

# The Management and Efficiency of Cropland Use in Thai Nguyen Province Part 3 - Evaluation of Land Use Type efficiency

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**ABSTRACT:** In this article, we refer to the management and efficiency of arable land in Thai Nguyen province, selected by the author as the object of analysis. The article's objective 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 management efficiency and use of rice land in Thai Nguyen province. With the research objectives set out, the author organizes this research into five main parts as follows. Part 1: Some characteristics of land use type in Thai Nguyen province; Part 2: Methods to investigate the status of land use type efficiency; Part 3: Evaluation of Land Use Type efficiency; Part 4: Economic efficiency analysis of Land Use Type; Part 5: Analyze the impact of land use type on social life.

**KEYWORDS:** Cultivated land, rice land, land, crop

## I. INTRODUCTION

The land is a precious national resource, a particular means of production, a great source of internal resources and capital of the country, an essential component of the living environment, and plays a significant role in agricultural production. In any country, the land is the primary means of agroforestry production and the territorial basis for the distribution of national economic sectors. Stabilizing the arable land area ensures food security and 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 increasingly use land resources to serve their interests. This leads to land degradation, reducing the sustainability of economic growth in general and in agriculture in particular. Facing the current situation, because the arable land area 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.

It minimized the conversion of currently used wet-rice land for non-agricultural purposes; encouraging the reclamation and expansion of rice-growing areas, and improved 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 national defense, security, and public interest. A competent state agency must approve it. Rice land will be closely protected by the State and supported by many policies.

## II. COMPARE LANDUSE TYPE EFFICIENCY

### 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 and 3rd in the Northern Midlands and Mountainous region.

After ten years, the population of Thai Nguyen province has increased by 163,635 people, and 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 province's total population.

### Evaluation of the efficiency of land use for rice cultivation in Phu Luong district

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

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

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.

### III. CONCLUSION

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.

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.

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