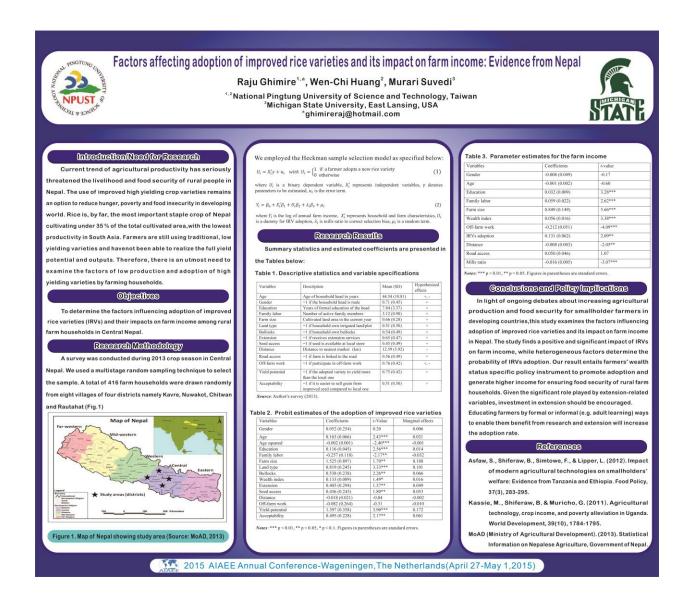
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Factors Affecting Adoption of Improved Rice Varieties and Its Impact on Farm Income: Evidence from Nepal

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Abstract

The use of improved, high yielding crop varieties by rural farm households remains an option to reduce poverty, hunger and food insecurity in developing world. However, many smallholders in developing countries have not been able to use improved crop varieties. The sizable proportion of Nepalese farmers is still using traditional, low yielding rice varieties. Rice is, by far, the most important staple crop of Nepal which is grown under 35 % of the total cultivated area. However, Nepal's rice productivity is amongst the lowest in South Asian region. This study aims to determine the key factors that influence the adoption of improved rice varieties (IRVs) and their impacts on farm income among rural farm households in Central Nepal.

The data for this study were obtained from a survey conducted during 2013 crop season. We used a multistage random sampling technique to select the sample. In the first stage, four districts namely Kavre, Nuwakot, Chitwan and Rautahat were purposively selected. In the second stage, 8 villages (two villages from each district) were selected. A total of 416 farm households were drawn randomly from the selected villages in the final stage. A farm household is assumed to maximize its utility function subject to resource constraints. Thus, the adoption decision was modeled in a random utility framework. We employed a Heckman sample selection model to analyze the data.

The results revealed that household characteristics such as age, education and family labor played a significant role in adoption decisions. Additionally, farm size, land type, bullocks and wealth index influenced farmers' decisions to adopt IRVs positively. Extension service and access to seed showed positive influence farmers' decisions to adopt IRVs. Further, adoption decision appeared to be substantially influenced by yield potential and consumers' acceptability of the grains in the market. From the second stage analysis, we found that education, family labor, farm size and wealth index showed positive and statistically significant impact on farm income. More importantly, farm households who adopted IRVs were likely to have higher farm income particularly in Terai region. In contrast, off-farm work and distance to market had negative and statistically significant impact on farm income, suggesting that households located nearby market and employed in off-farm activities tend to have lower farm income than their counterpart households located further away from the market.

Given the significant role played by extension-related variables, investment in extension should be encouraged. Educating farmers by formal or informal (e.g. adult learning) ways to enable them benefit from research and extension materials will increase the adoption rate. Additionally, set up of result/output demonstration sites for IRVs in farmers' field to show the yield difference between improved varieties and the local ones, and promote farmers-to-farmers extension can be a viable way to increase adoption, farm income and food security in the long run.

Keywords: technology adoption, improved rice varieties, farm income, food security, South Asia, Nepal

References

- Asfaw, S., Shiferaw, B., Simtowe, F., & Lipper, L. (2012). Impact of modern agricultural technologies on smallholders' welfare: Evidence from Tanzania and Ethiopia. *Food Policy*, 37(3), 283-295. doi: 10.1016/j.foodpol.2012.02.013
- Becerril, J., & Abdulai, A. (2010). The impact of improved maize varieties on poverty in Mexico: A propensity score-matching approach. *World Development*, 38(7), 1024-1035. doi: 10.1016/j.worlddev.2009.11.017
- Feleke, S., & Zegeye, T. (2006). Adoption of improved maize varieties in Southern Ethiopia: Factors and strategy options. *Food Policy*, 31(5), 442-457. doi: 10.1016/j.foodpol.2005.12.003
- Greene, W. H. (2012). Econometric Analysis (7th ed.): New York University, Princeton Hall.
- Kassie, M., Shiferaw, B. & Muricho, G. (2011). Agricultural technology, crop income, and poverty alleviation in Uganda. *World Development*, 39(10), 1784-1795.
- Mendola, M. (2007). Agricultural technology adoption and poverty reduction: A propensityscore matching analysis for rural Bangladesh. *Food Policy*, 32(3), 372-393.
- MOAD (Ministry of Agricultural Development). (2013). Statistical Information on Nepalese Agriculture, Agri-Business Promotion and Statistics Division, Government of Nepal, Kathmandu.