

Diversifying production for living income: a myth or reality for smallholder coffee farmers in Ankole, southwestern Uganda? - A cross-sectional study.

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Abstract

Background

Uganda's coffee sector is dominated by smallholder farmers who contribute more than 90% of national output but remain unable to attain a living income due to low productivity, limited resources, and climate risks. Diversification of production has been promoted as a pathway to enhance incomes and resilience, yet its effectiveness remains underexplored. This study examined the effect of production practices on the living income of smallholder coffee farmers within the Uganda Coffee Carbon Project (UCCP) in Ankole, Southwestern Uganda.

Methods

A cross-sectional design was employed, targeting 133 households affiliated with the Ankole Coffee Producers Cooperative Union. A sample of 113 respondents was surveyed using structured questionnaires, complemented by key informant interviews. Quantitative data were analyzed using descriptive statistics and regression models to test the relationship between production practices and household living income.

Results

The findings revealed that adoption of diversified production practices such as intercropping, agroforestry, and access to quality inputs significantly improved household income and resilience. Regression analysis confirmed a positive and statistically significant association ($p < 0.05$) between the adoption of multiple production practices and the attainment of living income indicators, including food security, healthcare access, and children's education. However, structural barriers such as limited credit, inadequate extension services, and low financial literacy constrained widespread adoption.

Conclusions

Diversification of production practices is a critical but insufficient pathway to bridging the living income gap for Ugandan coffee smallholders. While improved practices enhance yields and household welfare, systemic challenges in finance, markets, and extension restrict their full impact.

Recommendation

The study recommends strengthening extension services, scaling access to affordable quality inputs, and mainstreaming climate-smart practices. Targeted policy interventions such as farmer credit schemes, cooperative-led training, and integration of carbon finance incentives should complement production practices with post-harvest and market diversification strategies to sustainably close the living income gap.

Keywords: production practices, diversification, living income, smallholder coffee farmers, Uganda, resilience

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Introduction

Coffee is Uganda's most important agricultural export and a vital contributor to rural livelihoods, accounting for nearly a quarter of national export earnings and supporting more than 1.7 million households (Food and Agriculture Organization [FAO], 2020; Uganda Bureau of Statistics [UBOS], 2024). Smallholder farmers, who contribute over 90% of total national coffee output, form the backbone of this sector

(International Coffee Organization [ICO], 2020). Despite this pivotal role, most smallholders remain unable to earn a "living income"—defined as the net annual income required for a household to afford a decent standard of living, including food, shelter, health care, education, and savings (Living Income Community of Practice, 2019). Instead, coffee farmers face persistent income gaps that compromise

their welfare and threaten the sustainability of coffee production in Uganda (Smith et al., 2021; Turner, 2024). The production stage of the coffee value chain is central to this challenge. Production practices (including access to quality agricultural inputs, adoption of improved varieties, soil fertility management, intercropping, agroforestry, and livestock integration) shape yields, quality, and household resilience (Byaruhanga et al., 2019; Mugisha et al., 2018). Weaknesses at this stage, such as low input use, fragmented landholdings, and poor agronomic practices, limit productivity and restrict smallholders' ability to generate sufficient returns from coffee farming (World Bank, 2019). As a result, average farmer incomes remain well below the living income reference value, with some estimates suggesting an 85% gap between actual earnings and the benchmark (Katharina, 2024; Smith et al., 2021).

Diversification of production systems has emerged as a key strategy to mitigate risks and enhance smallholder income stability. Farmers in Uganda often intercrop coffee with bananas, beans, cassava, and other staples, a practice that provides both household food security and supplementary income streams (Kabi et al., 2020). In addition, apiculture, agroforestry, and livestock rearing are increasingly integrated into coffee systems, offering multiple benefits such as improved soil fertility, ecological resilience, and diversified cash flows (Ajao et al., 2019; Ssewanyana et al., 2021). Research shows that households engaged in diversified production practices are better positioned to cope with market fluctuations, climate shocks, and crop-specific risks than those reliant solely on coffee (Munyua et al., 2018).

Beyond horizontal diversification, vertical integration of production practices, such as engaging in on-farm processing or collective bulking, enhances value retention at the farm level. These practices allow smallholders to improve quality control and access higher-paying markets, thereby increasing their incomes (Chavas & Aliber, 2020). However, adoption of both horizontal and vertical diversification strategies is often limited by resource constraints, low access to finance, and gaps in extension services (Kasenge et al., 2017; Kadiyala et al., 2014). Consequently, while diversification has proven potential, its full impact on bridging the living income gap for Ugandan coffee farmers remains underexplored.

This study is grounded in the Sustainable Livelihoods Framework (SLF) (Chambers & Conway, 1992) and Value Chain Development (VCD) theory (Kaplinsky & Morris, 2001). The SLF highlights the importance of household access to multiple forms of capital—human, financial, natural, physical, and social—in sustaining livelihoods and building resilience to shocks. In the coffee sector, production practices directly influence access to natural capital (land productivity), human capital (skills and training), and financial capital (income generation). The VCD theory complements this by emphasizing the

enhancement of efficiency and equity at different stages of the value chain, including production, processing, and marketing. Together, these frameworks provide a structured approach to analyzing how production practices contribute to smallholder farmers' pursuit of a living income.

Recent interventions underscore the need to link production practices with both sustainability and income generation. The Uganda Coffee Carbon Project (UCCP), implemented by the Ankole Coffee Producers Cooperative Union (ACPCU) in collaboration with the African Plant Nutrition Institute (APNI), seeks to integrate climate-smart practices such as agroforestry, soil fertility management, and carbon finance into coffee systems. By promoting diversified production alongside access to alternative revenue streams, UCCP illustrates how strategic production interventions can simultaneously address environmental and income sustainability (Katusiimeh et al., 2019; Kilimo Trust, 2021). Although studies have documented the benefits of diversification and improved agronomic practices in enhancing productivity, food security, and poverty reduction (Torero & von Braun, 2019; Mugisha et al., 2018), limited research explicitly examines their effect on the living income of Ugandan coffee farmers. Most evidence assesses yields, price premiums, or resilience outcomes without directly connecting production practices to the living income benchmark. Furthermore, studies often analyze isolated interventions rather than integrated production strategies within the broader value chain. This limits the policy relevance of findings and hampers the design of holistic interventions.

Against this background, this study assessed the effect of production practices on the living income of smallholder coffee farmers in Uganda. By focusing on production as the foundational stage of the coffee value chain, the study provides insights into how inputs, training, and credit as diversified strategies influence household capacity to attain a living income. The findings aimed to inform policy, cooperative strategies, and development programs seeking to enhance the resilience and profitability of Uganda's coffee sector.

Methodology

Study design

This study employed a cross-sectional research design to assess the effect of production practices on the living income of smallholder coffee farmers in Uganda. The design was appropriate as it enabled the collection of quantitative data from multiple respondents at a single point in time, allowing for analysis of the relationship between production practices and household living income outcomes.

Study area

The study was conducted in July-August 2025 among smallholder coffee farmers participating in the Uganda

Coffee Carbon Project (UCCP) implemented by the Ankole Coffee Producers Cooperative Union (ACPCU) in Southwestern Uganda, specifically Mitoma and Ntungamo districts.

Study participants

Page | 3 The study was conducted among smallholder coffee farmers participating in the Uganda Coffee Carbon Project (UCCP) implemented by the Ankole Coffee Producers Cooperative Union (ACPCU) in Southwestern Uganda, specifically in Mitoma and Ntungamo districts. These districts were purposively selected due to their active engagement in coffee production and their inclusion in the UCCP program. The target population comprised all ACPCU-affiliated households engaged in coffee farming.

Inclusion criteria

Were households that (i) were registered members of ACPCU, (ii) actively cultivated coffee as part of their farming enterprise, and (iii) had a household head or an adult member available and willing to provide informed consent to participate in the survey.

Exclusion criteria

Included households that (i) were not directly involved in coffee production despite ACPCU affiliation (e.g., those leasing out land for coffee), (ii) had migrated or were absent during the data collection period, or (iii) declined to participate after being approached.

The study size

A sample of 133 respondents was determined using Yamane's formula (1967), ensuring representation of the study population. Stratified random sampling was applied, with strata defined by cooperative membership to specifically focus on coffee farmer experiences with diversified production practices.

Bias

To minimize potential bias in the study, stratified random sampling was employed. The target population was divided into strata based on cooperative membership to ensure that households with varying levels of participation and access to production practices were adequately represented. Within each stratum, households were randomly selected, which reduced the likelihood of systematic errors and minimized selection bias. This approach increased the representativeness of the sample by capturing diversity across farmer categories. In addition, randomization helped enhance the reliability of the findings and supported the validity of inferences made about the broader population.

Data collection

Primary data were collected using structured questionnaires administered to household heads. The instrument contained sections on demographic characteristics, production practices (such as access to agricultural inputs, credit, and training), and indicators of living income (food security, savings, education, health, and water access). The questionnaire was pretested with 20 farmers in a neighboring district to ensure clarity and reliability, after which adjustments were made. Secondary data from cooperative records and project reports were used to complement primary findings.

Statistical analysis

Instrument validity was established through expert review and computation of the Content Validity Index (CVI), which exceeded the acceptable threshold of 0.70. Reliability was assessed using Cronbach's Alpha, with coefficients above 0.80 confirming internal consistency of the production practices scale.

Quantitative data were coded and entered into SPSS (version 16) for analysis. Descriptive statistics (frequencies, means, and percentages) were used to summarize demographic characteristics and production practices. Inferential analysis was carried out using regression models to test the relationship between production practices and living income. The regression model controlled for demographic variables such as land size, years in coffee farming, and household size. Statistical significance was set at $p < 0.05$.

Epical consideration

Ethical approval was obtained from Bishop Stuart University's Directorate of Graduate Studies and Research. Informed consent was obtained from all respondents, who were assured of confidentiality and the voluntary nature of their participation. **Approval Date:** 21st Aug 2025, **REC Number:** BSU-REC-2025-592

Results

Participant flow

A total of 133 farmers were initially targeted for the study based on Yamane's formula. Of these, 120 were approached and examined for eligibility, while 13 could not be reached due to relocation or absence during data collection. Among the 120 approached, 113 farmers met the eligibility criteria and consented to participate. Seven farmers declined participation, citing a lack of time or disinterest. All 113 consenting farmers completed the questionnaires, and their data were included in the analysis. No participants were excluded after enrollment.

Reasons for non-participation included: Not reachable during data collection ($n = 13$), and declined participation ($n = 7$). Thus, the final analytic sample comprised 113 smallholder coffee farmers (Figure 1).

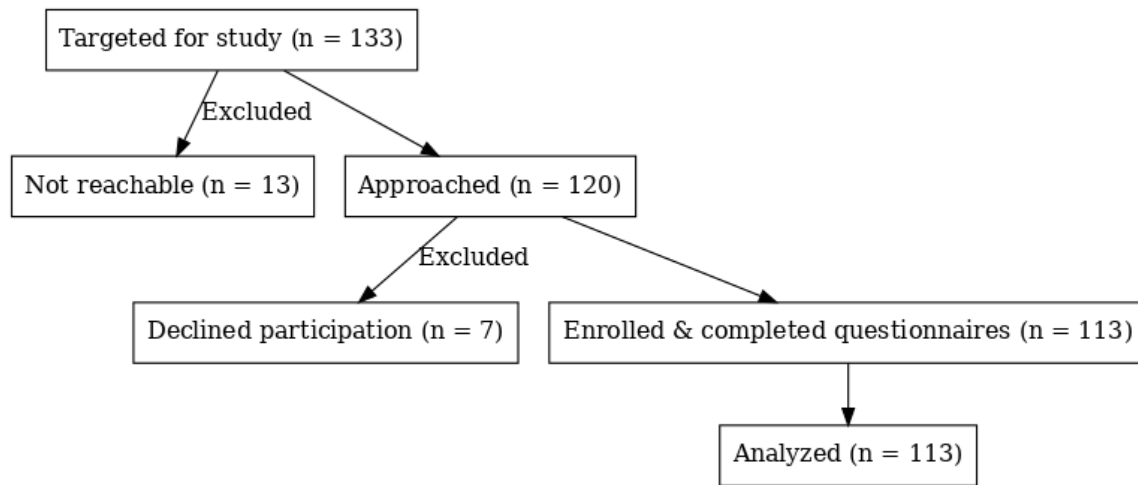


Figure 1: The analytic sample comprising 113 smallholder coffee farmers

The results reveal that the production dimension, encompassing agronomic practices, adoption of climate-smart methods, and intensity of coffee farming, plays a statistically significant role in determining whether smallholders attain a living income.

Descriptive results

A total of 113 smallholder coffee farmers participated in the survey. Their socio-demographic characteristics are summarized.

Table 1: Socio-demographic characteristics of respondents (n = 113)

Variable	Category	Frequency (n)	Percentage (%)
Age group (years)	18–35	27	23.9
	36–45	47	41.6
	46–55	31	27.4
	56–65	9	8.0
Gender	Male	72	63.7
	Female	41	36.3
Marital status	Married	90	79.6
	Single	10	8.9
	Widowed	13	11.5
Education level	No formal education	26	23.0
	Primary	41	36.3
	Secondary	32	28.3
	Tertiary	14	12.4
Household size	1–3 members	17	15.0
	4–6 members	40	35.4
	7–9 members	44	38.9
	≥10 members	12	10.7
District	Ntungamo	64	56.6
	Mitoma	49	43.4

Years in farming	≤10 years	57	50.4
	>10 years	56	49.6

Age: The farmers ranged from 22 to 72 years, with a mean age of 43.6 years (SD = 11.7). The majority (41.6%) were between 36 and 45 years, followed by 27.4% aged 46–55 years, while only 8.0% were above 65 years.

Gender: Out of 113 respondents, 72 (63.7%) were male and 41 (36.3%) females, reflecting the male dominance in land ownership and decision-making in coffee farming households.

Marital Status: Most farmers were married (79.6%), while 11.5% were widowed, and 8.9% single.

Education: In terms of education, 36.3% had attained primary education, 28.3% secondary, 12.4% tertiary, while 23.0% reported no formal education.

Household Size: Household size ranged from 2 to 12 members, with a mean of 6.1 persons (SD = 2.3). Large households (7–9 members) constituted the highest proportion (38.9%).

Location: Respondents were drawn from two UCCP implementing districts: Ntungamo (56.6%) and Mitoma (43.4%).

Years in Coffee Farming - On average, farmers had engaged in coffee farming for 15.8 years (SD = 7.9). Nearly half (49.6%) had more than 10 years of experience, reflecting long-term reliance on coffee as a livelihood source.

The findings show that the majority of coffee farmers adopt at least some recommended production practices, though intensity and consistency vary considerably. Key practices assessed included pruning, stumping, mulching, application of organic fertilizers, shade management, pest and disease control, and intercropping. Among these, pruning and mulching had the highest adoption rates, reported by over 70% of farmers, while fertilizer use was far less common, reported by less than 40%. Intercropping, primarily with bananas and beans, was widespread, reflecting its role in food security and supplementary income.

Living income attainment remains a critical challenge. The descriptive statistics reveal that only about one-quarter of the respondents reached or exceeded the national living income benchmark. Farmers who adopted a higher number of recommended production practices demonstrated a clear advantage in moving closer to the living income threshold compared to those with limited or no adoption, as the figure below depicts.

Inferential results

Regression analysis confirmed that production practices exerted a positive and statistically significant influence ($p < 0.05$) on household living income. A unit increase in adoption of production practices improved the living income score, with farmers employing three or more practices substantially more likely to reach the living income benchmark. Farm size, access to extension services, and credit availability moderated these effects—larger farms and households with regular extension contact benefited disproportionately. Gender dynamics also mattered: while male-headed households adopted more capital-intensive practices like fertilizer use, female-headed households relied on low-cost practices such as mulching and intercropping, explaining their relatively lower odds of attaining a living income. These findings are consistent with the regression model summarized in Figure 1 below, which highlights production diversification and farm efficiency as critical facilitators of household income. The constant line (UGX 2,300,000) in the model illustrates the baseline investment burden faced by farmers regardless of diversification, emphasizing why credit and extension access remain pivotal for income upgrading. This often renders farmers with limited land at risk of making a business loss, lest they diversify enterprises on the farm.

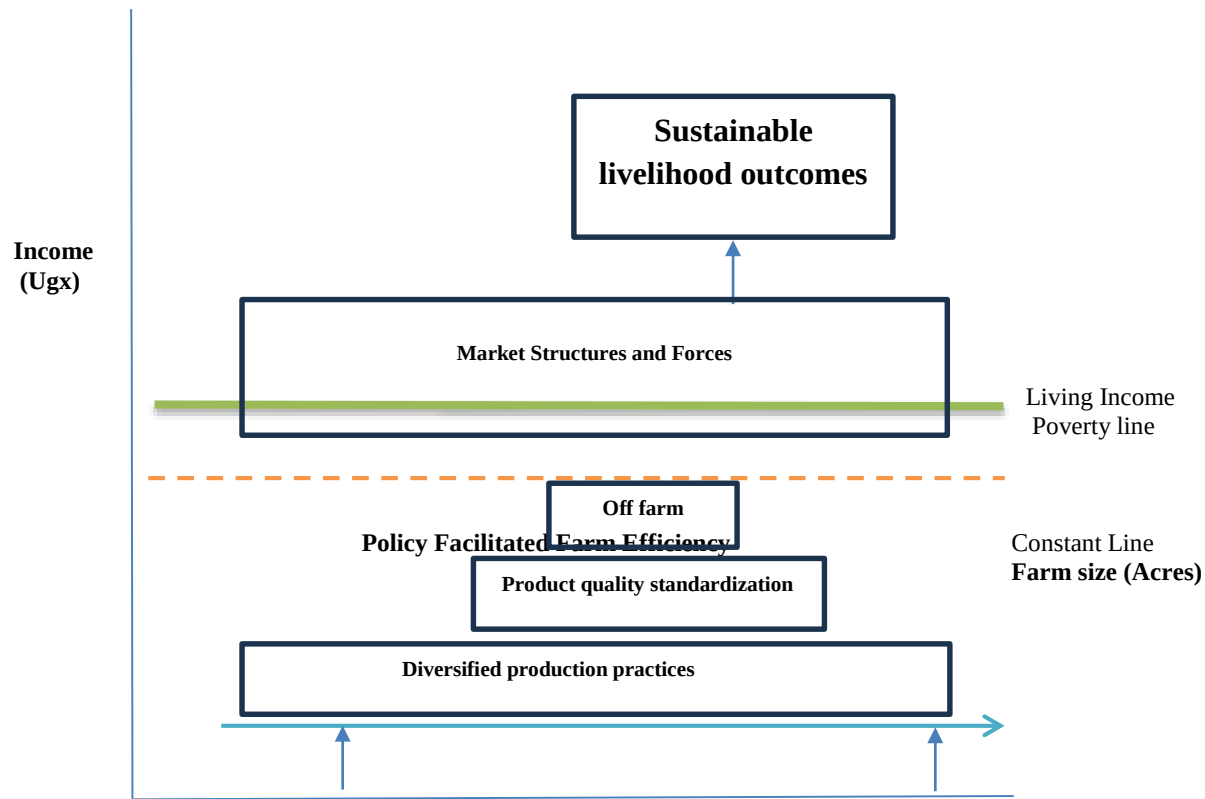


Fig 1: a figure showing the factors and facilitators to living Income

Taken together, the evidence shows that improved production practices enhance productivity, stabilize yields, and contribute to household welfare outcomes such as food security, education, and healthcare. However, as Figure 1 demonstrates, production practices alone are insufficient for all farmers to achieve a living income, given persistent constraints such as limited access to inputs, climate variability, and volatile market structures. This suggests that while production upgrading is foundational, complementary investments in post-harvest handling and market diversification are necessary to close the living income gap for Uganda's coffee smallholders.

Discussion

The findings of this study indicate that production “practices significantly affect the living income of smallholder coffee farmers in Uganda,” with regression results confirming a positive and statistically significant effect ($p < 0.05$). Specifically, farmers who adopted at least three improved agronomic practices—such as mulching, pruning, shade management, or soil fertility enhancement—were more likely to approach or reach the living income benchmark

compared to those adopting fewer practices. Descriptive results showed that over 70% of farmers practiced pruning and mulching, while fertilizer application was less common (<40%). Nevertheless, only about one-quarter (25%) of the respondents reached the national living income threshold, underscoring that while production practices contribute positively, they are not sufficient on their own.

A cautious interpretation of these results is necessary. First, the study employed a cross-sectional design, meaning the observed associations cannot be interpreted as strict causal relationships. Other unobserved factors—such as household labor dynamics, informal income sources, and community-level support systems—may also influence household income outcomes. Second, while improved practices enhanced productivity, adoption levels varied, and the benefits disproportionately accrued to resource-endowed farmers with larger landholdings or access to credit. Therefore, these findings should be seen as indicative rather than definitive proof that improved production practices alone guarantee attainment of a living income for all smallholder coffee farmers.

When compared with other studies, the findings align with broader evidence that good agricultural practices enhance productivity and household resilience. For example, Byekwaso et al. (2021) and ICO (2019) similarly found that adoption of agronomic practices improves yields and income stability in smallholder coffee systems. However, this study adds nuance by showing that the positive effects were uneven, with resource-constrained households benefiting less. This mirrors Ntiringanya et al. (2020), who noted that high input costs create barriers for poorer farmers. Furthermore, the moderating role of climate variability identified here resonates with Ssewanyana et al. (2021), who observed that practices such as mulching and agroforestry buffered households against climate shocks.

Importantly, the finding that “improved production practices alone were insufficient for all farmers to attain the benchmarked living income” reflects conclusions by the Living Income Community of Practice (2020), which stresses the need for holistic approaches that combine production improvements with post-harvest and market interventions. Similarly, Smith et al. (2021) reported that despite yield gains, coffee farmers in Uganda remained far below the living income benchmark due to volatile farm-gate prices and weak market linkages.

While the findings of this study provide strong evidence that production practices significantly influence living income outcomes among smallholder coffee farmers in Mitoma and Ntungamo districts under the Uganda Coffee Carbon Project, their generalizability should be considered with caution. The cross-sectional design and purposive focus on cooperative-affiliated households may limit applicability to farmers outside organized groups or in regions with different ecological and market conditions. For example, farmers in northern and eastern Uganda—where coffee systems are less diversified and market structures differ—may experience different outcomes from similar practices. Nonetheless, the consistency of these findings with other Ugandan and regional studies (Byekwaso et al., 2021; Ssewanyana et al., 2021; Smith et al., 2021) suggests that the positive association between improved agronomic practices and household income is not unique to this sample. Therefore, while the exact magnitudes of income effects may vary by context, the general principle that sustainable production practices contribute to narrowing the living income gap is likely to hold across other smallholder coffee systems in Uganda and potentially in comparable Sub-Saharan African settings.

Conclusions

- The study establishes that production practices significantly shape the living income of smallholder coffee farmers in Uganda.
- Farmers who adopted good agronomic practices—such as timely pruning, mulching, shade

management, soil fertility enhancement, and pest and disease control—achieved higher yields and more consistent harvests compared to those with low adoption levels.

- The results affirm that yield improvements, driven by sustainable production practices, are a critical pathway to narrowing the living income gap among coffee smallholders.
- However, the findings also show that while better production practices enhance household income, they are insufficient on their own to guarantee attainment of a living income.
- Constraints such as limited access to farm inputs, climate variability, and fluctuating farm-gate prices limit the full impact of improved production practices.
- In conclusion, production practices act as a foundational driver of income growth, but their effectiveness depends on complementary interventions across the coffee value chain.

Limitations

This study was limited by the participatory nature of both the Sustainable Livelihood Approach and the Value Chain Development theories used. An econometric approach, employing Living Income Reference Price (LIRP) methodologies to determine the true cost and opportunity cost of coffee production, should be undertaken in future studies.

Recommendations

- Extension services should be strengthened to ensure continuous farmer training on best agronomic practices, particularly targeting low-adopting households. Integrating digital advisory platforms into extension delivery could expand outreach and reduce knowledge gaps.
- Access to affordable and quality farm inputs—such as fertilizers, organic composts, and disease-resistant coffee varieties—must be scaled up through farmer cooperatives, credit schemes, and public-private partnerships.
- Climate-smart agricultural practices should be mainstreamed into production training to enhance resilience against weather shocks that undermine yields.
- Government and development partners should invest in farmer field schools and demonstration plots to showcase the tangible benefits of improved production practices, thereby increasing adoption rates.
- Since production alone cannot close the living income gap, interventions should be integrated with post-harvest, marketing, and value-addition

strategies to maximize returns from higher productivity.

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List of abbreviations

ACPCU: Ankole Coffee Producers Cooperative Union
FAO: Food and Agriculture Organization
ICO: International Coffee Organization
LIRP: Living Income Reference Price
SLF: Sustainable Livelihoods Framework
UCCP: Uganda Coffee Carbon Project
UBOS: Uganda Bureau of Statistics
VCD: Value Chain Development

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Conflict of interest

The authors declare that they have no conflict of interest.

Author contributions

- **Derrick Komwangi:** Conceptualization, data collection, analysis, and initial manuscript drafting.
- **Medard Twinamastiko:** Methodological guidance, literature review, and interpretation of results.
- **Johnson Atwiine:** Supervision, critical revisions, and policy implications.
- All authors read and approved the final manuscript.

Data availability

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

Author biographies

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REFERENCES

1. Ajao, O. A., Mugisha, J., & Ssewanyana, S. (2019). Diversification strategies and economic stability of coffee farmers in Uganda. *African Journal of Agricultural Research*, 14(5), 251-263. <https://doi.org/10.5897/AJAR2019.13914>
2. Ajao, R., Mugisha, J., & Nabwire, A. (2019). Diversification and household economic stability among smallholder coffee farmers in Uganda. *Journal of Agricultural Economics and Development*, 8(2), 45-57.
3. Barrett, C. B., Reardon, T., & Webb, P. (2010). Nonfarm income diversification and household livelihood strategies in rural Africa: Concepts, dynamics, and policy implications. *Food Policy*, 26(4), 315-331. [https://doi.org/10.1016/S0306-9192\(01\)00014-8](https://doi.org/10.1016/S0306-9192(01)00014-8)
4. Byaruhanga, C., Tumwine, J., & Kansime, M. (2019). Coffee farming and poverty dynamics among smallholders in Uganda. *African Journal of Rural Development*, 4(1), 67-81.
5. Byaruhanga, C., Tumwine, S., & Kato, E. (2019). Smallholder coffee productivity in Uganda: Constraints and opportunities. *Uganda Journal of Agricultural Sciences*, 20(1), 45-57.
6. Chambers, R., & Conway, G. (1992). Sustainable rural livelihoods: Practical concepts for the 21st century (IDS Discussion Paper 296). Institute of Development Studies.
7. Chavas, J. P., & Aliber, M. (2020). Agricultural diversification in Sub-Saharan Africa: Implications for income stability and poverty reduction. *World Development*, 125, 104682. <https://doi.org/10.1016/j.worlddev.2019.104682>
8. Food and Agriculture Organization (FAO). (2020). *FAO statistical yearbook: World food and agriculture*. FAO.
9. International Coffee Organization (ICO). (2020). *Coffee development report 2020*. ICO.
10. Kabi, F., Mugisha, J., & Nankinga, O. (2020). Intercropping and diversification practices among Ugandan coffee farmers. *Journal of Development and Agricultural Economics*, 12(6), 243-252. <https://doi.org/10.5897/JDAE2020.1183>

11. Kabi, J., Mugisha, J., & Twinamatsiko, M. (2020). Intercropping and food security among coffee-producing households in Uganda. *Agroecology and Sustainable Food Systems*, 44(6), 789-807. <https://doi.org/10.1080/21683565.2019.1697796>
12. Kadiyala, D. M., Nkonya, E., & Kaizzi, C. (2014). Constraints to agricultural diversification in Sub-Saharan Africa (IFPRI Discussion Paper 1381). International Food Policy Research Institute.
13. Kadiyala, S., Harris, J., Headey, D., Yosef, S., & Gillespie, S. (2014). Agriculture and nutrition in India: Mapping evidence to pathways. *Annals of the New York Academy of Sciences*, 1331(1), 43-56. <https://doi.org/10.1111/nyas.12477>
14. Kaplinsky, R., & Morris, M. (2001). A handbook for value chain research. Institute of Development Studies.
15. Kasenge, V., Nakiguli, J., & Sserunkuuma, D. (2017). Barriers to sustainable farming diversification in Uganda. *African Journal of Agricultural Research*, 12(10), 845-854. <https://doi.org/10.5897/AJAR2017.12122>
16. Kasenge, V., Sserunkuuma, D., & Mutabazi, F. (2017). Farmer capacity and the adoption of diversified farming systems in Uganda. *African Crop Science Journal*, 25(2), 101-115.
17. Katharina, S. (2024). Closing the living income gap in global coffee value chains. *Sustainability*, 16(4), 221-238. <https://doi.org/10.3390/su1604221>
18. Katusiimeh, M., Tumwebaze, P., & Twinamatsiko, M. (2019). Barriers to sustainable coffee production in Uganda: Evidence from smallholder farmers. *Journal of Rural Studies*, 71, 45-54. <https://doi.org/10.1016/j.jrurstud.2019.08.003>
19. Kilimo Trust. (2021). Agricultural diversification for sustainable livelihoods in East Africa. Kilimo Trust.
20. Living Income Community of Practice. (2019). The concept of living income. <https://www.living-income.com>
21. Mugisha, J., Bashaasha, B., & Nkonya, E. (2018). Coffee value chains and livelihood outcomes of smallholder farmers in Uganda. *African Journal of Economic Policy*, 25(2), 95-117.
22. Mugisha, J., Elepu, G., & Mwesigye, F. (2018). Coffee value chain and diversification strategies among smallholder farmers in Uganda. *African Journal of Economic Policy*, 25(1), 24-39.
23. Munyua, H., Adera, E., & Jensen, M. (2018). Impact of diversification on resilience of coffee households in East Africa. *Journal of Rural Development*, 37(3), 231-250.
24. Smith, J., Turner, G., & Katharina, S. (2021). Income gaps and sustainability in Uganda's coffee sector. *World Development Perspectives*, 23, 100345. <https://doi.org/10.1016/j.wdp.2021.100345>
25. Smith, S., Katusiimeh, M., & Turner, T. (2021). Bridging the income gap in Uganda's coffee sector: Lessons from sustainable production practices. *Development in Practice*, 31(8), 1023-1035. <https://doi.org/10.1080/09614524.2021.1902212>
26. Ssewanyana, N., Nankinga, O., & Kansiime, F. (2021). Climate change, diversification, and income resilience among coffee farmers in Uganda. *Climate and Development*, 13(7), 593-604. <https://doi.org/10.1080/17565529.2020.1867042>
27. Ssewanyana, S., Ajao, O., & Mugisha, J. (2021). Climate shocks, diversification, and the resilience of smallholder coffee farmers in Uganda. *Climatic Change*, 167(1-2), 45-62. <https://doi.org/10.1007/s10584-021-03145-y>
28. Turner, G. (2024). Measuring living income gaps among African coffee farmers. *Development Policy Review*, 42(1), 55-72. <https://doi.org/10.1111/dpr.12605>
29. Uganda Bureau of Statistics (UBOS). (2024). National housing and population census report. UBOS.
30. World Bank. (2019). Uganda economic update: Strengthening the agriculture sector. World Bank.

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