A STUDY ON SOME FACTORS WHICH INFLUENCE MANAGEMENT OF AGRICULTURAL LAND USE IN SONTAY TOWN, HANOI CITY, VIETNAM

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Abstract. The sustainable land use management relates to the current and future areas of economics, society, culture and environment, limits land and water degradation and reduces production costs. The study aims to find out some limiting factors in the management of agricultural land use in Sontay Town. The impact of the factors on the management of agricultural land use was analyzed by using Spearman Rank Correlation Coefficient in SPSS 17.0 with significant level 0.05 through the investigation of 160 households from 4 communes. The results of the research show that the local people realize that there has been a remarkable change in the land use management over the period and the main factors which influence the management of agricultural land use are land policies, policies supporting capital, techniques; characteristics of soil, scale of the area of farm land, and the roles of media and information.

Keywords: management of land use, agricultural land, land management, Sontay

INTRODUCTION

Land is a natural resource, valuable national property, heritage of mankind, a prerequisite for all manufacturing processes. Land use is the way in which humans exploit the land and the natural resources which are associated with the land to serve their benefits [Meyer 1996]. Land uses and their changes should be determined by land-use management practices including geographic distribution of land, status of land resources and their suitability, land use dynamics, policy interventions, socio-economic practices and compulsions, science and technology inputs, and so on. Therefore, land use management practices are carefully considered in order to develop

an integrated land use policy framework [Gautam and Raghavswamy 2004]. Land use management focuses on the land and the way in which the land is used for the purposes of manufacturing, preservation and aesthetic [Verheye 2010]. Land use management is the combination of all tools and techniques used by the authorities in order to manage the way in which the land is used and developed including planning, land use planning, law, land use rights, land valuation and real estate information. Management of sustainable land use relates to the economics, society, culture and environment, present and future, limits soil and water degradation and reduces production costs.

Sontay Town is a third grade urban area situated in the north-west of Hanoi city, with a total area of 113.5 km^2 (923.62 m^2 per capita), and the average population density of 1083 people/km^2. At the time of Mordernization-Industrilization, Sontay Town has been facing challenges of the process of expanding Hanoi Capital with increasing pressure of land demand for industry and urban development; organizing resettlement and employment change for a large number of farmers who have no cultivation land. The purpose of this research is to find out the factors which have impact on the management of agricultural land use in order to enhance the efficiency of land management in Sontay Town.

Research hypothesis. The change in land use management is very crucial to adapt to the trend of agriculture development in the industrialization and modernization period. It is assumed that there are relationships among the technical factors in agricultural production, socioeconomic factors, policy mechanism and the role of community with agricultural land use management.

METHODOLOGIES

Primary data. the primary data was collected from 160 households which were randomly selected from 4 representative communes surveyed of 2 areas investigated. Duong Lam commune and Vien Son commune represent plain area; Co Dong commune and Kim Son commune represent semi-mountain and semi-plain area.

Secondary data. The secondary data was collected from administrative organizations, land operation units in the research area and previous related studies.

METHOD OF DATA PROCESSING

Both qualitative and quantitative analyses were used in the study. Descriptive analysis, such as means, frequency counts, percentages, and standard deviation, were used in describing the characteristics of each area. Likert scales with five-point bipolar response [Likert 1932] were also used to measure people's attitude to agricultural land use management and the factors which influence it. These scales range from the lowest to highest level of the local people's attitude as follows – table 1.

Table. 1. Rating scales

Level	Point	Rating scale
Very good/ highly interested /rich/very large/very high	5	≥ 4.2
Good/ interested/good/large/high	4	3.4–4.19
Moderate/ moderate interested/ moderate/ moderate large/moderate	3	2.6–3.39
Bad/ slightly interested /poor/small/low	2	1.8–2.59
Very bad/ very slightly interested /very poor/very small/very low	1	< 1.8

Besides those, the T-test inspection was also used to test the difference in the quotas between the 2 surveyed areas. According to the theory, if X_1, X_2 are independent random variables picked from two overall subjects which are expected to be μ_1 and μ_2 respectively. To test the equality of the average rates of the two overall subjects, hypothesis H_0: $\mu_1 = \mu_2$ and opposite theory H_1: $\mu_1 \neq \mu_2$ are built. To come to the conclusion that hypothesis H_0 is accepted or rejected, we will use the appropriate inspection. Based on the value of P (*p*-value) (SPSS abbreviates *p*-value to sig) to conclude that hypothesis H_0 is accepted or rejected. If the p-value (sig.) is ≤ α (significant level), hypothesis H_0 is rejected. It means that there is a significant relationship among the variables which need inspecting. If the p-value (sig.) > α (significant level), hypothesis H_0 is accepted. It means that there is no relationship among the variables which need inspecting.

Observation values of the areas were ordinal data. So Spearman Rank Correlation Coefficient was used to measure the degree of relationship between the independent variables and the land use management. The null hypothesis is: "There is no relationship between two variables," while the alternative hypothesis is: "There is a relationship between two variables". The following formula was used to calculate the co- efficiency:

$$r_s = 1 - \frac{6\sum d^2}{n(n^2 - 1)}$$

Where: d^2 = is the sum of the squared differences between the pairs of ranks, and
   n = is the number of pairs.
Significance analysis of r_s was done by t statistics

$$t = \frac{r_s \sqrt{n-2}}{\sqrt{1 - r_s^2}}$$

Null hypothesis was rejected when $t > t_{\text{table (á/2(n-2))}}$

The general interpretations of the strength of a relationship (effect sizes) as follows:

Table 2. Category of interpretations of the strength of a relationship (effect sizes).

General interpretation of the strength of a relationship	r (coefficient correlation)
Perfectly negative correlation	-1.00
Extremely negative correlation	- 0.75 – -0.99
Highly negative correlation	-0.50 – -0.74
Moderately negative correlation	-0.25 – -0.49
Slightly negative correlation	-0.01 – -0,24
No correlation	0
Slightly positive correlation	0.01 – 0.24
Moderately positive correlation	0.25 – 0.49
Highly positive correlation	0.5 – 0.74
Extremely positive correlation	0.75 – 0.99
Perfectly positive correlations	1.00

Source: Zulueta and Costales [2005].

The acceptable level of significance was set at 0.05 and confidence level of 95 percent. The data were entered in a coding sheet and statistically analyzed using the software SPSS version 17.0.

RESULTS AND DISCUSSION

The study generally aims to analyze the factors which have impact on the management of agricultural land use in order to enhance the efficiency of land management in Sontay Town. This part is divided into three sections. The first section describes agricultural land use status in Sontay Town. The second section refers to land use management in Son Tay which focuses on land use planning, management of land use planning and plans for land use; organizing the implementation of legal documents on land use management; the allocation and management of the implementation of land use rights; land valuation; and land use rights information market. The third section analyzes the factors affecting the management of agricultural land use including group of policy factors, group of natural and technical factors, group of economic and social factors, and roles of community.

AGRICULTURAL LAND USE STATUS

Total natural area of the town is 11353.22 ha; in which, agricultural land occupies 43.47%, non-agricultural land accounts for 54.66%, the rest is unused land with 1.86% (Division of Natural Resources and Environment, 2011). The area of

agricultural land of the town in 2010 was 4935.36 hectares, decreasing by 233.75 hectares compared with the area in 2005, in which the area of land used for agricultural production was 4050.10 hectares, accounting for 82.06% of the area of agricultural land and reducing by 139.62 hectares in comparison with the area in 2005. The forestry area was 719.35 hectares, occupying 14.58% of the area of agricultural land and declining by 93.2 compared to the area in 2005. The area of aquaculture land was 164.91 hectares, falling by 0.93 hectares in comparison with the area in 2005. The area of other agricultural land was 1.0 hectare (Division of Statistics in Son Tay town, 2011). The town had some Land Use Types (LUTs) including rice paddy LUT , rice paddy – vegetable LUT, vegetable LUT, flower and landscaped plant LUT, fruit trees LUT and aquaculture LUT. In plain area had 4 LUTs and 23 kinds of land use, in which rice paddy – vegetable LUT occupied the largest area of all LUTs. In semi-mountain and semi-plain area there were 5 LUTs and 18 kinds of land use, in which rice paddy – vegetable LUT accounted for the largest of all LUTs. In the past few years, the value of agricultural production accounted for 11% total value of gross production of the town Sontay. Therefore, enhancing the efficiency in management of agricultural land use is extremely important.

AGRICULTURAL LAND USE MANAGEMENT IN SONTAY TOWN

Land use planning, management of land use planning and plans for land use. Sontay town has made plans for planning and implementing supervison of land use planning of the town and all the wards. However, land use planning had various aspects which were not suitable for the reality and it did not reflect the local people's real demands properly and sufficiently. The status of land allocation was slower than the schedule. The investigation results of the local people's perception of land use planning in the town show that the vast majority (91.88%) of the people interviewed knew about the land use planning which was made public. The detailed level of land use planning was evaluated with good level – 63.13% of respondents rated it normal. The majority of households (87.5%) surveyed said that the land use planning alternative had great two-way impact on their land use. 60% of households assumed that land use planning had big influence on making decision on their agricultural land use.

Organizing the implementation of legal documents on land use management. Research results show that people cared for land policies to find the best opportunity to change land use purpose (100% of households considered it choice number 1). Besides, they also wanted to avoid problems of illegal land use and to properly implement land user's rights and responsibilities. Most of the local people (more than 80% of households questioned) were interested in land policies, 46% of the repondents surveyed stated that it's good to issue and follow legal documents on land. They thought that land policies had great effects on changing their decision making on their agriculture land use.

The allocation and management of the implementaion of land use rights. Land allocation, land leasing and land aquisition have been performed well. The order and procedures have been in place and there is now no more inapproroate land allocation. Planning and infrastructure design of residential areas before land allocation have seriously been considered. The land allocation has been carried out strictly and appropreately. Up to now, the town has allocated agricultural land to households for stable use with 100%. Inspection and checking the state of land use is regularly done to ensure legal land use and highly economic efficiency. The study results show that the majority of the respondents (68%) stated that they were interested or very interested in obtaining land use rights. However, they rated this task performance moderate. But they were clearly aware of the impact of allocation of land use rights on their agricultural land use decision making.

Land valuation. People's Commitee of the city has issued land prices according to the regulations and adjusts them every year. The research results indicate that the majority of the respondents (91.26%) showed their interest in land price according to the regulations as well as agricultural land price on the market. However, they did not highly appreciate the promulgation and implementation of land price according to the regulations (40.63% of respondents). According to the respondents, the land valuation did not have a big impact on their agicultural land use decision making.

Land use rights information market. Management and development of land use rights market is a new task. So far, the market of land use rights has not been managed. Land transactions were mainly spontaneous between buyers and sellers. The town has not had an agency to manage this field. The research results show that up to 91.88% of respondents were interested in the information on land use rights market. Howerver, they did not appreciate the performance of this task in the local area. Up to 75.63% considered the provision of the land use rights market information poor and very poor. According to them, the land use rights information market had a major influence on their agricultural land use decision.

Some factors affecting the management of agricultural land use in Sontay Town

Group of policy factors. The investigation findings of the local people's assessment of policy mechanism, land policies, support policies, and other social policies are summarized in Table 3 and Figure 1.

Table 3. Investigation results of policy mechanism

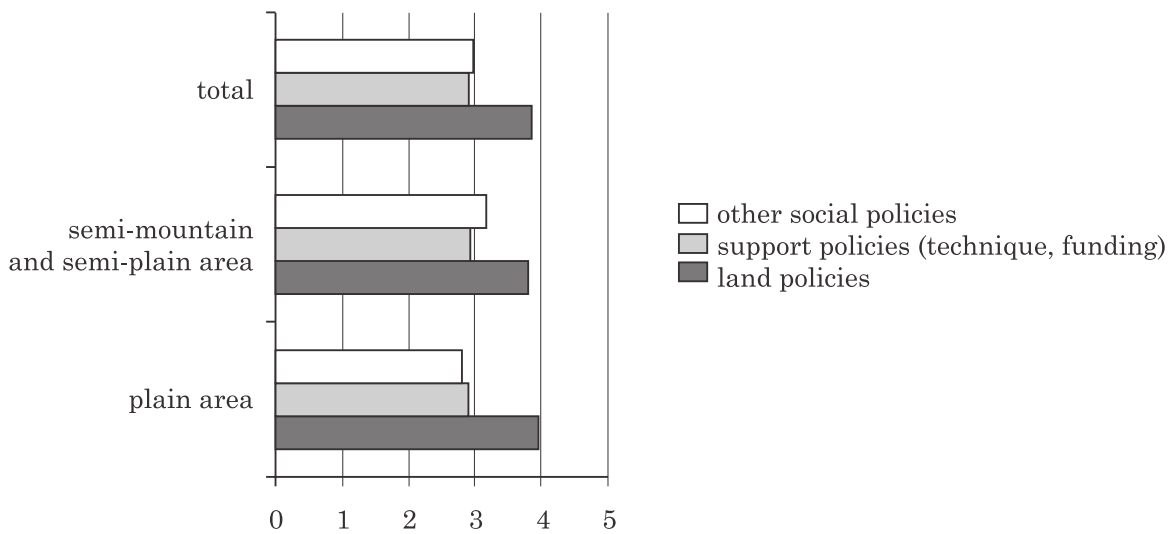| Criteria	Plain area n = 80		Semi-mountain and semi-plain area n = 80		Total N = 160	
	no of respondents	%	no of respondents	%	no of respondents	%
Land policies	80	100.00	80	100.00	160	100,00
very good	17	21.25	14	17.50	31	19.38
good	46	57.50	43	53.75	89	55.62
moderate	12	15.00	16	20.00	28	17.50
poor	5	6.25	7	8.75	12	7.50
very poor	0	0.00	0	0.00	0	0.00
Mean	3.94		3.80		3.87	0.00
P-value					0.284	
Support policies (technique, funding)	80	100.00	80	100.00	160	100.00
very good	6	7.50	6	7.50	12	7.50
good	5	6.25	8	10.00	13	8.13
moderate	50	62.50	47	58.75	97	60.63
poor	10	12.50	15	18.75	25	15.62
very poor	9	11.25	4	5.00	13	8.12
Mean	2.89		2.98		2.93	
P-value					0.571	
Other social policies	80	100.00	80	100.00	160	100.00
very good	3	3.75	4	5.00	7	4.38
good	15	18.75	17	21.25	32	20.00
moderate	40	50.00	50	62.50	90	56.25
poor	8	10.00	9	11.25	17	10.62
very poor	14	17.50	0	0,00	14	8.75
Mean	2.81		3.2		3.01	
P-value					0.007	

Fig. 1. Asessment results of policy mechanism

It can be seen from the Table that land policy mechanism was rated relatively good, 19.38% of respondents ranked land policy mechanism in the past period very good, 55.62% of them considered it good and only 7.5% of households thought it poor. It is also noteworthy that land policies were highly appreciated by the local people with the average level: 3.87. There were no differences between the two areas (the average rates of the two areas were 3.94 and 3.80 respectively). Apart from that, the technical and funding support policies were assessed at an average rate with the value: 2.93. There were no differences between two areas (2.89 and 2.98). In addition, social policies were rated moderate by nearly 60% of the respondents. They also assessed other social policies at the average rate with 3.01. There was a clear difference between the plain area and semi-mountain and semi-plain area (the plain area has the average of 2.81 compared to 3.20 of semi-mountain and semi-plain area). The people in semi-mountain and semi-plain area are significantly more aware of social policies than those in the plain. This shows that the prior policies are implemented in accordance with certain regions.

Table 4. The relationships between policy mechanism factors and agricultural land use management

Independent variables	Agricultural land use management				
	land use planning, management of land use planning and plans for land use	implementation of legal documents	allocation and management of the implementaion of land use rights	land evaluation	real estate information market
Land policies	0.558**	0,748 **	0.288**	0.510**	0.427**
Supportive policies (technique, funding)	0.321**	0,552**	0.217**	0.373**	0.383**
Other social policies	0.214**	0,129	-0.027	0.221**	0.009

The research results (table 4) show that there were positive relationships between land polices and agricultural land use management from moderate to high levels: 0.288 < r_s < 0.748; P= 0.01. It is noteworthy that support policies had a highly positive relationship with promulgation and implementation of legal documents with r_s = 0.552; P= 0.01. Apart from those, there were a slightly positive relationship between support policies and the allocation and management of the implementaion of land use rights with r_s = 0.217; P= 0.01 and moderately positive relationships between support policies and land use planning, management of planning and plans for land use, land evaluation, land information market (0.321 < r_s < 0.383; P= 0.01). It can also be seen from the table that other social policies had slightly positive relationships with planning, management of planning and plans for land use (r_s = 0.214; P= 0.01) and land evaluation (r_s = 0.221; P= 0.01). However, there were no relationships between other social policies and implementation of legal documents, allocation and management of the implementaion of land use rights, real estate information market. In other words, the significant change in land policies and other supportive policies on technique and fund leads to positive change on the management of agricultural land use.

Group of natural and technical factors. The survey results of group of natural and technical factors including characteristics of soil, crops and crop varieties, crop structure, and cultivated area given by the local people are presented in Table 5 and Figure 2.

Table 5. Survey results of group of natural and technical factors

Criteria	Plain area $n = 80$		Semi-mountain and semi-plain area $n = 80$		Total $N =160$	
	no. of respondents	%	no. of respondents	%	no. of respondents	%
1	2	3	4	5	6	7
Interest in soil characteristics	80	100	80	100	160	100
highly interested	27	33.75	45	56.25	72	45.00
interested	36	45.00	15	18.75	51	31.88
moderately interested	12	15.00	18	22.50	30	18.75
slightly interested	5	6.25	2	2.50	7	4.37
very slightly interested	0	0.00	0	0.00	0	0.00
Mean	4.06		4.29		4.18	
P-value					0.109	
Interest in selection of crops and crop varieties	80	100.00	80	100.00	160	100.00
highly interested	17	21.25	14	17.50	31	19.38
interested	46	57.50	43	53.75	89	55.62

1	2	3	4	5	6	7
moderately interested	12	15.00	16	20.00	28	17.50
slightly interested	5	6.25	7	8.75	12	7.50
very slightly interested	0	0.00	0	0.00	0	0.00
Mean	3.94		3.80		3.87	
P-value					0.284	
Interest in crop structure	80	100.00	80	100.00	160	100.00
highly interested	16	20.00	19	23.75	35	21.88
interested	54	67.50	47	58.75	101	63.13
moderately interested	8	10.00	7	8.75	15	9.37
slightly interested	2	2.50	1	1.25	3	1.87
very slightly interested	0	0.00	6	7.50	6	3.75
Mean	4.03		3.90		3.96	
P-value					0.352	
Cultivation area	80	100.00	80	100.00	160	100.00
very large (≥2000 m^2)	3	3.75	4	5.00	7	4.38
large (1700 – 2000m^2)	48	60.00	52	65.00	100	62.50
moderately large (1400 – 1699 m^2)	21	26.25	14	17.50	35	21.88
small (1100 – 1399 m^2)	8	10.00	9	11.25	17	10.62
very small (<1100 m^2)	0	0.00	1	1.25	1	0.62
Mean	3.58		3.61		3.59	
P-value					0.757	

Research results in Table 5 and Figure 2 show that characteristics of soil, selection of crops and varieties of crop and crop structure influenced agricultural land use efficiency. Up to 76.88% of respondents were interested in characteristics of soil, the rate of interest was high with 4.18 and there were no differences between the two areas with 4.06 and 4.29 respectively. 55% of the people surveyed cared about crop selection; 19.38% of them were very interested in crop selection and the rate of interest was also high with 3.87. There were no differences between two areas (the average rates were 3.94 and 3.80 respectively). It should be noted that up to 85.01% of respondents paid attention to crop structure. The average rate was high with 3.96 and there were no differences between the two areas. The average cultivated

area was big with the high average rate 3.59. Up to 84% of respondents have 1400-2000 m^2 of cultivated area. The average rates of the two areas were 3.58 and 3.61 respectively. The differences between two areas cannot be found.
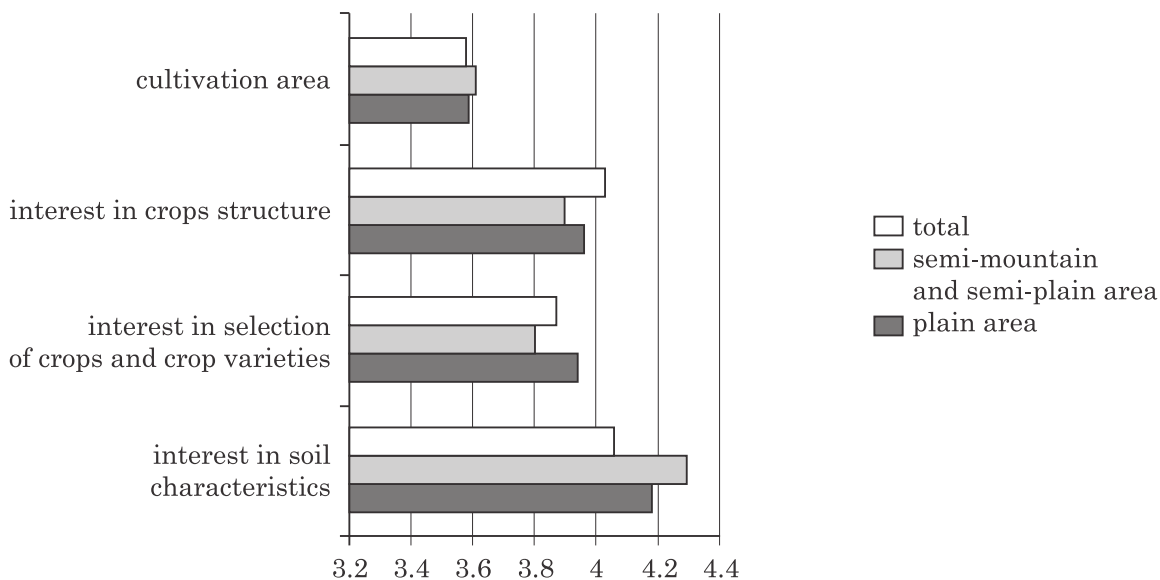

Fig. 2. Asessment results of group of natural and technical factors

The relationships between natural and technical factors and agricultural land use management were shown in Table 6.

Table 6. The relationships between natural and technical factors and agricultural land use management

Independent variables	Agricultural land use management				
	land use planning, management of land use planning and plans for land use	implementation of legal documents	allocation and management of the implementaion of land use rights	land evaluation	real estate information market
Soil properties	0.758**	0.322**	0.161*	0.325**	0.110
Crops and crop varieties	0.614**	0.364**	0.323**	0.206**	0.318**
Crop structure	0.417**	0.267**	0.269**	0.260**	0.312**
Cultivated area	0.515**	0.321**	0.209**	0.376**	0.236**

The results show that the positive relationship between soil properties and land use planning, management of land use planning and plans for land use was very high with $r_s = 0.758$; $P = 0.01$. The positive relationship between soil properties and agricultual land use management in terms of implementation of legal documents and land evaluation was moderate with $0.322 < r_s < 0.325$; $P = 0.01$. Besides, soil properties

had a slightly positive relationship with allocation and management of the implementaion of land use rights ($r_s = 0.161$; $P = 0.05$). There was no relationship between soil properties with land information market.

It is interesting to note that cultivated area had a highly positive relationship with land use planning, management of land use planning and plans for land use ($r_s = 0.515$; $P = 0.01$), moderately positive relationships with implementation of legal documents and land evaluation ($0.321 < r_s < 0.376$; $P = 0.01$), and slightly positive relationships with allocation and management of the implementaion of land use rights and real estate information market ($0.209 < r_s < 0.236$; $P = 0.01$).

It should also be noted that the selection of crop structure had moderately positive relationships with land use planning, management of planning and plans for land use: $r_s = 0.417$; $P = 0.01$, implementation of legal documents: $r_s = 0.267$; $P = 0.01$, allocation and management of the implementaion of land use rights: $r_s = 0.269$; $P = 0.01$, land evaluation: $r_s = 0.260$; $P = 0.01$, and real estate information market: $r_s = 0.312$; $P = 0.01$.

Another noticeable thing is that crop varieties and crops had a highly positive relationship with land use planning, management of planning and plans for land use: $r_s = 0.614$; $P = 0.01$; moderately positive relationships with implementation of legal documents: $r_s = 0.364$; $P = 0.01$, allocation and management of the implementaion of land use rights: $r_s = 0.323$; $P = 0.01$, real estate information market: $r_s = 0.318$; $P = 0.01$ and a slightly positive relationship with land evaluation: $r_s = 0.206$, $P = 0.01$.

In general, group of natural and technical factors has high positive influence on agricultural land use management in term of land use planning, management of land use planning and plans for land use. Thus, when planning for land use, the above factors should be taken into considerstion.

Group of economic and social factors.

Group of economic and social factors includes household economics, cultivation level and product consumption market. The survey results were shown in Table 7 and Figure 3.

Table 7. Survey results of group of economic and social factors

Criteria	Plain area n = 80		Semi-mountain and semi-plain area n = 80		Total N =160	
	no.	%	no.	%	no.	%
1	2	3	4	5	6	7
Economic status of households	80	100.00	80	100.00	160	100.00
rich	0	0.00	0	0.00	0	0.00
good	28	35.00	28	35.00	56	35.00
moderate	46	57.50	52	65.00	98	61.25
poor	6	7.50	0	0.00	6	3.75

cont. table 7

1	2	3	4	5	6	7
very poor	0	0.00	0	0.00	0	0.00
Mean	3.28		3.35		3.31	
P-value					0.381	
Educational attainment	80	100.00	80	100.00	160	100.00
very high (higher education)	2	2.50	5	6.25	7	4.38
high (grades 10–12)	54	67.50	47	58.75	101	63.13
moderate (grades 6–9)	18	22.50	19	23.75	37	23.12
low (grades 3–5)	4	5.00	7	8.75	11	6.87
very low (lower grades 3)	2	2.50	2	2.50	4	2.50
Mean	3.63		3.58		3.60	
P-value					0.689	
Product consumption market	80	100.00	80	100.00	160	100.00
very good	3	3.75	4	5.00	7	4.38
good	17	21.25	9	11.25	26	16.25
moderate	45	56.25	44	55.00	89	55.62
bad	8	10.00	14	17.50	22	13.75
very bad	7	8.75	9	11.25	16	10.00
Mean	3.30		2.81		2.92	
P-value					0.156	

The data show that the majority of households had moderate and good levels of economic growth with 96.25% and poor households accounted for only 3% and the rate was moderate with 3.31. There were no differences in this criterion between the two areas. The noticeable thing is that the local people had high educational attainments. Up to 90.63% of respondents graduated from middle school and the differences between the two areas cannot be found. According to the local people's perception, 55.62% of the households stated that the product consumption market was at moderate level, 23.75% of the respondents considered it bad and very bad. The average rate of this criterion was moderate with 2.92. There were no differences between the two areas.
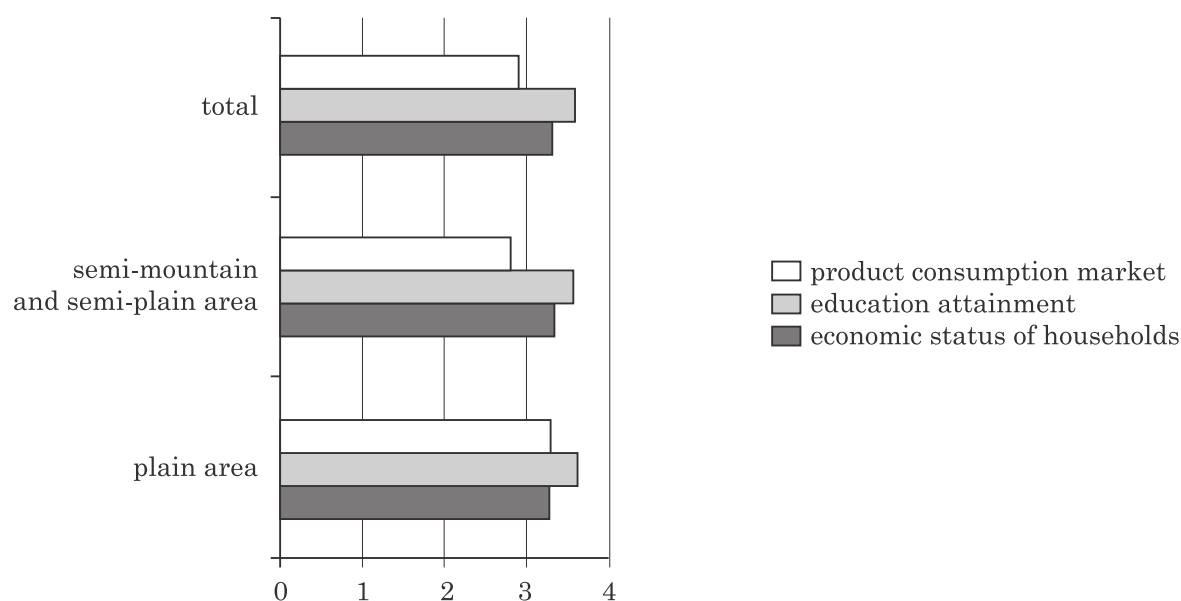
Fig. 3. Asessment results of group of economic and social factors

The relationships between economic and social factors and agricultural land use management were shown in Table 8.

Table 8. The relationships between economic and social factors and agricultural land use management

Independent variables	Agricultural land use management				
	land use planning, management of land use planning and plans for land use	implementation of legal documents	allocation and management of the implementaion of land use rights	land evaluation	real estate information market
Economic status of households	0.045	0.116	0.052	0.113	-0.072
Educational attainment	0.034	0.123	-0.021	0.102	0.174*
Product consumption market	0.221**	0.208**	0.203*	0.168*	0.315**

The results in table 8 show that product consumption market had a moderately positive relationship with real estate information market (r_s = 0.315; P = 0.01), slightly positive relationships with land use planning, management of land use planning and plans for land use (r_s = 0.221; P = 0.01), implementation of legal documents (r_s = 0.208; P = 0.01), allocation and management of the implementaion of land use rights (r_s = 0.203; P = 0.05) , land evaluation (r_s = 0.168; P = 0.05). There was no relationship between economic status of households and agricultural land use management. The Table 6 also shows a slightly positive relationship between educational attainments and real estate information market (r_s = 0.174; P = 0.05) but

there were no relationships between educational attainments with land use planning, management of land use planning and plans for land use, implementation of legal documents, allocation and management of the implementaion of land use rights and land evaluation.

Roles of community. Roles of community in agricultural land use of households were evaluated through the roles of local authorities, roles of agricultural extension and forestry extension organizations, roles of other social organizations and roles of media and information. The survey results were shown in Table 9 and Figure 4.

Table 9. Survey results of roles of community

Criteria	Plain area $n = 80$		Semi-mountain and semi-plain area $n = 80$		Total $N = 160$	
	no.	%	no.	%	no.	%
1	2	3	4	5	6	7
Local authorities	80	100.00	80	100.00	160	100.00
very good	1	1.25	0	0.00	1	0.63
good	20	25.00	27	33.75	47	29.38
moderate	44	55.00	45	56.25	89	55.62
bad	9	11.25	5	6.25	14	8.75
very bad	6	7.50	3	3.75	9	5.62
Mean	3.01		3.2		3.11	
P-value					0.134	
Agricultural extension, forestry extension organizations	80	100.00	80	100.00	160	100.00
very high	3	3.75	4	5.00	7	4.38
high	19	23.75	16	20.00	35	21.87
moderate	33	41.25	41	51.25	74	46.25
low	18	22.50	10	12.50	28	17.50
very low	7	8.75	9	11.25	16	10.00
Mean	2.91		2.95		2.93	
P-value					0.811	
Other social organizations	80	100.00	80	100.00	160	100.00
very good	15	18.75	14	17.50	29	18.13
good	39	48.75	41	51.25	80	50.00
moderate	15	18.75	15	18.75	30	18.75

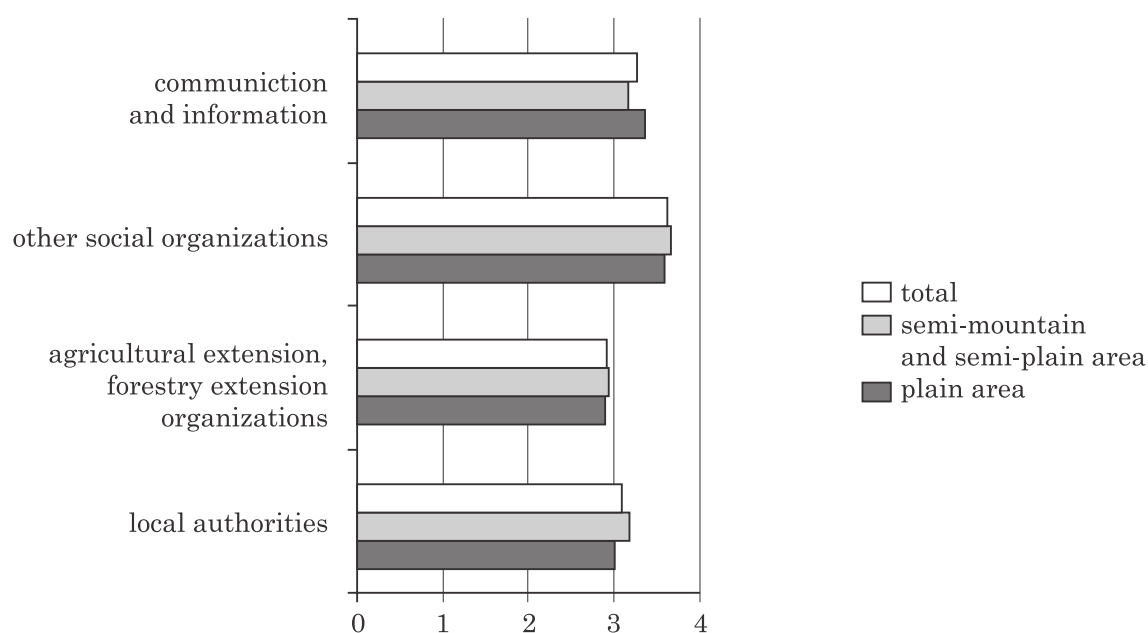| 1	2	3	4	5	6	7
bad	5	6.25	6	7.50	11	6.87
very bad	6	7.50	4	5.00	10	6.25
Mean	3.61		3.69		3.65	
P-value					0.656	
Communication and information	80	100.00	80	100.00	160	100.00
very good	3	3.75	2	2.50	5	3.13
good	45	56.25	37	46.25	82	51.25
moderate	17	21.25	23	28.75	40	25.00
bad	9	11.25	10	12.50	19	11.87
very bad	6	7.50	8	10.00	14	8.75
Mean	3.38		3.19		3.28	
P-value					0.245	

Fig. 4. Asessment results of roles of community

The survey results show that roles of local authorities were highly appreciated by 0.63% and 29.38% of the respondents. The average rate of this criterion was considered moderate with 3.11. There were no differences between two areas, and 55.62% of them ranked these roles moderate. Also, the roles of agricultural extension and forestry extension organizations were assessed at moderate rate with 2.93. There were 21.87% of respondents who ranked these roles good and 46.25% of them

thought these roles moderate. There were no differences between the two areas because the average rates were 2.91 and 2.95 respectively. Apart from those, the roles of other social organizations were highly appreciated with the high average rate 3.65. About 18.13% of the respondents rated these roles very good and 50% of the respondents considered them good. The differences between the two areas cannot be found because the average rates were 3.61 and 3.69 respectively. Besides, the roles of media and information system were considered moderate with 3.28. About 51.25% of the respondents ranked these roles high and 25% regarded them moderately. There were no differences between the two areas (average rate of 3.38 and 3.19).

The influence of roles of community on agricultural land use management in Sontay were shown in Table 10.

Table 10. The relationships between roles of community and agricultural land use management

Independent variables	Agricultural land use management				
	land use planning, management of land use planning and plans for land use	implementation of legal documents	allocation and management of the implementaion of land use rights	land evaluation	real estate information market
Local authorities	0.250**	0.243**	0.204**	0.193*	0.268**
Agricultural extension, forestry extension organizations	0.411**	0.260**	0.205**	0.283**	0.201*
Other social organizations	0.163*	0.171*	0.209**	0.267**	0.211**
Media and information	0.813**	0.384**	0.338**	0.416**	0.291**

Research results in table 10 show that there were moderately positive relationships between roles of local authorities and land use planning, management of land use planning and plans for land use with $r_s = 0.250$; $P = 0.01$, real estate information market ($r_s = 0.268$; $P = 0.01$). There were slightly positive relationships between roles of local authorities and implementation of legal documents, allocation and management of the implementaion of land use rights, land evaluation ($0.193 < r_s < 0.243$; $P = 0.01$).

The roles of agricultural extension and forestry extension organizations had moderately positive relationships with land use planning, management of land use planning and plans for land use ($r_s = 0.411$; $P = 0.01$), implementation of legal documents ($r_s = 0.260$; $P = 0.01$), and land evaluation ($r_s = 0.283$; $P = 0.01$), and slightly positive relationships with allocation and the implementaion of land use rights ($r_s = 0.205$; $P = 0.01$), and real estate information market ($r_s = 0.201$; $P = 0.01$).

The roles of other social organizations had a moderately positive relationship with land evaluation ($r_s = 0.267$, $P = 0.01$) and slightly positive relationships with land use planning, management of land use planning and plans for land use ($r_s = 0.163$;

P= 0.05), promulgation and implementation of legal documents (r_s = 0.171; P = 0.05), allocation and management of the implementaion of land use rights (r_s = 0.209; P = 0.01), real estate information market (r_s = 0.211; P = 0.01).

There was a extremely positive relationship between the roles of media and information and land use planning, management of land use planning and plans for land use (r_s = 0.813; P = 0.01). However, the roles of media and information had moderately positive relationships with implementation of legal documents (r_s = 0.384; P = 0.01), allocation and management of the implementaion of land use rights (r_s = 0.338; P = 0.01), real estate information market (r_s = 0.291; P = 0.01), and land evaluation (r_s = 0.416; P = 0.01).

CONCLUSION

Sontay Town has a total natural area of 11353.22 hectares in which, agricultural land occupies 43.47%, non-agricultural land accounts for 54.66%, the rest is unused land with 1.86%. The results show that the local people realize that there has been great changes in land use management in the past years and the major factors which influence agricultural land use management are:

In group of policy mechanism factors, land policies have highly positive influence on agricultural land use management in terms of implementation of legal documents; land use planning, management of land use planning and plans for land use and land evaluation. In addition, support policies have highly positive influence on agricultural land use management in terms of implementation of legal documents. Thus, creating appropriate land policies and supportive policies is a crucial task.

Group of natural and technical factors has high impact on agricultural land use management in terms of land use planning, management of land use planning and plans for land use. Therefore, the above factors should carefully be considered when planning for land use.

Group of economic and social factors has slightly positive influence on agricultural land use management. This phenomenon hardly ever happens in developing countries. However, the reason is that Sontay is the place which has convenient geographical location, high goods consumption, well-educated local people and good household economy.

Among roles of community factors, media and information has highly positive influence on agricultural land use management in terms of of land use planning, management of land use planning and plans for land use and moderately positive influence on agricultural land use management in terms of implementation of legal documents, allocation and management of the implementaion of land use rights, land evaluation, real estate information market. Therefore improving system of media and information is necessary for higer efficiency of agricultural land use management.

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BADANIE WPŁYWU ZALEŻNOŚCI WYBRANYCH CZYNNIKÓW NA ROZWÓJ ROLNICZEGO UŻYTKOWANIA GRUNTÓW W MIEJSCOWOŚCI SONTAY, HANOI, WIETNAM

Streszczenie. Zrównoważone użytkowanie gruntów aktualnych obszarów ziemskich zależy i będzie zależeć od ekonomii, społeczeństwa, kultury i środowiska, limitacji gruntów i wody oraz od kosztów produkcji. Badanie ma na celu porównać wybrane czynniki istotne dla użytkowania gruntów rolnych w miejscowości Sontay. Wpływ czynników na użytkowanie gruntów rolnych określano za pomocą współczynnika korelacji rang Spearmana (SPSS) 17.0 na znaczącym poziomie 0,05 poprzez analizę 160 gospodarstw z czterech gmin. Wyniki badań pokazują, że mieszkańcy Sontay zdają sobie sprawę, że miały miejsce znaczące zmiany w użytkowaniu gruntów w badanym okresie. Zauważają przyczyny, potrafią wyodrębnić główne czynniki, które mają wpływ na sposób użytkowania gruntów rolnych, a są to: gospodarka przestrzenna, polityka wspierania koncentracji kapitału, techniki, właściwości gleby, skale obszaru użytków rolnych i rola mediów i informacji.

Słowa kluczowe: użytkowanie gruntów, grunty trolne, Sontay