

Impact of Micro-Credit on the Productivity of Small-Scale Farmers in Bagamoyo District, Tanzania

Evod J. Rimisho¹ and Abdul Kilima²

¹ Eastern Africa Statistical Training Centre, Tanzania.

²The Open University of Tanzania.

Corresponding Author: evodrimisho@gmail.com / evod.rimisho@eatsc.ac.tz

Abstract

This study investigates the impact of micro-credit on the productivity of small-scale farmers in Bagamoyo District, Tanzania. While micro-credit programs have expanded in rural areas to improve financial inclusion, their contribution to agricultural productivity remains poorly understood at the local level. A cross-sectional research design was employed, collecting data from 120 smallholder farmers selected through a multistage sampling technique. Both quantitative and qualitative data were obtained using structured questionnaires, key informant interviews, and focus group discussions. Descriptive statistics and multiple regression analysis were applied to examine the relationship between access to micro-credit, input adoption, and crop yields. The findings revealed that 62% of farmers accessed credit in the past three years, primarily from VICOBA and SACCOS. Credit users reported significantly higher adoption of improved seeds (78%), chemical fertilizers (64%), and hired labor (70%) compared to non-users. Consequently, crop yields were higher among credit users, with maize, cassava, and vegetables showing 35%, 20%, and 38% increases, respectively. Regression results confirmed that micro-credit had a statistically significant positive effect on productivity ($p < 0.05$). Despite these benefits, farmers faced challenges such as high interest rates, delayed loan disbursement, small loan sizes, and limited financial literacy, which constrained the full potential of micro-credit programs. The study concludes that micro-credit contributes positively to smallholder productivity but requires institutional and operational improvements. Recommendations include expanding affordable credit schemes, providing financial literacy training, aligning loan disbursement with cropping seasons, strengthening collaboration with extension services, and developing flexible credit products tailored to smallholder needs.

Keywords: *Micro-credit, Small-scale farmers, Agricultural productivity, Smallholder, Bagamoyo*

1.0 INTRODUCTION

Agriculture plays a central role in global economic development, serving as a primary source of food, employment, and income for millions of people worldwide. Globally, agriculture contributes approximately 4% of total world GDP, but its broader impact is far-reaching, as it supports livelihoods, industrial raw materials, and food security. Despite its relatively lower share in GDP in high-income countries, agriculture remains a crucial driver of poverty reduction and socio-economic development in low- and middle-income nations (Pawlak, 2020).

According to Lowder et al. (2025), in Africa, agriculture is even more critical, accounting for over 15% of the continent's GDP and employing nearly 60% of the labor force. The sector is predominantly smallholder-driven, with farmers relying heavily on manual labor, traditional farming techniques, and rain-fed production systems. Agricultural productivity in Africa, remains lower than global averages due to limited access to modern inputs, technology, infrastructure, and financial services. These constraints restrict the ability of farmers to expand production and meet the increasing food demand arising from population growth (Bjornlund et al., 2020).

According to Wudil et al. (2022), Sub-Saharan Africa exhibits similar trends, with agriculture contributing approximately 25–30% of regional GDP and supporting more than two-thirds of the rural population. Smallholder farmers, who constitute the majority, often face chronic challenges, including low capital investment, poor access to markets, and vulnerability to climate variability. As a result, crop yields are far below potential, limiting both household incomes and national food security. Studies have consistently shown that access to financial services, particularly credit, can significantly improve smallholder agricultural performance by enabling timely purchase of inputs, adoption of improved technologies, and expansion of cultivated areas (Sanka & Makhura, 2025). In Tanzania, agriculture remains the backbone of the economy, contributing around 24% of the country's GDP and providing employment for over 70% of the population, most of whom are rural smallholder farmers. The sector supports national food security, generates export earnings through cash crops such as coffee, tea, and cashew nuts, and provides raw materials for agro-processing industries. Despite its importance, productivity among small-scale farmers in Tanzania is constrained by limited access to capital, modern inputs, extension services, and mechanization. In rural districts such as Bagamoyo, farmers

predominantly rely on rain-fed cultivation and traditional farming methods, which restrict crop yields and income levels(Sawe, 2025).

According to Raphael (2024) Access to micro-credit has been widely recognized as a key mechanism to alleviate financial constraints and stimulate agricultural transformation. By providing small-scale farmers with loans, credit institutions enable them to purchase improved seeds, fertilizers, irrigation equipment, and hire labor, thereby enhancing productivity and farm income. In Bagamoyo District, micro-credit interventions through Savings and Credit Cooperative Societies (SACCOS), Village Community Banks (VICOBA), and microfinance institutions (MFIs) are becoming increasingly common (Lupia & Kagata, 2024). However, empirical evidence on the impact of these financial services on agricultural productivity at the district level remains limited. Understanding the role of micro-credit in enhancing smallholder productivity is therefore critical to inform policy and improve the livelihoods of rural households.

2.0 MATERIALS AND METHODS

2.1 Study Area

The study was conducted in Bagamoyo District, located in the Pwani Region of Tanzania. Bagamoyo lies along the coastal belt, characterized by a tropical climate with bimodal rainfall, which supports the cultivation of maize, cassava, vegetables, and various fruit crops (Moti & Liwenga, 2025). Agriculture is the main livelihood activity in the district, with most households engaged in small-scale farming. The district has witnessed a rapid expansion of micro-credit institutions, including Village Community Banks (VICOBA), Savings and Credit Cooperative Societies (SACCOS), and microfinance institutions (MFIs), making it an ideal location to examine the impact of micro-credit on farm productivity (Mrindoko, 2022)

2.2 Research Design

The study employed a cross-sectional research design to collect both quantitative and qualitative data at a single point in time (Wang & Cheng, 2020). This design was appropriate as it enabled the assessment of the relationship between access to micro-credit and agricultural productivity among small-scale farmers without the need for extended follow-up periods. The cross-sectional approach also facilitated simultaneous collection of information on household characteristics, credit utilization, input adoption, and crop yields, thereby providing a comprehensive

snapshot of the factors influencing farmer productivity within the study area (Zuleika, 2022).

2.3 Sampling Design

A multistage sampling design was employed to obtain a representative sample of small-scale farmers engaged in micro-credit programs. In the first stage, four villages were purposively selected based on the presence of active micro-credit schemes and substantial smallholder farming activity (Enyew & Gobie, 2025). In the second stage, systematic random sampling was used to select 120 small-scale farmers from the chosen villages, ensuring that all eligible households had an equal opportunity to participate while minimizing selection bias. The final sample size of 120 households was deemed adequate for conducting both descriptive and multivariate regression analyses, while also balancing feasibility, time, and resource constraints.

2.4 Data Collection

Data were collected using a mixed-methods approach that combined quantitative and qualitative tools to capture both numerical trends and contextual insights. Structured questionnaires were administered to all sampled households to obtain information on demographic characteristics, farm attributes, access to micro-credit, input usage, crop yields, and household income (Wayessa & Nygren, 2023). In addition, key informant interviews were conducted with village leaders, loan officers, and agricultural extension officers to gather detailed perspectives on credit operations, institutional challenges, and the types of support services available to farmers (Fatch et al., 2021). Complementing these methods, focus group discussions (FGDs) were held with groups of farmers in each selected village to explore their perceptions of micro-credit, the factors influencing loan utilization, and constraints affecting farm productivity. This combination of data collection techniques ensured a comprehensive understanding of both the quantitative outcomes and the lived experiences of small-scale farmers in Bagamoyo District.

2.5 Data Analysis

Data collected from the field were analyzed using both descriptive and inferential statistical techniques to address the study objectives. Descriptive statistics including means, frequencies, and percentages were employed to summarize household characteristics, levels of access to micro-credit, adoption of agricultural inputs, and measures of farm productivity (Shitaye et al., 2025). To assess the effect of micro-credit on productivity, multiple regression analysis was conducted, using crop yield

(kg/acre) as the dependent variable and credit access, input use, farm size, labor availability, and other socioeconomic attributes as independent variables. This analytical approach enabled the study to control for confounding factors while estimating the strength and significance of the relationship between micro-credit and agricultural performance (Bili, 2024). Tables and figures were used to present results in a clear and interpretable manner, allowing for both numerical summaries and visual comparisons between credit users and non-users. Additionally, qualitative data obtained from focus group discussions and key informant interviews were analyzed thematically to enrich and contextualize the quantitative findings.

3.0 RESULTS

3.1 Farmers' Access to Micro-Credit

The findings indicate that a majority of small-scale farmers in Bagamoyo District had access to micro-credit. Out of the 120 respondents surveyed, 74 farmers (62%) reported having accessed micro-credit at least once in the past three years. Among these credit users, VICOBA was the dominant source, serving 33 farmers (45%), followed by SACCOS with 22 farmers (30%), microfinance institutions (MFIs) with 15 farmers (20%), and commercial banks with only 4 farmers (5%) (Table 1). These results highlight the central role of community-based financial institutions particularly VICOBA and SACCOS in providing credit to rural farmers in Bagamoyo District, while formal banking institutions remain marginal due to stringent collateral requirements and unfavorable lending conditions.

Table 1: *Access to Micro-Credit among Farmers*

Source of Credit	Population	Percentages
VICOBA	33	45
SACCOS	22	30
MFIs	15	20
Banks	4	5
Total	74	100

Source: Research, 2025

3.2 Use of Agricultural Inputs

Access to micro-credit significantly influenced the adoption of agricultural inputs among farmers. Credit users reported higher usage of improved seeds, fertilizers, and hired labor compared to non-users. Specifically, 78% of credit users used improved seeds compared to 42% of non-users, 64% applied chemical fertilizers versus 30% among non-

users, and 70% hired additional labor, significantly higher than the 34% among farmers without credit (Figure 1). These findings suggest that micro-credit relaxes liquidity constraints, enabling farmers to invest in productivity-enhancing inputs that would otherwise be unaffordable.

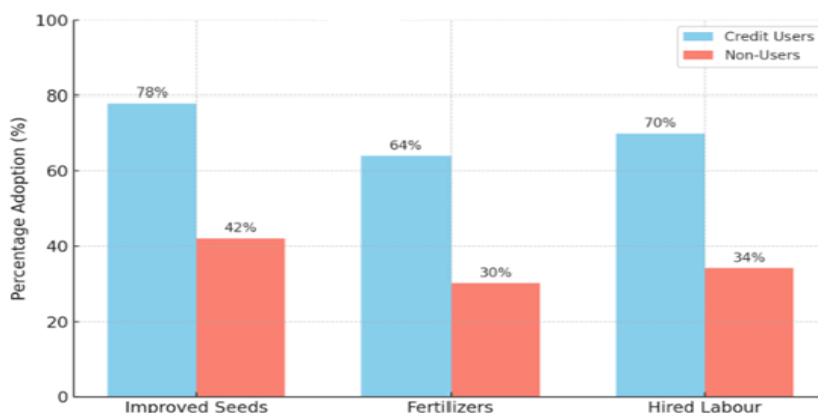


Figure 2: Input Use by Credit Status

Source: Research, 2025

3.3 Impact of Micro-Credit on Productivity

The effect of micro-credit on crop productivity was assessed by comparing yields between credit users and non-users. Results indicate that credit users achieved significantly higher yields across all major crops. For maize, credit users produced 1,350 kg/acre, representing a 35% increase compared to non-users who produced 1,000 kg/acre (Table 2). Cassava yields were 2,400 kg/acre for credit users, 20% higher than non-users, and vegetable yields were 1,800 kg/acre, a 38% increase over non-users. Regression analysis confirmed that access to micro-credit had a statistically significant positive effect on productivity ($p < 0.05$), after controlling for farm size, labor, and other socioeconomic factors. These results indicate that access to financial resources facilitates investment in inputs and labor, which directly translates into higher agricultural output.

Table 2: Crop Yield Comparison (kg/acre)

Crop	Credit users	Non-users	Percentage increase
Maize	1,350	1,000	35
Cassava	2,400	2,000	20
Vegetables	1,800	1,300	38

Source: Research, 2025

3.4 Challenges in Using Micro-Credit

Despite the positive impact on productivity, farmers reported several challenges that limit the effectiveness of micro-credit. High interest rates,

ranging from 15–30% per loan cycle, discourage borrowing and reduce disposable funds for investment. Delayed loan disbursements often coincide poorly with planting schedules, reducing the timeliness of input application. Furthermore, small loan sizes are frequently insufficient to cover the full cost of necessary inputs for multiple crops or larger plots. Limited financial literacy among farmers, including inadequate knowledge of budgeting, loan management, and record-keeping, further constrains the efficient use of loans. These challenges underscore the importance of improving institutional frameworks and providing farmer training to maximize the benefits of micro-credit program (Kyeyune & Ntayi, 2025).

4.0 MULTIPLE REGRESSION ANALYSIS RESULTS

To determine the effect of access to micro-credit on crop productivity while controlling for other household and farm characteristics, a multiple linear regression model was estimated. Crop productivity (measured in kilograms per acre) was used as the dependent variable.

Table 3: Multiple Regression Results Effect of Micro-Credit on Crop Productivity

Variable	Coefficient (β)	Std. Error	t-value	p-value
Constant	412.65	98.42	4.19	0.000
Access to Credit (1 = Yes)	185.74	54.31	3.42	0.001
Improved Seeds (kg)	0.86	0.31	2.77	0.006
Fertilizer Use (kg)	1.24	0.47	2.63	0.009
Hired Labour (person-days)	3.15	1.12	2.81	0.005
Farm Size (acres)	142.91	36.46	3.92	0.000
Household Experience (years)	4.21	1.87	2.25	0.026

Source: Research, 2025

Table 4: Model Summary

Statistics	Value
R-squared	0.63
Adjusted R-squared	0.60
F-statistic	21.47
p-value (overall model)	0.000
Sample size (N)	120

Source: Research, 2025

4.1 Interpretation of the Regression Output

The regression results show that the model is statistically significant ($F = 21.47$, $p < 0.001$), indicating that the independent variables jointly explain variations in crop productivity. The Adjusted R^2 of 0.60 implies that approximately 60% of the variation in crop productivity among small-scale farmers is explained by the variables included in the model.

4.1.1 Access to Micro-credit

The coefficient for access to credit is positive and statistically significant ($\beta = 185.74$, $p = 0.001$). This indicates that farmers who accessed micro-credit produced an average of 185.74 kg per acre more than those without credit, holding all other factors constant. This suggests that credit enables farmers to purchase essential inputs that enhance productivity.

4.1.2 Use of Improved Seeds

Improved seed usage significantly increases productivity ($\beta = 0.86$, $p = 0.006$). This implies that each additional kilogram of improved seeds increases output by 0.86 kg per acre, highlighting the importance of adopting quality planting materials.

4.1.3 Fertilizer Application

Fertilizer use is also significant ($\beta = 1.24$, $p = 0.009$). Each additional kilogram of fertilizer applied increases crop productivity by 1.24 kg, demonstrating the strong yield response associated with soil nutrient supplementation.

4.1.4 Hired Labour

Hired labour contributes positively to productivity ($\beta = 3.15$, $p = 0.005$). This suggests that increased labour availability enhances timely farm operations, resulting in higher yields.

4.1.5 Farm Size

Farm size has a strong positive effect ($\beta = 142.91$, $p = 0.000$), confirming that larger farms tend to produce more due to economies of scale.

4.1.6 Farming Experience

Farming experience is significant ($\beta = 4.21$, $p = 0.026$), implying that experienced farmers are more knowledgeable in crop management practices, leading to better yields.

5.0 DISCUSSION

5.1 Effect of Micro-Credit Access on Small-Scale Farmers' Investment in Agricultural

In line with the first objective, the findings demonstrate that access to micro-credit significantly enhances small-scale farmers' ability to invest in productivity-enhancing agricultural inputs in Bagamoyo District. Empirical evidence from the study shows that 62% of the sampled farmers accessed micro-credit, predominantly from VICOBA (45%) and

SACCOS (30%), indicating the central role of community-based financial institutions in rural financing.

Statistical comparisons between credit users and non-users reveal substantial differences in input adoption. Specifically, 78% of credit users adopted improved seeds, compared to only 42% of non-users, while 64% of credit users applied chemical fertilizers, more than double the 30% recorded among non-users. Similarly, the use of hired labour was significantly higher among credit users (70%) than non-users (34%). These differences clearly illustrate that micro-credit relaxes liquidity constraints, enabling farmers to make timely purchases of modern inputs that are otherwise unaffordable under cash-constrained conditions (Khan, 2025) (Khan, 2025).

The regression analysis further reinforces these findings, as key input variables—improved seeds ($\beta = 0.86$, $p = 0.006$), fertilizer use ($\beta = 1.24$, $p = 0.009$), and hired labour ($\beta = 3.15$, $p = 0.005$)—were all positive and statistically significant. This suggests that credit-facilitated input use has a direct and measurable effect on farm productivity. These results are consistent with empirical evidence from other developing countries, which shows that access to micro-credit increases farmers' capacity to adopt improved technologies, enhance production efficiency, and improve household welfare (Yu *et al.*, 2025).

5.2 Impact of Micro-Credit on Crop Productivity among Small-Scale Farmers

Addressing the second objective, the study establishes a strong and statistically significant relationship between access to micro-credit and crop productivity. Descriptive yield comparisons indicate that farmers who accessed micro-credit achieved substantially higher yields across all major crops. For instance, maize yields among credit users averaged 1,350 kg per acre, representing a 35% increase over non-users, who recorded 1,000 kg per acre. Cassava yields were 20% higher among credit users (2,400 kg/acre) compared to non-users (2,000 kg/acre), while vegetable yields showed the largest gain, with a 38% increase (1,800 kg/acre versus 1,300 kg/acre).

These yield differentials are further validated by the regression results, which show that access to micro-credit increases crop productivity by an average of 185.74 kg per acre, holding other factors constant ($p = 0.001$). The model explains approximately 60% of the variation in crop productivity (Adjusted $R^2 = 0.60$), indicating strong explanatory power.

Additionally, farm size ($\beta = 142.91$, $p < 0.001$) and farming experience ($\beta = 4.21$, $p = 0.026$) were also significant, suggesting that while credit is a key driver of productivity, its impact is amplified when combined with scale advantages and accumulated farming knowledge.

These findings confirm that micro-credit enhances productivity not merely by increasing input use, but also by improving the overall efficiency of farm operations. The results corroborate earlier studies that report a positive and significant relationship between agricultural credit access and farm output, income growth, and food security among smallholder farmers in Sub-Saharan Africa (Ali *et al.*, 2025).

5.3 Constraints Limiting the Effectiveness of Micro-Credit Utilization

In line with the third objective, the study identifies several institutional and operational constraints that limit the full productivity gains from micro-credit. Despite the observed positive impacts, farmers reported high interest rates ranging from 15% to 30% per loan cycle, which reduce net returns from agricultural investments and discourage repeated borrowing. Moreover, delayed loan disbursement was frequently cited as a major challenge, particularly when loans were released after the onset of the planting season, undermining timely input application and yield potential (Balana *et al.*, 2022).

Small loan sizes were also identified as a significant limitation, as many farmers were unable to finance the full input requirements for multiple crops or larger plots. These constraints help explain why, despite the significant effect of credit on productivity, some farmers still fail to fully exploit the potential benefits of borrowing. Limited financial literacy further exacerbates these challenges, as inadequate budgeting and record-keeping skills reduce the efficiency of loan utilization (Lu *et al.*, 2024). These findings are consistent with previous research, which emphasizes that the impact of micro-credit on agricultural productivity is highly dependent on loan adequacy, affordability, timing, and complementary support services. Studies have shown that when credit is poorly structured or delivered without technical and financial guidance, its effectiveness in stimulating productivity is significantly reduced (Ali *et al.*, 2025).

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study examined the impact of micro-credit on the productivity of small-scale farmers in Bagamoyo District, Tanzania. The findings provide

strong empirical evidence that access to micro-credit plays a significant role in enhancing agricultural productivity by easing financial constraints and enabling farmers to invest in productivity-enhancing inputs (Ali et al., 2025). Descriptive results showed that 62% of the sampled farmers accessed micro-credit, mainly through community-based financial institutions such as VICOBA and SACCOS, highlighting their importance in rural financial inclusion.

The study further established that access to micro-credit significantly increased the adoption of improved agricultural inputs. Credit users recorded substantially higher use of improved seeds (78%), chemical fertilizers (64%), and hired labour (70%) compared to non-users. These investments translated into higher crop yields, with credit users achieving yield increases of 35% for maize, 20% for cassava, and 38% for vegetables relative to farmers without credit access. Multiple regression analysis confirmed that access to micro-credit had a positive and statistically significant effect on crop productivity, increasing output by an average of 185.74 kg per acre ($p < 0.01$), even after controlling for farm size, labour use, and farming experience.

Despite these positive impacts, the study identified key constraints that limit the effectiveness of micro-credit programs. High interest rates, delayed loan disbursement, small loan sizes, and limited financial literacy among farmers reduce the potential productivity gains from credit use (Balana et al., 2022). The findings therefore suggest that while micro-credit is a critical catalyst for improving smallholder productivity, its impact is highly dependent on the design, timing, and complementary support services associated with credit delivery.

6.2 Recommendations

Based on the findings and conclusions of the study, the following recommendations are proposed. Financial institutions and policymakers should expand access to affordable micro-credit by reducing interest rates and simplifying lending conditions. Lower borrowing costs would enhance farmers' willingness and ability to invest in essential agricultural inputs, thereby increasing productivity and farm incomes. Credit providers should synchronize loan disbursement schedules with agricultural production calendars to ensure timely access to inputs. Early loan release before planting seasons would improve input application efficiency and maximize yield outcomes.

There is a need to integrate financial literacy training into micro-credit programs. Training in budgeting, record-keeping, and loan management would enhance the efficient use of credit and reduce default risks, thereby improving both farmer welfare and institutional sustainability. Strengthening collaboration between credit institutions and agricultural extension officers is essential. Combining financial services with technical guidance on input use, crop management, and modern farming practices would significantly increase the productivity impact of micro-credit. Government and development partners should promote integrated rural financing frameworks that combine credit access with extension services, farmer training, and market support. Such holistic approaches are more likely to generate sustainable productivity gains and contribute to long-term rural development.

REFERENCES

- Ali, S. A., Ullah, K., Manzoor, G., & Illahi, R. (2025). *Center For Management Science Research The Role Of Microfinance In Enhancing Agricultural Productivity In Developing Countries*. 3(7). <https://doi.org/10.5281/Zenodo.17776122>
- Balana, B. B., Mekonnen, D., Haile, B., Hagos, F., Yimam, S., & Ringler, C. (2022). Demand And Supply Constraints Of Credit In Smallholder Farming: Evidence From Ethiopia And Tanzania. *World Development*, 159, 106033. <https://doi.org/10.1016/J.Worlddev.2022.106033>
- Bili, J. A. S. (2024). *Determining Factors Affecting Agricultural Credit Demand: A Research In Erzurum*. 30(4), 712–724. <https://doi.org/10.15832/Ankutbd.1439139>
- Bjornlund, V., Bjornlund, H., & Rooyen, A. F. Van. (2020). Why Agricultural Production In Sub-Saharan Africa Remains Low Compared To The Rest Of The World – A Historical Perspective. *International Journal Of Water Resources Development*, 36(1), 20–53. <https://doi.org/10.1080/07900627.2020.1739512>
- Enyew, S., & Gobie, W. (2025). *Adoption Of Climate Smart Agricultural Practices Impact On Food Security Of Smallholder Farmers In North Western Ethiopia*.
- Fatch, P., Masangano, C., Hilger, T., Jordan, I., Francesca, J., Kamoto, M., Mambo, I., Kalimpira, A., Chiutsi-Phiri, G., & Nuppenau, E. (2021). *Role Of Policies, Stakeholder Programs And Interventions In Agricultural Diversification Among Smallholder Farmers: A Case Of Lilongwe District In Malawi*. <https://doi.org/10.3390/Agronomy11071351> Academic
- Khan, C. M. (2025). *Evaluating The Impact Of Agricultural Credit*

- Access On Smallholder Maize Farmers' Productivity In The Northwest Region Of Cameroon.* 1–14. <https://doi.org/https://doi.org/10.3390/Su17177574>
- Kyeyune, G. N., & Ntayi, J. M. (2025). *Empowering Rural Communities : The Role Of Financial Literacy And Management In Sustainable Development.* February, 1–15. <https://doi.org/10.3389/Fhumd.2024.1424126>
- Lowder, S. K., Bhalla, G., & Davis, B. (2025). Decreasing Farm Sizes And The Viability Of Smallholder Farmers : Implications For Resilient And Inclusive Rural Transformation. *Global Food Security*, 45(March), 100854. <https://doi.org/10.1016/J.Gfs.2025.100854>
- Lu, Z., Li, H., & Wu, J. (2024). Borsa Istanbul Review Exploring The Impact Of Financial Literacy On Predicting Credit Default Among Farmers : An Analysis Using A Hybrid Machine Learning Model. *Borsa Istanbul Review*, 24(2), 352–362. <https://doi.org/10.1016/J.Bir.2024.01.006>
- Lupia, J., & Kagata, L. (2024). *Evaluation of the Performance And Constraints Of Savings And Credit Cooperative Societies (Saccos) In Tanzania.* 5(3), 854–862. <https://doi.org/https://doi.org/10.62277/Mjrd2024v5i30055>
- Moti, M. K., & Liwenga, E. T. (2025). *East African Journal Of Agriculture And Biotechnology Assessing The Impacts Of Climate Change And Variability On The Livelihoods Of Pastoralist Communities In Bagamoyo District , Coastal Tanzania.* 8(2), 30–50. <https://doi.org/10.37284/Eajab.8.2.3411>
- Mrindoko, A. E. (2022). *Impact Of Village Community Bank Loans On Smallholder Farmers ' Household Income In Kiteto.* 8(1), 280–308. <https://doi.org/http://doi.org/10.26437/Ajar.03.2022.19>
- Pawlak, K. (2020). *The Role Of Agriculture In Ensuring Food Security In Developing Countries : Considerations In The Context Of The Problem Of Sustainable Food Production.*
- Raphael, L. J. (2024). *Challenges Facing Smallholder Farmers In Mono Cash-Crop Production In Tanzania : Are Adaptation Strategies Towards Livelihood Diversification A Panacea ? Challenges Facing Smallholder Farmers In Mono Cash-Crop Production In Tanzania.* 22(1), 116–134. <https://dx.doi.org/10.56279/Njiy8787/Tjds.V22i1.71>
- Sanka, M., & Makhura, M. N. (2025). *Participation And Utilisation Levels Of Smallholder Farmers Agricultural Credit Guarantee Scheme In Shinyanga And Iringa.*
- Sawe, J. R. (2025). *Smallholder Farmers ' Satisfaction With Agricultural*