

Poverty Status among Cassava (*Manihot esculenta* Crantz) Farmers in Bekwarra Local Government Area of Cross River State, Nigeria

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ABSTRACT

Poverty among smallholder cassava farmers remains a critical development challenge in rural Nigeria despite the country's status as the world's largest cassava producer. This study assessed the poverty status of cassava (*Manihot esculenta* Crantz) farmers in Bekwarra area of Cross River State, Nigeria. A multistage sampling procedure was used to select 140 respondents from four randomly selected wards. Primary data were collected through structured questionnaires administered via personal interview and analyzed using descriptive statistics, the Foster-Greer-Thorbecke (FGT) poverty index, and binary logit regression. Results revealed that 67.9% of sampled cassava farmers were classified as poor, falling below the poverty line, while 32.1% were non-poor. The poverty depth index ($P_1 = 0.31$) and severity index ($P_2 = 0.18$) further confirmed the depth and intensity of poverty in the study area. Logit regression results showed that farming experience ($p = 0.000$), farm income ($p = 0.003$), and farm size ($p = 0.003$) were significant at the 1% level, while years of schooling ($p = 0.080$) and age ($p = 0.096$) were significant at the 10% level. Major constraints included insecurity (90.7%), adverse climate conditions (89.3%), and financial exclusion (89.3%). The study concludes that Poverty among cassava farmers is multidimensional and driven by interconnected socio-economic and institutional constraints, and recommends targeted policy interventions addressing security, credit access, extension services, land consolidation, and rural infrastructure to improve farmers' welfare.

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INTRODUCTION

Poverty reduction remains one of the most pressing development challenges in sub-Saharan Africa, particularly among rural farming households characterised by low productivity, restricted market access, and persistent institutional exclusion (World Bank, 2022). In Nigeria, approximately 133 million people live in multidimensional poverty, with rural households accounting for the majority of this population (National Bureau of Statistics [NBS], 2022). Smallholder farmers are disproportionately affected, operating within structurally constrained environments that limit their capacity to escape poverty. Cassava (*Manihot esculenta* Crantz) is a perfect illustration of this situation. This crop occupies a central place in Nigeria's agricultural economy, as the country is the world's largest cassava producer, generating over 60 million metric tonnes annually and supplying approximately one-fifth of global output (Food and Agriculture Organization [FAO], 2023). The crop is essential to food security, rural livelihoods, income generation, and agro-industrial development.

Despite this strategic importance of cassava, most Nigerian producers cultivate less than two hectares using rudimentary tools and rain-fed production systems, and many lack access to formal credit, extension services, and efficient markets. These conditions perpetuate such farming practices and entrench rural poverty (Edaba et al., 2025). Poverty among cassava-dependent households has attracted the attention of researchers across Nigeria and sub-Saharan Africa more broadly. Agunbiade et al. (2019) identified farm size, income,

and farming experience as key determinants of poverty among cassava farmers in Osun State, highlighting the role of productive assets in shaping welfare outcomes. In Benue State, Olayiwola et al. (2025) demonstrated that the adoption of biofortified cassava varieties significantly reduced poverty incidence, underscoring the transformative potential of improved agricultural technologies when accompanied by adequate institutional support. At the continental level, Hossain et al. (2006) documented comparable poverty dynamics among cassava-dependent households across sub-Saharan Africa, while Christiaensen et al. (2011) established that agricultural growth reduces poverty more effectively when complemented by investments in rural infrastructure, financial inclusion, and human capital. Together, these findings indicate that poverty among cassava farmers is shaped by interdependent factors such as low human capital, weak institutions, poor infrastructure, and inadequate policy support.

This situation is particularly evident in the Bekwarra Local Government Area of Cross River State, where cassava cultivation serves as the main livelihood for most rural households. However, these farmers are hindered by a combination of insecurity, limited financial inclusion, insufficient agricultural extension services, and poor infrastructure, all of which stifle productivity and perpetuate poverty (Edaba et al., 2025). Despite the crop's economic significance, there is a lack of rigorous, context-specific empirical research regarding the poverty levels of cassava (*Manihot esculenta* Crantz) producers in this region. This

research gap complicates the development of targeted, evidence-based policy interventions. Consequently, this study addresses this void by analyzing the socio-economic profile of these farmers, evaluating their poverty status, and identifying the constraints affecting their agricultural activities.

MATERIALS AND METHODS

Study Area and Sampling Techniques

The study was conducted in Bekwarra Local Government Area of Cross River State, Nigeria, located between latitudes 6°40'N-7°05'N and longitudes 8°50'E-9°20'E. The area covers approximately 284 km² with an estimated population of 105,822. Its tropical climate, characterised by annual rainfall of 1,200-1,800 mm and temperatures ranging from 22°C to 34°C, is highly suitable for cassava cultivation. Farming is the primary livelihood, with smallholders typically cultivating 1-3 hectares of cassava, maize, yam, and groundnut. A multistage sampling procedure was adopted. In the first stage, this Area was purposively selected based on the prevalence of active cassava farming. In the second stage, four council wards were randomly selected from the ten wards in the LGA. In the third stage, 18 villages were purposively selected based on farmer concentration. In the fourth stage, respondents were randomly selected proportionally from each village. The sample size of 140 was determined using the Yamane (1967) formula: $n = N / (1 + Ne^2)$, where N = estimated farming population of 1,750, and e = margin of error of 0.07, yielding $n = 139.4 \approx 140$ respondents. Primary data were collected through structured questionnaires administered via face-to-face interviews in November–December 2025. The questionnaire was pre-tested on 15 farmers outside the study area and refined based on feedback before the main survey. Informed consent was obtained from all participants prior to data collection.

Analytical Techniques

Data were analyzed using both descriptive and inferential statistical methods. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to profile the socio-economic characteristics of respondents. The Foster-Greer-Thorbecke (FGT) poverty index (Foster et al., 1984) was used to estimate poverty incidence (P_0), depth (P_1), and severity (P_2), specified as follows:

$$P_\alpha = \frac{1}{N} \sum_{i=1}^q \left[\frac{Z - Y_i}{Z} \right]^\alpha \quad \alpha > 0 \quad (1)$$

Where: N = total number of households; q = number of poor households; Z = poverty line (set at two-thirds of mean per capita household expenditure; Y_i = per capita expenditure of

household i ; and α = poverty aversion parameter (0 = incidence, 1 = depth, 2 = severity).

A binary logit regression model was used to identify the socio-economic determinants of poverty status. The model is appropriate given the binary nature of the dependent variable (1 = poor, 0 = non-poor), and is specified as:

$$\log \left(\frac{P_i}{1-P_i} \right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \varepsilon \quad (2)$$

Where: $P_i/(1-P_i)$ = odds ratio of being poor; β_0 = constant; β_1 – β_9 = regression coefficients; ε = error term; X_1 = years of schooling; X_2 = age (years); X_3 = extension visits; X_4 = farming experience (years); X_5 = farm income (₦); X_6 = farm size (ha); X_7 = marital status (1 = married, 0 = otherwise); X_8 = household size; X_9 = access to credit (1 = yes, 0 = no). These variables were selected based on empirical evidence from prior studies on smallholder poverty determinants in Nigeria.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of Respondents

The socio-economic characteristics of cassava farmers in our study Area are presented in Table 1. With regard to age distribution, the majority of respondents (49.3%) were aged 40-59 years, followed by those aged 20-39 years (38.6%), while only 12.1% were aged 60 years and above. The mean age was 43.19 years (SD = 12.10). In terms of sex, males accounted for 57.1% of respondents while females constituted 42.9%. Regarding educational attainment, 43.6% had secondary education, 41.4% had tertiary education, and 15.0% had primary education. On cooperative membership, 57.9% were not members of any cooperative society. With respect to credit access, 56.4% had no access to credit. Similarly, 53.6% had no access to extension services. The mean farming experience was 11.55 years (SD = 8.42) and mean household size was 5.19 persons (SD = 3.28).

These results show indicates that the majority are middle-aged, well-educated individuals who rely on farming as their main source of income. With an average age of 43.19, the sector is driven by a productive and active workforce, a trend that aligns with Aboajah et al. (2018), who noted the vital role of this demographic in cassava production within Benue State. The high level of formal education among the participants supports the research of Raphael Babatunde et al. (2016), which highlights how education empowers farmers by improving their management skills, increasing their ability to adopt new technologies, and facilitating better access to information. Nevertheless, the study also points to significant institutional shortcomings, such as low participation in cooperatives and limited access to credit and agricultural extension services. These barriers continue to hinder the productivity and overall well-being of smallholder farmers.

Table 1: Socio-Economic Characteristics of Cassava Farmers in Bekwarra LGA

Variable	Category	Frequency	Percentage (%)
Age (years)	20–39	54	38.6
	40–59	69	49.3
	60 and above	17	12.1
	Mean = 43.19 (SD = 12.10)	140	100.0
Sex	Male	80	57.1
	Female	60	42.9
Level of education	Primary	21	15.0
	Secondary	61	43.6
	Tertiary	58	41.4
Cooperative membership	Yes	59	42.1
	No	81	57.9
Access to credit	Yes	61	43.6

Variable	Category	Frequency	Percentage (%)
Access to extension	No	79	56.4
	Yes	65	46.4
Farming experience (years)	No	75	53.6
	Mean = 11.55 (SD = 8.42)	140	100.0
Household size	Mean = 5.19 (SD = 3.28)	140	100.0

Source: Field Survey, 2026

Poverty Status of Cassava Farmer

Table 2 presents the poverty status of cassava farmers in the study area. Results revealed that 67.9% of cassava farmers were classified as poor ($P_0 = 0.679$), while 32.1% were non-poor. The poverty depth index ($P_1 = 0.31$) indicates that on average, poor farmers' expenditure falls 31% below the poverty line, while the poverty severity index ($P_2 = 0.18$) reflects the degree of inequality among the poor.

The study highlights a concerning poverty rate of 67.9% among cassava farmers, showing that even with their agricultural efforts, most households remain below the poverty line. This figure is notably higher than the rates found

in studies by Agunbiade et al. (2019) in Osun State (28.9%) and Osuji (2019) in Imo State (25%), which points to more severe structural challenges within the study Area. These results support the general view held by Raphael Babatunde et al. (2016) that rural poverty is a persistent issue for cassava farmers, often driven by factors like large family sizes, limited education, and a lack of assets. Furthermore, the high indices for poverty depth and severity reveal that these farmers are not just struggling in numbers, but are facing profound deprivation that would require substantial economic intervention to help them rise above the poverty threshold.

Table 2: Poverty Status of Cassava Farmers in Bekwarra LGA

Poverty Status	Frequency / Index Value	Percentage (%)	FGT Index
Non-poor	45	32.1	—
Poor	95	67.9	—
Total	140	100.0	—
Poverty Incidence (P_0)	—	67.9	0.679
Poverty Depth (P_1)	—	—	0.310
Poverty Severity (P_2)	—	—	0.180

Source: Field Survey, 2026

Determinants of Poverty Status among Cassava Farmers

The results of the logit regression model are presented in Table 3. The overall model was statistically significant (LR $\chi^2(9) = 142.14$; Prob > $\chi^2 = 0.0000$; Log likelihood = -16.843 ; Pseudo $R^2 = 0.8084$), indicating strong explanatory power. Years of schooling (X_1) had a positive odds ratio of 1.862 and was statistically significant at the 10% level ($p = 0.080$). Age (X_2) recorded an odds ratio of 0.043 and was also significant at the 10% level ($p = 0.096$). Farming experience (X_4) had an odds ratio of 75.731 and was highly significant at the 1% level ($p = 0.000$). Farm income (X_5) recorded an odds ratio of 21.854 and was significant at the 1% level ($p = 0.003$). Farm size (X_6) had an odds ratio of 0.006 and was significant at the 1% level ($p = 0.003$). Extension visits (X_3), marital status (X_7), household size (X_8), and access to credit (X_9) were not statistically significant, recording p-values of 0.247, 0.847, 0.610, and 0.970 respectively.

The logit regression analysis reveals that key factors such as farming experience, total farm income, and the size of the land cultivated play a decisive role in determining the poverty

levels of cassava farmers. The positive impact of experience aligns with Aboajah et al. (2018), suggesting that seasoned farmers are better equipped to implement efficient production techniques and manage their resources effectively. In parallel, the importance of farm income echoes the conclusions of Akpaeti et al. (2024), confirming that higher earnings are essential for poverty reduction. Furthermore, the results reinforce the work of Olayiwola et al. (2025), which highlights how the adoption of advanced agricultural technologies significantly improves the economic standing of farming households. The data confirms that the poverty status of these farmers is deeply linked to a lack of productive assets and systemic institutional barriers. These results validate the Sustainable Livelihood Framework, which argues that poverty stems from a shortage of human, financial, physical, natural, and social capital. The widespread lack of access to quality education, credit facilities, infrastructure, and extension services observed in this study clearly illustrates these structural gaps in the farmers' livelihood assets.

Table 3: Factors Influencing Poverty Status among Cassava Farmers (Logit regression)

Variable	Odds Ratio	Std. Error	z-value	p-value
Years of schooling (X_1)	1.862	0.662	1.75	0.080*
Age (X_2)	0.043	0.082	-1.67	0.096*
Extension visits (X_3)	48.989	164.753	1.16	0.247
Farming experience (X_4)	75.731	85.133	3.85	0.000***
Farm income (X_5)	21.854	22.778	2.96	0.003***
Farm size (X_6)	0.006	0.010	-3.00	0.003***
Marital status (X_7)	1.793	5.447	0.19	0.847
Household size (X_8)	3.664	9.342	0.51	0.610
Access to credit (X_9)	0.892	2.697	-0.04	0.970

LR $\chi^2(9) = 142.14$; Prob > $\chi^2 = 0.0000$; Log likelihood = -16.843 ; Pseudo $R^2 = 0.8084$

*** $p < 0.01$ (significant at 1%); * $p < 0.10$ (significant at 10%); ns = not significant. All VIF values < 5 , confirming absence of severe multicollinearity.

Source: Field Survey, 2026

Constraints Faced by Cassava Farmers

Table 4 presents the distribution of constraints faced by cassava farmers in the study area. Insecurity challenges ranked first with 90.7% of respondents identifying it as a major constraint, followed by adverse climate conditions (89.3%) and inadequate capital and financial exclusion (89.3%), both ranking second. Inadequacy of basic social amenities ranked third (88.6%), followed by lack of farm inputs (87.1%), poor political representation (85.7%), and social exclusion (83.6%).

The research highlights that farmers in the region are primarily hindered by issues of insecurity, unpredictable climate patterns, and a lack of access to financial services.

These results mirror the work of Edike et al. (2025), who pointed to insufficient funding, weak infrastructure, and a lack of government intervention as significant threats to the long-term viability of cassava farming. Likewise, Yuguda et al. (2013) identified similar barriers, specifically capital shortages, the high cost of inputs, and a lack of agricultural advisory services, as key factors restricting production in Taraba State. Furthermore, the emphasis on financial exclusion in this study aligns with the broader economic research of Aroyewun et al. (2024), which demonstrates that increasing financial access is a vital strategy for lowering poverty rates across Nigeria.

Table 4: Constraints Faced by Cassava Farmers in Bekwarra LGA

Constraints	Frequency	Percentage (%)	Rank
Insecurity challenges	127	90.7	1 st
Adverse climate conditions	125	89.3	2 nd
Inadequate capital/financial exclusion	125	89.3	2 nd
Inadequacy of basic social amenities	124	88.6	3 rd
Lack of farm inputs	122	87.1	4 th
Poor political representation	120	85.7	5 th
Social exclusion	117	83.6	6 th

Source: Field Survey, 2026 (Multiple Responses)

CONCLUSION

This study assessed the poverty status of cassava (*Manihot esculenta* Crantz) farmers in Bekwarra Local Government Area and found that poverty is highly prevalent among farming households, with 67.9% of farmers classified as poor, a poverty depth of 0.31, and severity index of 0.18. The persistence of poverty was linked to insecurity, limited access to credit, weak extension services, and poor rural infrastructure. The study therefore recommends improved access to farmland, affordable credit, strengthened extension services, enhanced rural security, and greater investment in rural infrastructure to improve farmers' welfare and productivity. Future studies should employ panel data approaches to examine poverty dynamics and gender-related differences among cassava farmers.

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