



Tropentag, September 16-18, 2015, Berlin, Germany

“Management of land use systems for enhanced food security:  
conflicts, controversies and resolutions”

## Technical Efficiency and Food Security of African Indigenous Vegetable Farmers in Kenya

SABINA KHATRI KARKI, ANJA FASSE, ULRIKE GROTE

*Leibniz Universität Hannover, Inst. for Environmental Economics and World Trade, Germany*

### Abstract

The agricultural sector is well acknowledged to play a central role in the economy of sub-Saharan Africa. African indigenous vegetables (AIVs) are important as well since they are considered to contribute to food and nutrition security, employment opportunities and poverty alleviation. However, increasing productivity is crucial for improving the welfare of smallholder farming communities. Productivity can be improved either through the technological improvements or through the more efficient use of resources such as fertilizer, pesticide, labour etc. Considering the importance of AIVs, little research focused on the productivity, efficiency and household food security, particularly for farmers growing AIVs. Therefore, this study aims to determine the levels of technical efficiency of AIV farmers in Kenya and its determinants. In addition, the study attempts to determine the impact of efficiency on household income and food security using indicators such as the food consumption score and the household diet diversity score. Based on the rural and peri-urban household survey data of 1200 vegetable farmers collected in 2014, the study uses a Cobb-Douglas type stochastic frontier model and multivariate regressions to analyse technical efficiency and welfare impacts. The mean technical efficiency index is estimated to be 33% indicating that there is a high potential to increase efficiency in vegetable production among the farmers through better use of available resources. Market participation, location to peri-urban areas and land are found to be the significant determinants of technical efficiency. Further, efficiency is significantly associated with household income. The positive and significant association of efficiency and income also showed higher household food security.

**Keywords:** African indigenous vegetables, Cobb-Douglas stochastic frontier model, food security, Kenya, technical efficiency