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Institutional drivers of millet commercialisation and household food security in central Tanzania

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Abstract

While millet is a nutrient-dense, climate-resilient crop with a rich micronutrient profile essential for strengthening sustainable food systems, its commercialisation in Tanzania remains low, thus limiting its full potential. Using fractional logit regression and Inverse Probability Weighted Regression Adjustment (IPWRA) approaches, this study used survey data from 417 millet-farming households in Singida and Dodoma to investigate the institutional drivers of millet commercialisation and its contribution to household food security.

Fractional logit regression examined the institutional determinants of millet market participation. Findings revealed that millet commercialisation is affected by complex interactions among institutional elements. Credit availability and market information by themselves have little effect on commercialisation, but when combined, they greatly improve it. Extension services, when paired with access to credit or market information, surprisingly decrease commercialisation, stressing millet's traditional role as a subsistence crop. On the other hand, group membership has a positive impact on commercialisation through social capital. Furthermore, there is a trade-off between food security and market participation, with higher storage capacity being associated with lower commercialisation.

Secondly, IPWRA was applied to estimate food security using Household Dietary Diversity (HDDS) and Food Consumption Score (FCS) across commercialised and non-commercialised households. The results reveal that millet commercialised households exhibit a higher HDDS and FCS (13.01 % and 20.31 % respectively) than their non-commercialised counterparts, controlling for observed differences. Notably, land size, market information, and off-farm income emerge as consistent enablers of improved food security to both commercialised and non-commercialised households.

The study highlights the positive impact of millet commercialisation on food security. It also indicates that when provided in isolation, extension services, credit, and market information tend to have no significance on millet commercialisation. Therefore, greater emphasis should be placed on integrated programmes that align these tools to support

millet's commercial potential. Furthermore, policies should improve access to agricultural credit, establish effective market information systems, and encourage collective action through group membership. Furthermore, upgrading storage infrastructure to support market-oriented production can help reduce its current adverse effects.

Keywords: Climate resilience, commercialisation, food security, institutional drivers, millet