Tropentag, September 10-12, 2025, hybrid conference

"Reconcile land system changes
with planetary health"

Adoption, complementarity and productivity effects of modern inputs: evidence from the e-voucher subsidy programme in Uganda

Christine Kanyenyeri[1], John Ilukor[2], Jackline Bonabana[3]

[1] *Makerere University, Kampala Uganda, Agribusiness and Natural Resource Economics, Uganda*
[2] *The World Bank, Development Data Group - Survey Unit, Uganda*
[3] *Makerere University, Kampala Uganda, Agribusiness and Natural Resource Economics,*

Abstract

The adoption of modern agricultural inputs has been promoted as one of the sustainable approaches for most developing countries to enhance on-farm production in the face of declining soil fertility and climate related challenges. Government efforts have long focused on improving access to critical inputs of production such as improved maize seed and inorganic fertilisers to address the gap in productivity. This study examines the factors influencing adoption of modern inputs (improved maize seed and inorganic fertilisers) among maize farmers, and the effect of the adoption of different combinations of these inputs on maize productivity using data from Uganda. The study employs t-tests for means and proportions to characterise farmers based on input choices and a multinomial endogenous switching regression model is estimated to address endogeneity and selection bias. Descriptive results indicate that farmers who adopted only improved maize seed had larger household sizes and greater access to market information, agronomic support and credit. Those who adopted both inputs were the youngest, had the largest landholdings, the highest education levels and the greatest access to agronomic support. In contrast, non-adopters generally had smaller household sizes, lower education levels, the smallest landholdings, and the least access to agronomic support. Estimates from the multinomial endogenous switching regression model reveal that farmers who adopt only improved maize seed tend to have older household heads, own livestock, face drought conditions, have greater access to credit and market information. Those who adopt both improved seeds and fertilisers are younger, interestingly female-headed households, better educated and have better access to extension services. Non-adopters are generally male-headed households with lower education levels, engaged in non-farm employment, have limited access to credit and agronomic support. The impact estimates further validate that adopting modern inputs significantly boosts yield outcomes, with the highest productivity gains observed from the combined use of improved maize seed and inorganic fertiliser. These results emphasise the critical need to focus on policies that improve access to education, extension services and credit to encourage comprehensive adoption of modern inputs.

Keywords: Input choices, maize farmers, multinomial endogenous regression, Uganda

Contact Address: Christine Kanyenyeri, Makerere University, Kampala Uganda, Agribusiness and Natural Resource Economics, P.O. Box 7062, Kampala, Uganda, e-mail: christinekanyenyeri1@gmail.com