-Upland Crop and Rice-Aquaculture in the Mekong Delta of Vietnam

Nguyen Quang Tuyen

Abstract- The study on the factors affecting the net income of the households for mono rice production, rice-upland crop and rice-aquaculture in the Mekong Delta was conducted in July, 2013 which aimed to (1) Assess the main resources of the households; (2) Analyze factors impacting the net income and (3) Propose solutions for improving the net income for rice production, rice-upland crop and rice-aquaculture of households in the Mekong Delta. The analysis method was based on the descriptive statistics, and the multiple linear regressions. The study results showed that: (1) The educational levels of the household heads were low; (2) The farmland was large with 1.95 hectare per household; (3) There are three groups of household having the main net income from agricultural production, and the second net income from the non-agricultural activity; (4) The net income of the mono rice production households was affected by the participation association of the household heads and the farmland area; (5) the net income of the rice-upland crop households was impacted by the family man-days and the production investment in materials; and (6) the net income of the rice-aquacultural households was effected by the educational levels, the family man-days and the farmland area. Based on the study results, some solutions for improvement of the household net income were proposed.

Keywords: household, mekong delta, mono rice production, net income, rice - aquaculture, rice –upland crop.

I. Introduction

The land of the Mekong Delta occupied 4.000.000 hectares in which the farmland accounted for 65%. The Mekong Delta has contributed at 56% of rice production, 70% of fruit production and 57% of aquaculture production of whole country (General Statistics Organization, 2012). However, there are several difficulties of the limitation of human resource for the human development in the Mekong Delta (Duong Ngoc Thanh and Pham Duc Thuan, 2016).

In recent years, to adapt with the change of the natural, economical and social conditions, the households have used suitably resources, improved production capacities and changed the suitable farming systems such as the systems of mono rice production, rice_upland crop and rice_aquaculture which have contributed in improving the income and the life of households. However, the social life of the households has slowly changed, the natural resources have negatively changed which have influenced the environmental ecology systems in the process of the economical development of the region (Le Quang Tri and Vo Thi Guong, 2006).

Therefore, the theme titled: "The factors affecting the net income of the households for mono rice production, rice-upland crop and rice-aquaculture in the Mekong Delta of Vietnam" was conducted to find out the solutions for improving the net income of the households.

II. Objectives of Study

There are three specific objectives of study such as (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 mono rice production, rice-upland crop and rice-aquaculture in the study site.

III. Methodology of Study

a) Methods of choosing study site and sampling

- The households who are in An Giang, Kien Giang and Dong Thap provinces selected the mono rice production and rice-upland crop.
- The households who are in Vinh Long province, Cantho city and Hau Giang province selected the rice-upland crops and rice-aquaculture.
- The rice-aquaculture were chosen by the households in Bac Lieu province.
- Total sampling of 220 households was distributed by 53 households for rice-upland crops ; 85 households for mono rice production; and 82 households for rice-aquaculture production.

b) Methods of data collection and analysis

The secondary data were collected beside the primary data, which were interviewed from 220

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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. *Educational level*

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

Table 1: The educational level of the householders in the three production groups

Education of householders	Rice-Upland crops		Mono Rice crops		Rice-Aquaculture		Total	
	Number of householders	%	Number of householders	%	Number of householders	%	Number of householders	%
Illiterate	0	0	2	2,4	4	4,8	6	2,7
Primary school	16	30,2	36	42,3	29	35,4	81	36,8
Secondary school	29	54,7	34	40,0	29	35,4	92	41,8
High School	8	15,1	12	14,1	18	22,0	38	17,3
College	0	0	0	0	1	1,2	1	0,5
University	0	0	1	1,2	1	1,2	2	0,9
Total of householders	53	100,0	85	100,0	82	100,0	220	100,0

Source:Household interviewed in 2013

ii. *Farm land*

In 2013, the farm land was over 2 hectares per household obtained at the highest proportion while the farm land under 1 hectare per household ranged the lowest one. For the Rice-Aquaculture production group and Rice-Upland crop production group with the 1- 2 hectare farm land per household accounted for the highest proportion while the Mono Rice production group with the farm land was over 2 hectares per household occupied at the highest proportion. The average farm land per household in the three production groups was quite big; it was in round of 2 hectares in 2013.

Farm land was considered as the basic resource for the livelihood activities of the farm households. Moreover, the farm land was also a property of farm households to access the credits from the banks for the production works or their life.

Table 2: Farm land of the farm households in three production groups

Farm land	Rice-Upland crops		Mono Rice crops		Rice-Aquaculture		Total	
	No. of households	%	No. of households	%	No. of households	%	No. of households	%
<1 ha	15	28,3	23	27,1	19	23,2	57	25,9
1- 2 ha	20	37,7	22	25,9	38	46,3	78	35,5
>2 ha	18	34,0	40	47,1	25	30,5	85	38,6
Household total	53	100,0	85	100.0	82	100,0	220	100,0
Average of landarea (ha)	1,68		2,25		1,93		1,95	

Source:Household interviewed in 2013

iii. *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 Mono Rice crop household obtained the highest in the three production household groups, then, NI total per Rice-Aquaculture household reached the second range while NI total per Rice-Upland crop household achieved the lowest. Net income total per Mono Rice crop household was higher than those of Rice-Aquaculture household and Rice-Upland crop household because NI of doing farming and livestock per Mono Rice crop household contributed more than those of Rice-Aquaculture household and Rice-Upland crop household in 2013.

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Table 3: Structures of the net incomes per farm household between different production groups in a year

Source of net income (NI)	Rice-Upland crops household		Mono Rice crops household		Rice-Aquaculture household		Total	
	Amount (MillionVND)	%	Amount (MillionVND)	%	Amount (MillionVND)	%	Amount (MillionVND))	%
Farming	58,64	67,47	88,36	77,09	61,46	63,27	69,49	69.87
Livestock	4,98	5,73	9,49	8,28	6,27	6,45	6,91	6,95
Non-farm	23,30	26,80	16,77	14,63	29,41	30,28	23,05	23,18
NI total	86,92	100,00	114,62	100,00	97,14	100,00	99,45	100,00

Source:Household interviewed in 2013

b) *Analysis of the factors affecting the net income of the households for mono rice production, rice-upland crop and rice-aquaculture production group*

For the Mono Rice crop production group, the NI of the household participating in the local associations correlated positively. For instance, the NI of the household who participated in the local associations increased 33.5 millions VND. Moreover, the farmland area was also correlated with the NI of the household. It showed that the NI of the household increased 40.4 millions VND when the farmland was enlarged by one hectare which could be interpreted that the total of production cost reduced from discounting prices of the material inputs when the household bought with a large amount in 2013. Therefore, the more farm land area got more NI.

In the Rice-Upland crop production group, the family labors correlated positively with the NI of the household. It showed that the NI of the household increased 0.1 million VND when the increment of the family labor was added by one man-day. Investment for material inputs was also correlated with the NI of the household. It illustrated that the NI of the household increased 0.35 million VND when the household increased one million VND for the material inputs in 2013.

In Rice-Aquaculture production group, the educational level of the householder correlated well with the NI of the household. It showed that the NI of the household increased 10.37 millions VND when the education of the householder raised one level in 2013. It could be explained that the householder could access with the advanced techniques in the process of farming to produce the good products when he or she reached a certain level of education. Besides, the NI of the household increased 0.09 million VND when the increment of the family labor was supplied by one man-day and the NI of the household also increased 27.99 millions VND when the farm land area was enlarged by one hectare in 2013.

Table 4: Analysis of the factors affecting the net income of the households for mono rice production, rice-upland crop and rice-aquaculture production in 2013

Independent variables	Mono rice household		Rice-upland crops household		Rice-aquaculture household	
	Regression Coefficient	Value P	Regression Coefficient	Value P	Regression Coefficient	Value P
Constant	-33.354	0.170	25.238	0.275	-0.451	0.980
X1: Educational level of householder	13.167	0.232	¯6.172	0.516	10.375	0.089
X2: Participating in union (yes, no)	33.511	0.096	8.047	0.541	-14.440	0.256
X3: Family labors (man-day)	0.074	0.106	0.108	0.000	0.090	0.000
X4: Livestock (yes, no)	5.936	0.792	10.612	0.480	2.771	0.810
X5: Investment for material inputs (million VND)	0.012	0.928	0.350	0.000	0.027	0.733
X6: Farm land (ha)	40.494	0.000	4.300	0.358	27.991	0.000
Observation number	85		53		82	
Sig.F	0.000		0.000		0.000	
R	0.769		0.733		0.769	
R^2	0.591		0.538		0.591	
Durbin-Watson	2.025		2.219		2.118	

Source: Household interviewed in 2013

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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 including the mono rice production, rice-upland crop and rice-aquaculture production groups were recommended such as:

The mono rice production households should participate in the local associations and enlarge the farm land area to increase their net incomes.

The rice-upland crop production households should optimize using their family labors and invest the material inputs in the production to improve their net incomes.

In the rice-aquaculture production households, the educational level of the householders and the family members should be strengthened, the family labors should be used appropriately and the farm land area should be enlarged enough to improve the net incomes of the households.

V. Conclusion

The educational and training level of the householders were still low and the farmland area of the households was quite high in three production household groups, in which the farmland per rice-aquaculture production household ranged from one to two hectares occupying the highest rate, while the farmland per mono rice production household occupied over two hectares accounting for the highest rate. The main NI of three production household groups was from the agriculture, then, from the non farm activities. The mono rice production households reached the highest in the total of the net income.

The householders participating in the local associations and the large scale of the farmland did the increment of the net income in the mono rice production households.The man-day number of the family labors and the investment of the material inputs in the production increased the NI in the rice-upland crop production households. The educational level, the participation of the family labors in the production and the farmland scale helped increasing the NI in the rice-aquaculture production households.

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