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Scaling regenerative agriculture through peer-led extension: Causal evidence from the village-based advisor model in Kenya

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Abstract

Sub-Saharan Africa's extension gap leaves smallholders without the localised support needed to adopt regenerative agriculture (RA) practices that build soil health, climate resilience, and multifunctional landscapes. We ask whether the Village-Based Advisor (VBA) model, a peer-led, locally embedded extension approach, causally raises RA adoption, and which practices it promotes most effectively. The data come from a 2024–2025 household survey of 1,932 farmers and 2,797 plots across four counties in eastern Kenya, covering the IKEA-funded Strengthening Regenerative Agriculture in Kenya (STRAK) project. We estimate intent-to-treat effects of residing in an intervention ward using probit models with county fixed effects, and correct endogenous self-selection into VBA participation through recursive bivariate probit. A multivariate probit captures interdependencies across seven RA categories: minimum tillage, mulching, soil fertility management, crop rotation, intercropping, agroforestry, and soil and water conservation (SWC). Propensity score matching and distance-based spillover tests provide robustness.

Living in a STRAK intervention ward raises plot-level adoption of six of seven practices. Effect sizes range from 6 percentage points for agroforestry to over 20 for crop rotation and intercropping. Effects are strongest for knowledge-intensive, low-capital practices and weakest for SWC structures, which require capital and collective action. Adoption among non-participants rises with proximity to VBA participants, so programme reach extends beyond direct beneficiaries. Recursive bivariate probit confirms a positive causal effect of direct VBA engagement once self-selection is corrected.

Locally embedded peer extension can scale the knowledge-intensive components of multifunctional, climate-resilient agro-ecosystems but not capital-intensive ones. Pairing peer advisory with credit and collective-action support is the practical lever for scaling RA in smallholder systems.

Keywords: Regenerative agriculture, impact evaluation, Kenya, peer-led extension, smallholder farmers, technology adoption, village-based advisors