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Regenerative agriculture and dietary outcomes among smallholder farmers in Kenya

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Abstract

Regenerative agriculture (RA) is increasingly promoted as a pathway to enhance smallholder livelihoods, strengthen resilience, and improve food systems in sub-Saharan Africa. However, empirical evidence on how RA adoption translates into household nutrition outcomes, and through which pathways, remains limited. In this study, we examine the association between RA implementation and dietary outcomes among smallholder farmers in Kenya.

We use data from 949 households across two contrasting agroecological contexts and apply a sequential mixed-methods approach combining descriptive analysis, multivariable regression models, and qualitative insights from 14 focus group discussions and 33 interviews. We measure dietary outcomes using household dietary diversity (HDDS 12 and HDDS 9) and food consumption scores (FCS).

Results show that RA implementation is positively associated with improved dietary diversity and food consumption quality. Both peer-trained and NGO-trained implementers exhibit significantly higher dietary diversity relative to non-adopters, with consistent effects across different model specifications. We further find that direct (NGO-trained) implementation is associated with higher food consumption scores. In contrast, no significant differences are observed in food expenditure, indicating that improvements are not driven by increased purchasing power.

Post-estimation tests show no statistically significant differences between peer-led and NGO-led implementation pathways across all dietary outcomes. This suggests that nutrition benefits are not dependent on the modality of knowledge transfer. Instead, improvements appear to operate primarily through production-based pathways, particularly increased on-farm diversity and reduced reliance on market purchases.

We find that RA contributes to improved food security primarily through self-provisioning rather than income-mediated channels. and that these benefits do not depend on the modality of knowledge transfer. These findings highlight the potential for scalable and cost-effective dissemination strategies that leverage farmer-to-farmer learning and locally embedded knowledge systems in smallholder contexts in the Global South and beyond.

Keywords: Agroecology, dietary diversity, food security, food systems, knowledge transfer, livelihoods, nutrition-sensitive agriculture