



Tropentag, September 10-12, 2025, hybrid conference

“Reconcile land system changes  
with planetary health”

## The impact of an extension-based campaign and the adoption of integrated soil fertility and water conservation technologies on household food security: Experimental evidence from Uganda

ESTHER GLORIA MBABAZI<sup>1</sup>, AWUDU ABDULAI<sup>1</sup>, ENOCH KIKULWE<sup>2</sup>, ELISABETTA GOTOR<sup>3</sup>

<sup>1</sup>*University of Kiel, Dept. of Food Economics and Consumption Studies, Germany*

<sup>2</sup>*The Alliance of Bioversity International & CIAT, Uganda*

<sup>3</sup>*The Alliance of Bioversity International & CIAT, Italy*

### Abstract

The rapid global population growth, rising food demand, and mounting pressure on land resources underscore the need for sustainable agricultural intensification to enhance productivity while conserving the environment. Integrated soil fertility and water conservation (ISFWC) practices, such as mulching, manure application, and trenching, are vital sustainable intensification techniques that offer significant gains in yield, income, and food and nutrition security. These technologies also contribute to environmental conservation and ecosystem services. However, their adoption remains low due to limited farmer access to agronomic information and overburdened public extension systems. This study assesses the effectiveness of an extension-based information campaign in increasing ISFWC adoption and improving household food security and crop incomes. We conducted a randomised controlled trial across smallholder communities, delivering targeted ISFWC agronomic information via multiple communication channels, including radio talk shows, in-person lecture trainings, video shows, demonstration plots, and farmer field days. Our findings show that the campaign significantly increased the adoption of mulching, manure application, and trenching, raised crop incomes by 25 U.S. dollars, and improved dietary diversity and food security. Literacy of the household head, farmer-group membership, and asset wealth are key determinants of the adoption of the soil fertility and water conservation technologies. The actual uptake of ISFWC technologies markedly enhanced household food security and increased crop revenues by 308 U.S. dollars. This experimental evidence highlights the critical role of well-designed extension initiatives in promoting sustainable intensification. By delivering tailored ISFWC information, extension interventions can meaningfully boost technology adoption, elevate smallholder incomes, and enhance household food and nutrition security.

**Keywords:** Agricultural extension, smallholder food security, soil fertility, water conservation