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THE MANAGEMENT AND EFFICIENCY OF CROPLAND USE IN THAI NGUYEN PROVINCE

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Abstract

Research paper on the management and efficiency of arable land use in Thai Nguyen provinces. The objective of the article is to assess the current status of the management and efficiency of cropland use as a basis for orienting the management and use of the arable land fund in the future towards sustainable development. At the same time, determine the causes that change the arable land area. From there, propose solutions to improve the efficiency of management and use of rice land in Thai Nguyen province.

Keywords*: Cultivated land, rice land, land, crop*

INTRODUCTION

The land is an extremely valuable national resource, a special means of production, a great source of internal resources and capital of the country, an important component of the living environment and plays a particularly important role. with agricultural production. In any country, the land is the main means of agroforestry production and the territorial basis for the distribution of national economic sectors. Stabilizing the arable land area not only ensures food security but also preserves the resource system, land value and soil. If the arable land fund is fully exploited, there will be no more land for the development needs of future generations.

In recent years, along with the trend of globalization of the world economy, Vietnam's economy is developing more and more. Along with this movement and development, people are increasingly using land resources to serve their own interests. This leads to land degradation, reducing the sustainability of economic development in general and in agriculture in particular.

Facing the current situation, because the arable land area across the country is decreasing, there is a risk of threatening national food security. The Ministry of Agriculture and Rural Development has proposed to apply the policy of tightening the management of the rice land fund. These policies have been mentioned in the rice development project to ensure national food security.

Minimizing the conversion of currently used wet-rice land for non-agricultural purposes; encouraging the reclamation and expansion of rice-growing areas, and improving other rice-land into specialized wet-rice land. When making a plan, it is only allowed to transfer the currently used wet rice cultivation land for the purposes of national defense, security and public interest and must be approved by a competent state agency. Rice land will be closely protected by the State and supported by many policies.

Land for rice cultivation is a special means of production, playing a core role in ensuring food security. In the context that other land needs must be harmonized, in the face of the fact that rice land is under a lot of pressure on the reduction in area and cannot be expanded further, it is really necessary to have solutions to manage, protect and control the land. make full use of the base in

each field, each acre of field.

Thai Nguyen is located in the key economic region north of Hanoi capital, is the political and economic center of the Viet Bac area in particular, of the Northeast Midlands and Mountains in general, is a gateway for socio-economic exchanges. between the midland and mountainous regions and the Northern plains.

The People's Committee of Thai Nguyen province has submitted a proposal to the People's Council of the province to issue a resolution approving the adjustment and supplementation of the list of land acquisition projects, projects with the conversion of the purpose of using rice land in the area. conscious. It is expected to change the use purpose of 974.06 hectares of rice land in 2021. Specifically, there are 312 land acquisition projects, with the conversion of 974.06 hectares of rice land in 2021 in the province. The above 312 projects are divided into 3 groups of additional proposed lists, including:

The first group includes 49 projects that have changed the use purpose of 39.46 hectares of rice land.

The second group consists of 245 land acquisition projects, with a total area of 2,021.84 hectares, including 404.33 hectares of land for rice cultivation.

The third group includes 18 land acquisition projects with a total area of 1,433.91 ha, with the use purpose of 530.27 ha of rice land, and must be submitted to the Prime Minister for approval for the change of purpose.

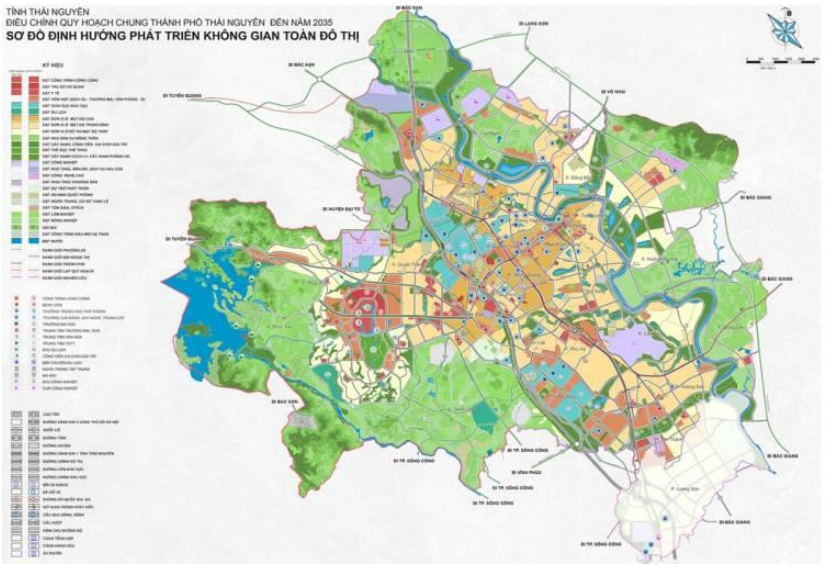

Figure 1. Map of Thai Nguyen province

The land is increasingly showing its extremely important role not only in the present but also in the future. When the earth's population is small, the land can easily meet human needs in terms of quantity as well as quality, in that condition man also has little impact on this precious resource. . In recent decades, the world population has increased rapidly, leading to an increase in the demand for food, food, shelter... Fertility is increasingly narrowed due to the needs of industrialization, urbanization ... leading people to find ways to exploit lands that are less suitable for production. The consequence of this process is that the land is degraded, washed away, and severely eroded,

causing a large area of land in the world to be depleted, in addition to affecting the living environment of humans and many animal species. other plants. To ensure the lives of present people as well as future generations, it is necessary to have land-use strategies to maintain the productive capacity of present and future residential land. The search for solutions to use land efficiently and sustainably has always been a human desire throughout time.

PROPOSED METHOD

1 Methods to investigate secondary data:

Collect information and data available from:

- Specialized departments of Thai Nguyen provinces.
- Related scientific and research works, books and newspapers.

2 Primary data survey method

Method of rapid rural assessment (RRA): through field trips to observe, interview officials and people to investigate the current status of land use, collect information related to life and situation agricultural production.

Survey and interview with a set of prepared questions about What about investment costs for rice production/ha/year? Economic value (how much...million VND/ha/year)? Institutions and policies: annual agricultural land tax? Constraints in land use for rice cultivation? Compared with other forms of land use such as afforestation, fruit trees, aquaculture.... What are the advantages and disadvantages of production? Want to switch from rice land to another form? Specifically?

The statistics are processed by Excel software, map data is scanned and digitized on Microstation software. The results are presented by a system of data tables, charts and maps.

3 Method of calculating land-use efficiency

To calculate the economic efficiency of land use per 1 hectare of land of various types of land use (LUT) for agricultural production, the project uses a system of indicators:

ECONOMIC EFFICIENCY:

+Value of production (GTSX) is the total value of physical products and services created in a certain period, usually a crop (or a year). With crop systems, GTSX is the value of output per unit area.

+ Intermediate costs (CPTG) are all material costs calculated in money involved in the production of that good.

+ Value added (VAT) is the difference between production value and cost, which is the additional social product created in that production period.

VAT = VAT - CPTG

+ Net income (TNT) is the value obtained after deducting the total cost and labor wages.

TNT = VAT - (CPTG + TCLD)

+ Margin = TNT*100/GTSX

SOCIAL EFFICIENCY

+ Level of labor attraction, job creation (work/ha)
+ Production value per labor (GST/Labor)
+ Income of farmers.

ENVIRONMENTALLY EFFECTIVE

Through assessing the current status of soil fertility under some types of research land use.

Method of determining land characteristics based on natural conditions, irrigation conditions, cadastral records (Cadastral maps to determine dominant rice-growing areas)...

Expert method, consultation with experts, leaders of the Department of Natural Resources and Environment, Department of Agriculture and Rural Development and good farmers in the provinces on land use rice cultivation in the province.

COMPARISION OF RESULTS

1 Status of population distribution

Preliminary calculation by 2020, Thai Nguyen province's population is 1,307,871 people, making it the 25th most populous province in the country and 3rd in the Northern Midlands and Mountainous region. After 10 years, the population of Thai Nguyen province has increased by 163,635 people, the average population growth rate is 1.36%/year. From the time of the population and housing census on April 1, 2019, by the end of 2020, the population of Thai Nguyen province will increase by 21,120 people.

The province has 434,111 people residing in urban areas, accounting for 32% of the total population; 876,484 people reside in rural areas, accounting for 68% of the total population of the province.

2 Evaluation of the efficiency of land use for rice cultivation in Thai Nguyen provinces

According to FAO: Land Use Type (LUT) is a picture describing the actual land use status of an area with production management methods under socio-economic and technical conditions. determined.

Through the household survey and land use survey, the following main types of land use for rice cultivation can be identified.

Table 1. Types of land use for rice cultivation

Rice land	LUT	Land use type
2 cases	2 rice - 1 color	1. Spring rice - summer rice - winter corn
		2. Spring rice - summer rice - winter sweet potato
		3. Spring rice - summer rice - winter vegetables
	2 rice	4. Spring rice - season rice
1 cases	1 rice -2 color	5. Spring corn - summer rice - winter corn
		6. Spring corn - summer rice - winter sweet potato
		7. Spring peanut - summer rice - winter corn
	1 rice - 1 color	8. Springtime - seasonal rice
		9. Spring corn - season rice
		10. Vegetables - seasonal rice

	1 rice	11. Seasonal rice

The rice land of Phu Luong district has 5 LUTs with 11 common land uses, each of which has a different size and area, in which 2 main crops are rice and maize.
LUT 1: Land use type 2 rice - 1 color.
There are 3 types of land use with crop formulas: Spring rice - summer rice - vegetables, winter crops (maize, sweet potato, winter vegetables...). This type of land use is grown in areas with high and golden terrain, active irrigation, light mechanical composition, and sandy soil.

LUT 2: Land use type 2 rice.
This type of land use is traditional, popular in the commune and has existed for a long time, and is accepted by the people.
This LUT is applied in mountainous and lowland terrains capable of draining water in the rainy season and some areas with high terrain but are actively being irrigated. The mechanical composition ranges from mixed sand to medium flesh, with varying thickness and thickness of the soil layer. The land-use type is spring rice - summer rice.

LUT 3: Type of land use 2 colors - 1 rice.
Consisting of 3 crop rotation formulas: Spring maize - summer rice - winter maize, Spring maize - summer rice - winter sweet potato, Lac spring-summer rice - winter maize.
The main crop is rice, transplanted into the crop. The crops are rotated according to the season by the soil conditions, farming practices, and needs of each household. This LUT is distributed scattered in the area, is applied in areas with mountainous and highland terrain, unfavorable irrigation, the mechanical components are mostly mixed sand.

LUT 4: Type of land use 1 rice - 1 color.
Mainland use types: spring peanut - summer rice, spring maize - summer rice. Seasonal rice is grown similar to the 2-rice land use type, the spring crop rotates crops such as: peanuts, corn, beans, vegetables... This LUT is grown on land with medium mechanical composition, difficult to cultivate, high rate of lightning, low pH, high terrain, yellow soil, can't actively irrigate. the yield of rice and crops is not high.

LUT 5: Type of land use 1 rice.
This is the least efficient LUT and is applicable only when no other LUT can be selected. This LUT is mainly applied in the muddy, acidic soils, where only 1 spring rice crop can be transplanted, due to the frequent flooding of the crop and low rice yield. Distributed mainly in valleys, small fields, along streams and foothills.

3 Economic efficiency

Economic efficiency is an indispensable criterion in assessing land-use efficiency, which is an important basis for finding technical solutions and choosing an appropriate land use type. To evaluate the economic efficiency, I conducted a field survey and a household survey using a survey form on the following criteria: Productivity, output, selling price, material and labor costs, etc. economic efficiency of land use types through the following criteria: production value, production costs, net income, the efficiency of capital, the value of labor days. Economic efficiency is assessed

based on a comparison of production value and production cost. The higher the difference between production value and production costs, the higher the economic efficiency, which is also a common goal of all material production industries. Plants grown on rice land are plants with a short growing period (usually 1 year, 1 crop...), from which the ability to quickly rotate capital, creating short-term capital to meet the needs In the immediate future, maintain production of perennial crops and livestock.

Economic efficiency of land use types is determined through 3 steps.

Step 1: Determine the economic efficiency of the main crops of each region.

Step 2: Determine the average economic efficiency of the main crops in the study area.

Step 3: Determine the economic efficiency of the land use types

The economic efficiency of the main crops is shown in the table

Table 2. Economic efficiency of different types of land use

Land use type	Production value (thousand of VND)	Level	Production cost (Thousand VND)	Level	Net Income (Thousand VND)	Level	Effective use of capital (times)	Level	Value of working day (thousand VND)/work)	Level
1. LX - LM - winter corn	95.959,65	M	51.902,54	H	44.057,10	M	1,85	L	69,33	L
2. LX - LM - winter sweet potato	108.393,14	H	52.275,79	H	56.117,34	H	2,07	M	84,23	H
3. LX- LM- winter vegetables	144.687,21	VH	63.356,14	VH	81.331,06	VH	2,28	H	89,31	H
4. Spring corn - LM - winter corn	84.498,45	M	47.477,06	H	37.021,39	L	1,78	VL	61,75	L
5. Spring corn - LM - winter sweet potato	96.931,94	M	47.850,31	H	49.081,63	M	2,03	M	77,86	H
6. Spring Peanut - LM - winter corn	94.046,64	M	51.801,07	H	42.245,56	L	1,82	VL	58,52	VL
7. LX- LM	70.494,20	L	36.985,06	M	33.509,13	L	1,91	L	75,06	H
8.Spring Peanut - LM	72.407,21	L	37.086,53	M	35.320,67	L	1,95	L	66,29	M
9.Spring Peanut - LM	60.946,01	L	32.661,05	L	28.284,96	VL	1,87	L	68,90	M
10. LM- vegetables	108.079,80	H	44.354,84	M	63.724,95	H	2,44	VH	92,93	VH
11. LX	36607,41	VL	19001,30	VL	17606,11	VL	1,93	L	78,27	H

Table 3. Economic efficiency hierarchy of LUT (Average/1ha)

Level	Production value (hundred dong)	Production cost (Thousand VND)	Net Income (Thousand VND)	Effective use of capital (times)	Value of working day (thousand VND)/work)
KC Level	22.000	9.000	13.000	0,15	9

VH	> 123.000	> 54.000	> 69.000	> 2,29	> 82
H	101.000 - 123.000	45.000 - 54.000	56.000 - 69.000	2,14 - 2,29	73 - 82
M	79.000 - 101.000	36.000 - 45.000	43.000 - 56.000	1,99 - 2,14	64 - 73
L	57.000 - 79.000	27.000 - 36.000	30.000 - 43.000	1,84 - 1,99	55 - 64
VL	< 57.000	< 27.000	< 30.000	< 1,84	< 55

From Table 3 we see:
LUT 2L - M: This LUT has high economic efficiency but the scope of application is not large.
LUT 2L: Rice is a familiar crop, the main food, and the top priority in farming.
LUT 2M - 1L: The economic efficiency of this LUT is not high and depends on the crop rotation formula. The crop rotation formula for the highest efficiency is Spring corn - summer rice - winter sweet potato
LUT 1L - 1M: In this LUT, there is a big difference in economic efficiency between crop rotation formulas. This type of land use is less commonly applied due to low economic efficiency.
LUT 1L: Net income is 17,333.35 thousand VND, this is the LUT with the lowest economic efficiency
Through the above analysis, it can be seen that the land use types in the Phu Luong district are quite diverse, the main annual crops are still rice and maize.

4 Social efficiency

The social efficiency of each type of land use is assessed through the following criteria: attracting labor, ensuring social life, reducing the poverty rate, investment capital requirements, products consumed. on the market, by farming practices... Each type of land use has certain effects on local social life.

Table 4. Social effects of different types of rice land use (Source: Farm household survey)

Numerical order	LUT	Evaluation criteria					
		Food security	Labor attraction	Requires investment capital	Reduce poverty rate	The needs of farmers.	Commodity products
1	2L - M	***	**	**	***	**	**
2	2L	***	**	**	***	**	**
3	1L - 2M	**	*	**	**	**	*
4	1L - 1M	**	*	*	*	*	*
5	1L	*	*	*	*	*	*

High: *** medium: ** Low: *

The survey results show that the income from rice is too low, while the prices of consumer goods are increasing. People here easily find jobs with higher incomes, but they are not stable. As a result, many areas of rice land are abandoned and not regularly cultivated. When finding a job, people quit

production, when there is no job, they return to the field, but the production mentality is not stable, so there is no investment in taking care and improving the land. Thus, agricultural production has not met the needs of farm laborers, agricultural production has low profits, not enough to cover living expenses, households have to do other jobs.

5 The situation of rice land management in recent years and directions for the coming years.

From the 2014 census until now, the total area of agricultural land has decreased by 2,497 hectares. From 2021 to 2025, agriculture is still an important production industry, providing market demand for food and foodstuffs, developing agriculture and rural areas associated with industrialization and modernization of the country, ensuring ensure jobs for rural areas, reducing the income gap between rural and urban areas, improve ecological environment quality, be ready to respond to climate change, build modern civilized countryside. The explosion of the 4th industrial revolution and the digital economy continues to bring many opportunities as well as difficulties and challenges for the development of the agricultural and rural economy.

Effective management and use of land specialized in rice cultivation. Develop organic agriculture and ecological agriculture to meet the needs of the market and serve tourism. The average growth rate of production value in the 2021-2025 period is from 1.6%/year or more; By 2025, the value of products obtained on 1 hectare of arable land will reach about 135 million VND.

CONCLUSION

Agriculture is still the main industry in the economic structure of the district. The socio-economic development and the speed of urbanization are creating great pressure on the district's land fund, requiring appropriate solutions in the future, creating conditions for the balanced development of industries. People's lives are still difficult, production cannot meet the needs of local labor.

Agricultural production has not met the needs of farm laborers. 100% of surveyed households answered that agricultural production has low profits, not enough to cover living expenses.
Based on the results of the evaluation of the efficiency of agricultural land use, select 3 types of land use that are suitable and promising: LUT 1: 2L - M; LUT 2: 2M - 1L; LUT 3: 2L.

For the management: To make planning, specialized plans for rice land. Clearly define the control target on the area of rice land that needs to be strictly protected, allocate and define the boundaries of public landmark planting to each land plot to ensure the strict management and protection of the rice land fund. Assign the commune-level People's Committee to take responsibility for direct management and at the same time have policies to support and encourage localities and farmers to feel secure in farming.

In order to improve the efficiency of using and managing rice land from an ecological and sustainable point of view, it is necessary to organize the exploitation of the land's potential in the direction of increasing the production of commodity products and applying scientific and technical advances. techniques in production, construction of specific production areas.. There should be a specialized plan for zoning the protected rice land. Implement synchronously policy solutions, infrastructure development, science and technology solutions, market solutions to promote production. The land use process must be associated with the reclamation, fostering and protection

of the land, and the protection of the environment.

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