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"Reconcile land system changes
with planetary health"

Employing micro-scale household surveys for agricultural systems analysis and examining production drivers in sub-saharan Africa

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Abstract

Micro-scale household surveys are essential for informing farm-level decision-making and enhancing agricultural productivity, particularly within smallholder farming systems. The Living Standards Measurement Study - Integrated Surveys on Agriculture (LSMS-ISA) provides high-quality, agriculture-focused data to support such analysis. This study presents a descriptive and exploratory analysis of LSMS-ISA data from six African countries—Ethiopia, Malawi, Uganda, Niger, Nigeria, and Mali—towards understanding spatial and temporal trends in agronomic practices and production. As a foundational step toward understanding the climatic and non-climatic factors influencing farm decisions, the study examines key management practices such as planting and harvesting dates and growing season length, all of which directly impact crop establishment, growing season length, and productivity. The study findings reveal that management practices vary with crop type and country. For instance, planting dates for drought-tolerant crops like millet and cassava exhibit greater year-to-year variability. In contrast, cereal crops such as maize tend to follow more consistent planting schedules. Cropping systems also influence these trends: monocropped fields show more uniform planting and harvesting patterns, while intercropping systems exhibit staggered harvesting across different crops and regions. Additionally, the distribution of perennial versus non-perennial crops varies significantly across countries, which has implications for household food security and livelihoods, especially in the region with dominant subsistence agriculture. Such descriptive and exploratory analysis provides a critical foundation for more in-depth investigations into the drivers of farm management decisions. The study highlights the value of micro-level household survey data for developing targeted agricultural policies and interventions in environments where detailed socio-economic datasets are not readily available for spatial-explicit analysis of agricultural systems.

Keywords: Farm decisions, LSMS-ISA, spatial, temporal, trends

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