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“Competing pathways for equitable food systems transformation:
Trade-offs and synergies”

Impact of seed innovations on farm performance among African indigenous vegetables producers in western Kenya

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Abstract

Food insecurity, population growth and urbanisation are major challenges in sub-Saharan Africa (SSA). In East Africa, leafy vegetables that naturally occur and grow from seed after the rainy season have traditionally been used. Informal markets and formal supply chains of these African indigenous vegetables (AIVs) are increasingly developing with a potential to not only contribute to food sufficiency but also diversified diets in terms of micronutrients and vitamins. Despite the growing recognition of the development potential of AIVs, development of AIVs value chains faces constraints such as limited access to appropriate seed innovations and low levels of efficiency. Previous literature has shown that smallholder producers can capitalize on various innovations including seed innovations to overcome these constraints and enhance their performance. In line with the conference theme “Competing pathways for equitable food systems transformation”, this study, under the project “Inclusive nutrition-sensitive value chains, upgrading strategies for underutilised horticultural crops in Kenya and Uganda (InNuSens)” sought to assess determinants of adoption of seed innovations and its impact on performance of AIVs producing households, a potential technical solution to climate change phenomenon in food systems. The study incorporates behavioural factors as covariates of adoption of seed innovations. To achieve this objective, the study used multistage sampling approach that led to 445 AIVs producers in Bungoma and Kakamega Counties in Kenya being included. We employ a bias-Corrected Stochastic Meta-Frontier Approach to estimate technical efficiency (TE), allocative efficiency (AE), economic efficiency (EE) and technology gap ratios (TGRs) while accounting for potential technological differences as well as self-selection bias. We specify a stochastic frontier model to estimate meta TE, AE and EE and employ propensity score-matching (PSM) technique to address self-selection bias. Our results reveal that both behavioural and control beliefs have a positive influence on adoption of seed innovations. Empirical results show that adopters outperform their non-adopter counterparts on average in both technical, allocative and economic efficiencies and meta-efficiencies.

Keywords: AIVs, impact, seed innovations, vegetables