

## A STUDY ON EVALUATING THE EFFECTIVENESS OF CULTIVATION ON UPLAND IN NORTHWEST OF VIETNAM

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Title : A STUDY ON EVALUATING THE EFFECTIVENESS OF CULTIVATION ON UPLAND IN NORTHWEST OF VIETNAM

(ベトナム北西部高地における農業生産の効率性評価に関する研究)

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### Thesis Summary

Although economics was reformed 28 years, Viet Nam is still a developing country with low-income and agriculture is also still remained as the most important sector in GDP of Vietnam. Rice and maize are the two most important annual crops in Viet Nam. Rice production is sufficient for self-consumption and exportation, whereas maize production is insufficient and must be imported because of the growing feed industry. Three quarters of Vietnam's territory is made up of mountainous and hilly regions where farmers have to cultivate in upland because lack of arable land for agricultural activities. Nearly 70% of population and 90% of poor people are living in rural areas. Therefore, one of the most important orientations of Vietnamese government is developed agriculture and rural economy. And ICT application has been enhancing to narrow the gap between different region, poverty reduction and promote sustainable growth.

This study aims to monitor the status of cultivation on uplands and provides insight for adopting appropriate technical applications for improving farm productivity, adding the value and having sustainable livelihood for farmers in the Northwest upland of Vietnam. In order to clarify the aims, it needs to address the specific objective as following: 1) To identify important factors and their influence on productive efficiencies among farms; 2) To examine the role of information sources and their impact on farm's.

There is very few researches had been done in northwest area, especially for upland and ICT field. The original point of this study is to evaluate the efficiency of cultivation methods on upland focusing on two main crops rice and maize, and try to find the evident of the role of information sources and their impact on farm's. These are the major different between this study and previous studies. The new findings of this study is that all of farms are not fully technical and scale efficient and they are influenced by some socio-economic factors. We also found some interesting results regard to information sources that have impacted on technical inefficiency, farm income and its determinants.

Although maize has an important role in socio-economic structure of farmers' life, there have been no study regarding the impact of socio-economic factors to the income from maize in northwest region. The data were analyzed by using 2SLS regression model. The results investigated that education of household head were positively significant, membership of agricultural group were significant but negative. Likewise, credit access and extension service were not significantly effective on individual income of farm's members from maize production.

There are few studies regarding the efficiency of rice and maize crop production. This article is the first study to estimate farm-level technical and scale efficiencies and identify the factors influencing them. We used a smooth bootstrapping method to analyze the variability of DEA technical efficiency estimates and to correct for the inherent bias in the DEA method. The results had revealed that the opportunity for both technical and scale inefficiencies of maize and rice crops is significant. The result of using a Tobit regression to explain variations in efficiencies among farms showed that national electricity source is an important

factor to improve the technical efficiency of both rice and maize farms. And, large families are likely to be more technically efficient on maize farms.

In the literature, some researches have studied technical efficiency (TE) and the factors that influence the TE of rice and coffee products in Vietnam. Nevertheless, none of them have studied both main cereal crops (rice and maize) and the impact of information sources on TE. The results of analyzing 358 respondents show that there is significant room for technical inefficiency and no farm is fully technically efficient. We also found some interesting results regard to information sources that have impacted on technical inefficiency. Agricultural information from printed materials and frequent watching of television were two negatively significant factors for technical inefficiency.

The CCPO is an important program in Viet Nam. There have been many meetings, and conferences have discussed and evaluated the impact of the CCPO on rural social life. However, to our knowledge, there is no study that use the econometric approach to estimate the implications of the CCPO and that, based on the results, suggests policy to enhance or cut off the program. Therefore, this study provides an additional literature review for policy makers or those who are interested in the topic. The results indicated a positive and significant influence of household head education and owning livestock on participation, as well as an impact on household income per capita. These results also suggest that knowledge is a very important factor to increase the social-economic life of farmers, especially with mountainous areas and ethnic groups. Our estimates suggest positive self-selection in both the participant and non-participant groups, and significance only for the participant equation. This implies that farmers in both groups are better off participating in the CCPO as it could lead to a higher per capita income. However, the different effects between the expected outcome for participants and what non-participants would have achieved had they participated is not meaningful and not sufficiently high.

As previously mentioned, information sources have an important role in all socio-economic activities, including agriculture, and are recognized as a tools to improve efficiency and effectiveness in agricultural production. However, studies have not been conducted place in Vietnam on the importance of information sources in agriculture or the determinants of information source use by Vietnamese farmers. The result of identifying factors that may effect on other information sources using household-level data of 360 farm households found that household income, farm size, household size, educational attainment and off-farm jobs were the most important influences on whether the respondents used the media and personal information sources.

According to the results, there are some recommendations to respect government, organizations, and farmers. More investment on public education is an important role for not only government but also farms in this area. Government and group leaders should more emphasize on finding the way of credit providing, extension services, adjusting customs, and group supporting. In addition, expanding a national electricity source is an important strategy for the government in the near future to increase social welfare. Farmers are better to new models for value chain development, using resources more sustainable, increasing technology adoption and implement of governmental and provincial policies. And, co-operation in cultivation, crop diversity and the optimal use of rice plots are several suggestions for optimal farm production. Off-farm employment for farmers should be provided and encouraged. It is also important to make efforts to close the gap among districts by increasing investments, expanding road infrastructure, and wireless towers to farmers in remote areas.