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“Filling gaps and removing traps
for sustainable resource management”

Uptake of Integrated Soil Fertility Management Techniques in Maize Mixed Farming Systems of East and Southern Africa: Case of Malawi's Rift Valley Escarpments

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Abstract

Addressing the dual challenges of increasing food production and reducing environmental degradation requires first an understanding of the farmers' intentions and actions. As farmers strive to earn a living on their land units, they perceive the environmental resources and adapt to changes by either taking autonomous proactive actions or imitate others resulting in heterogeneous farming households and farmlands. Given several approaches that have been rolled out since the 1980s - including sustainable land management, climate smart agriculture and integrated soil fertility management - farmers allocate resources to technologies that either maximise soil fertility improvement or minimise risk of soil degradation. Among the 30% of total farming households sampled from 5 villages in rural Malawi, inorganic fertilisers were used by 90%, legumes by 72% and organic manures by 57%. Empirical evidence from the double hurdle model shows that none of the household and farm factors consistently influenced the two decisions (adopt and intensify) for all the three technologies. Positive effects from increasing labour supply are offset by the negative effects associated with increasing dependency ratios. However, women empowerment could increase the probability of legume cropping but with negative effects on organic manure application. It is evident also that there could be spill-over effects in that if a driver is only important for a particular soil fertility technology, it could have indirect effects on associated technologies. On the basis that all factors are dynamically changing with different magnitudes and confidence intervals, sustainable intensification could be achieved by harnessing the positive effects while concurrently reducing the negative influences.

Keywords: Household decision, integrated soil fertility management, intensification, rift valley escarpments, smallholder farmers