

EGERTON



UNIVERSITY

**TEGEMEO INSTITUTE OF AGRICULTURAL
POLICY AND DEVELOPMENT**

Kindaruma Lane
Off Ngong' Road
P O Box 20498
NAIROBI, KENYA
Tel: 020 2347297, 020 3504316
Fax: 020-717819

Press Release:

Nairobi, December 5th 2017 ...

Adoption of Maize Technology Bundles among Farm Households in Kenya: Implications on Productivity and Food Security

Authors: Eric Njue, Timothy Njagi and Mary Mathenge

Abstract

While agriculture remains the mainstay of Kenya's economy, her food systems face a myriad of challenges thus putting food security among top development agenda issues. Extreme weather events coupled with rapid population growth have exacerbated food insecurity status thereby increasing the level of malnutrition and hunger. Nonetheless, persistent food insecurity is largely attributed to low agricultural productivity hence no doubt that farmers will rely more on technology to boost productivity.

While it is agreed that agricultural innovations are needed to stimulate crop productivity, empirical evidence from Kenya shows that maize productivity has stagnated overtime while output has been declining. This is against the ever increasing demand for the commodity thus transforming Kenya into a net maize importer despite past efforts to promote adoption of modern farming technology.

In this study, we seek to establish the link between various indicators of food security and adoption of technology bundle(s) that have high probability of increasing households' food availability and access. Using a three-year panel data of 1800 maize growing households from the mid-altitude regions of Kenya, our findings show existence of relatively high joint correlation between inorganic fertilizer and improved seed use.

Furthermore, the choice of maize technology bundle is positively influenced by level of education of the head and availability and access to credit, and participation in a demo plot by the households. Use of inorganic fertilizer was instrumental in boosting both productivity and household food security even without improved seed. The study results implore the need for

policies that stimulate development and adoption of practical complementary technologies to increase crop productivity in a sustainable manner.

Conclusions and Recommendations

Agriculture sector has been acknowledged to offer solutions for rural development and as means to eradicate hunger and extreme poverty. While agriculture remains the mainstay of sub-Saharan Africa, food systems in these countries faces a myriad of challenges that threaten agricultural production. Extreme weather events coupled with rapid population growth have exacerbated food insecurity status thereby increasing the burden of malnutrition. While it is agreed that agricultural innovations are needed to stimulate crop productivity, our study sought to provide a link between food security and adoption of technology bundle(s) that have high probability of increasing household's food availability and access whilst enhancing their resilience to food supply shocks.

The key drivers of technology adoption identified in this study are education (both formal and extension-led training), credit access and altitude. Altitude is used as an important indicator that captures the characteristics of the particular innovation. Yields for key grains in sub-Saharan Africa are way below global average yet population is rising rapidly. Technology adoption is a function of both demand-end and supply-end factors. Lack of well-tailored innovations such as suitable hybrid seeds to overcome pest and diseases in mid-altitude has been acknowledged as a major shortcoming. This could further be associated with inadequate investment in research and development for particular innovations. On the other hand, non-adoption of available innovations among smallholders could be pegged to socio-economic constraints such as credit, market access risks and information barriers that render adoption of these innovations non-profitable (Brauw, 2011).

Our results indicate that adoption of both improved seed and fertilizer has the greatest impact on household food security but fertilizer component is critical even without the improved seed. Increasing food available per capita will therefore necessitate a paradigm shift to overcome yield stagnation. Policy options need to be evaluated well when promoting interventions that aims at raising productivity and these include promotion technologies that complement each other to boost crop yields and diversification of technology options. Similarly, the policy framework must be sensitive to specific needs of the farm population especially female farmers since they are a major source of farm workforce.

For further assistance, more information or if you would like to conduct interviews with the Lead Principal Investigator, you can do so through: Judy Kimani, 0720 96 33 48, (jkimani@tegemeo.org).

www.tegemeo.org