



ANALYSIS OF POVERTY STATUS AMONG FARMING HOUSEHOLDS IN CENTRAL ZONE OF PLATEAU STATE, NIGERIA

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ABSTRACT

This study examined the poverty status of farming households in Central Zone of Plateau State, Nigeria. A multi-stage sampling procedure was used in selecting the respondents. Data were collected through the use of structured questionnaire and were analysed using both descriptive (percentage and mean) and inferential statistics (Foster, Greer and Thorbecke and Logistic regression). The results revealed that the mean age of the respondents was 40 years, most of the respondents were married with an average number of 5 persons per households, and relatively low-income level but well educated, it was also confirmed that the average annual income of the respondents was ₦148,855 generated as a result of relatively large farm sizes as indicated by the average farm size of 3.8ha. The finding further reveals that inadequate government support, non-accessibility to improved seeds alongside poor road network/reserves and inadequate healthcare facilities were the major causes of poverty among the respondents. The poverty status was found to be at a moderate poverty line with (2/3 MPCl) of ₦99,236.36 and a core poverty line (1/3 MPCl) of ₦49,618.18, while the poverty incidence and severity were found to be at 0.505 and 0.299 respectively. Some of the major constraints identified in the study area were; inadequate access to funds, security issues and inadequate seminars/workshops. Emanating from the findings it can be concluded that the factors influencing poverty statuses of the farming households were income, education level, age, household size and farming experience. Based on the constraints highlighted the study recommends, the need for government and other relevant stakeholders such as financial agencies and non-governmental organizations to provide support through provision of loans, grants, trainings and seminars on the use of novel technologies in agriculture to foster and boost production among the farming households most especially in the rural settlements.

Keywords: Poverty status, Household size, Farming households, Plateau, Multi-stage sampling.

INTRODUCTION

Poverty is a state of being in which a person lacks the income (or other means of support) to reliably meet their basic personal needs such as food, shelter and clothing. Ogunniyi *et al.* (2017) also defined poverty as a state where the people do not have the ability to achieve the desired state of wellbeing and socially acceptable standard of living. Today estimates for global poverty are nearly 8.6% of the world. People who live in severe poverty live on \$1.90 or less per day. According to Max *et al.* (2013) most people in the world live in poverty, 85% of them live on less than \$30 per day, two-third live on less than \$10 per day, and every tenth persons live on less than \$1.90 per day. Global poverty is one of the worst problems that the world faces today. The poorest in the world are always hungry, have less access to education; they do not have light at night regularly, and suffer many health challenges. To make a headway



against poverty is therefore one of the most urgent global goals the data from the World Poverty Clock shows that by the end of 2018, close to four million were added to the population of people living below \$1.90 per day, thereby increasing the number of severe poverties to an estimated 90.8 million Nigerians. This represents 50% of its estimate of over 200 million (World Poverty Clock, 2018). Poverty is a topical issue in developing countries especially in Africa. International Future Sub-Saharan Africa (2021) account for roughly 60% of the global population living in poverty in 2020 and it is expected that Africa will represent nearly 87% of the World poor by 2030.

Nigeria has experienced a high incidence of poverty in the last two decades due to the adverse macroeconomic performance of the economy especially as dictated by the effects of insecurity and recently COVID 19 in addition to the poor utilization of the land resources. The scarcity of studies on quantitative determinants of poverty in Nigeria is a major weak point in the country's poverty reduction policy and strategy formulation (Olawuyi and Adetunji, 2013). Despite Nigeria's huge agricultural resource base which has great potential for growth, poverty has continued to spread widely in the country and has been on the increase. The largest percentages of Nigerians are poor, and a good percentage of them, especially in rural areas, live in absolute poverty. The country's poor rural women and men depend on agriculture for food and income. About 70 per cent of Nigeria's food is produced by small-scale farmers who cultivate small plots of land and depend on rainfall rather than irrigation systems (Olalekan and Abdulsalami, 2020). Nigerian government have tried many ways by initiating lots of policies and programs aimed at restoring the agricultural pride (Adama *et al.*, 2016) but to no avail.

According to the National Bureau of Statistics (NBS) in The World Bank (2020) report, 'forty percent of the total population, that is almost 83 million people, live below the country's poverty line of 137,430 naira (\$381.75) per year'. Nigeria has a population of over 206 million according to World Bank (2021), the largest in Africa and a fast-growing economy where agriculture is the bedrock of the economic growth, development and poverty eradication of the economy. It is one of the major contributors to the country's GDP (Olawuyi and Adetunji, 2013). Poverty is a major constraining factor among farming households in Nigeria, therefore it is important to investigate the trend, structure and determinants of poverty among the farming households in the country to ascertain their contribution to agricultural output especially now that the price of food in the market is on the increase and the standard of living is rising high.

Despite the importance of Agricultural sector and in spite of the fact that a larger percentage of Nigerian households engage in agriculture, most Nigerian farmers are wallowing in abject poverty. One of the damaging effects of the rural poverty is food and nutrition insecurity, and its socio-economic and political costs. Rural poverty is endemic in Nigeria and this situation has attracted much attention but rather than abating the problem is proving increasing. Despite the involvement of rural farmers in Agriculture, many obstacles however work against their efforts to produce more food and live a better life. The small-scale farmers who constitute the largest percentage of the faming population are seriously threatened by the problems of rural poverty and neglect. Many rural farmers sell their farm produce at giveaway price regardless of the cost of production in order to meet some pressing needs of the family therefore remaining in perpetual poverty. Literatures have shown that there are little or no empirical studies on analysis of poverty status among farming households in central zone of plateau state. It is against this backdrop that this research wishes to be conducted.

The broad objective of the study is to analyse the poverty status of farming households in Central Zone of Plateau State, Nigeria. While the specific objective was to:

- i. Describe the socio-economic characteristics of farming households in the study area;
- ii. describe the poverty status among farming households;



- iii. determine the incidence, depth and severity of poverty among farming households;
- iv. determine the factors influencing the poverty status of farming households and;
- v. describe the major constraints to increase poverty among farming households in the study area.

The results from this research work will help farmers in identifying the causes of poverty in the study area. The research will determine the incidence, depth and severity of poverty among farming households in the study area and also be of enormous important to policy makers in the area of poverty reduction and eradication in making the required policies. The study is restricted to the farming households in Plateau State. The area of coverage is limited to three Local Government Areas (LGAs) in the central Agricultural Zone of Plateau State.

MATERIALS AND METHODS

The Study Area

The study is conducted in Plateau State which is located or lies between latitude 9⁰North and 10⁰ North and longitude 9⁰East and 10⁰ East. It is bounded by Bauchi State in the North, Mikang, Shendam and Qua'anpan Local Government Areas, in the South, Kanam and Langtang North LGAs in the East, while in the West is bounded by Bokkos and BarkinLadi L.G.As. The estimated area land of the study area is 100 km². The current total population of people in the study area is 4,042,144 according to projected population 2023. The major occupation of the people in the study area is crop production and livestock farming. The study area has two major seasons which are raining and dry seasons. The rainy season usually started from March and lasted to October but sometimes extended into November with average annual rainfall of about 1500mm (NWS, 2021) while the dry season commenced from November to March. The average annual temperature is 22⁰C (72⁰F) and have the maximum temperature of 31⁰C (April) and minimum temperature of 13⁰C (January). The major crops/livestock are Maize, Millet, Sorghum, Acha and Potato. The livestock include chicken, sheep, goat and cattle.

Sample Technique and Sampling Size

A multiple stage sampling technique was adopted for the selection of the farming households. In the first stage 3 LGAs from the Central Agricultural Zone Pankshin, Mangu and Kanke. In the second stage 3 Districts were selected each from the three selected LGAs, making a total of 9 Districts. In the third stage, two villages were selected randomly from the selected Districts making a total of 18 villages. In the final stage, 20% of the sampling frame was selected as the sample size of the study.

Table 1: Sample Frame and Sample size plant of the study

LGAs	Districts	Villages	Sample Frame	Sample Size @ 20%
Pankshin	Pankshin	Fwor	151	30
		Wulmi	153	31
		Jimin	162	32
	Wokkos	Kwala	142	28
		Mile 8	173	35
		Fier	Posat	141
Mangu	Panyam	Nyes	178	36
		Panyam	184	37
		Kerang	165	33
	Kerang	Kopal	157	31
		Vodni	186	37
		Pushit	Tilengpat	137
Kanke	Kabwir	Dawaki	171	34
		Somji	165	33
		Gungji	162	32
	Amper	Seri	135	27
		Danchor	123	25
	Ampang East	Sharam	119	24
		Total	2,804	560

Method of Data Collection

Primary data were collected using a structured questionnaire. Questionnaires were issued to the respondents from house to house and the answered questionnaires were retrieved on the spot upon completion.

Data Analysis

Data will be analyzed using both descriptive and inferential statistics, the descriptive statistics used include percentage and mean. The inferential statistics used include Foster, Greyer and Thorbecke and Logistic regression.

Inferential Statistics

This study adopted the Foster, Greer and Thorbecke (1984) approach to estimate the incidence, depth and severity of poverty of the households (The World Bank, 2020).

Foster, Greer and Thorbecke (FGT) poverty measures:

The Foster, Greer and Thorbecke FGT (1984) poverty measures were used to examine the poverty profile of small-holder arable farmers based on their income class. FGT poverty decomposition model was used to estimate the poverty incidence, depth and severity of the farming household, respectively represented by P_0 , P_1 and P_2 . The three measures are based on a single formula but each index puts a different weight on the degree to which a household fall below the poverty line. The FGT poverty index called P-alpha is given by:

$$P_{\alpha} = \frac{1}{N} \sum_{i=1}^q \left(\frac{Z - y_i}{Z} \right)^{\alpha} \quad \dots (1)$$

where; Z is the poverty line, q is the number of households below the line, N is the total number of households, and y_i is the income of the i^{th} household. α is the FGT parameter which takes the values 0, 1 and 3 depending on the degree of concern about poverty.

When $\alpha = 0$ the equation becomes:



$$P = \frac{1}{N} \quad \dots (2)$$

This is the incidence of poverty (head count index) and is used to the per capital income of the poor,

where; $\alpha=1$ the equation becomes:

$$P = \frac{1}{N} \sum_{i=1}^q \left(\frac{Z - y_i}{Z} \right) \quad \dots (3)$$

This is the poverty depth/gap which is defined as the difference between the poverty line and the mean expenditure of the poor.

When $\alpha=2$ the equation becomes:

$$P_2 = \frac{1}{N} \sum_{i=1}^q \left(\frac{Z - y_i}{Z} \right)^2 \quad \dots (4)$$

This indicates poverty severity Poverty line was also constructed to classify the household into poor and non-poor. The monthly income was used as the proxy for standard of living. In order to calculate per capita household monthly expenditure, total monthly income was divided by total household size, while the mean per capital household monthly income was calculated by dividing total per capita household monthly income by total household size

Logit regression analysis will be used to estimate the effect of the selected variable on poverty among farming household.

The analytical model is: $Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + e \dots (5)$

where;

Y = Poverty (1=Yes, 0=No)

a = constant term of the intercept (autonomous poverty depth),

$b_1 - b_6$ = regression coefficient

X_1 = Annual income

X_2 = Education level.

X_3 = Age of the household head.

X_4 = Household size.

X_5 = Farming experience.

X_6 = Type of farming.

e = Independently distributed error term.

RESULTS AND DISCUSSION

Socio-economic Characteristics of the Respondents

The result from Table 2 shows the socio-economic characteristics of the respondents in the study area. The findings reveals that 30.2%, 29.2% and 22.8% of the respondents were within the ages of 41-50 years, 31-40 years and 18-30 years, respectively, while 14.3% and 3.4% of the respondents were within age bracket of 51-60 years, 61 and above years respectively, with the mean age of 40 years, this indicates that majority of the respondents were in their active ages of production in agriculture. This implies that the respondents were found to be active working population in the study area who by one way or the other will strive to survive above poverty line in the study area. The findings further reveal that majority (71.1%) of the respondents were male, while 28.9% of the respondents were female. The result also shows that majority (71.5%) of the respondents were married, while 28.5% of the respondents were single. This implies that poverty assessment is based on household sustainability level which is the reason for majority of the respondents been married and no single, single respondents had little or no responsibility or dependency but rather part of the family that also depends on the head of the household in the study area.



Table 2: Socio-economic characteristics of the respondents (n=530)

Variables	Frequency	Percentage	Mean
Age (years)			
18-30	121	22.8	40
31-40	155	29.2	
41-50	160	30.2	
51-60	76	14.3	
61 and above	18	3.4	
Sex			
Male	377	71.1	
Female	153	28.9	
Marital status			
Married	379	71.5	
Single	151	28.5	
Household size			
1-5	278	52.5	5
6 and above	252	47.5	
Educational level			
Non-formal education	42	7.9	
Adult education	23	4.3	
Primary education	47	8.9	
Secondary education	98	18.5	
Tertiary education	320	60.4	
Occupation			
Farming	310	58.5	
Civil servant/farming	180	34.0	
Business/farming	40	7.5	
Farming experience (years)			
1-10	61	11.5	19
11-20	183	34.5	
21-30	170	32.1	
31 and above	116	21.9	
Income (₦)			
1,000 - 10,000	54	10.2	148,855
10,100 – 50,000	114	21.5	
51,000 – 100,000	98	18.5	
101,000 – 150,000	58	10.9	
151,000 and above	206	38.9	

Source: Field survey, 2022



Table 2: Socio-economic characteristics of the respondents **Cont'd.** (n=530)

Variables	Frequency	Percentage	Mean
Type of farming			
Mono cropping	235	44.3	
Livestock production	16	3.0	
Mixed cropping	31	5.8	
Mixed farming	248	46.8	
Farm size (hectare)			
1-1.5	308	58.1	2.0
1.6-2.0	116	21.9	
2.1-2.5	60	11.3	
2.6 and above	46	8.7	
Land acquisition			
Inheritance/purchase	332	62.6	
Hired	68	12.8	
Least	100	18.9	
Contract	30	5.7	
Extension contacts			
Yes	73	13.8	
No	457	86.2	
Frequency of contact			
Weekly	4	.8	
Monthly	4	.8	
Forth nightly	8	1.5	
Quarterly	202	38.1	
Annually	290	54.7	
None	22	4.2	
Credit access			
Yes	77	14.5	
No	453	85.5	

Source; Field survey, 2022

The result further reveals that majority (52.5%) of the respondents had a household size of 1-5 persons, while 47.5% of the respondents had 6 and above persons with an average household size of 5 persons. The result further indicates majority (60.4%) of the respondents had attained tertiary level of education, while 18.5%, 8.9%, 7.9 and 4.3% of the total respondents had attained secondary, primary, non-formal education and adult education, this implies that the respondents were well educated and learned persons, this is an important factor in agriculture especially in the dissemination of information by extension officers in the study area, most educated people tends to strive and maximize profit by accepting and adopting new technologies and innovations. The result further reveals that majority (58.5%) of the respondents were farmers, while 34% and 7.5% of the respondents were into civil service and business as other occupation apart from farming, this implies that the respondents had diverse source of income and livelihood to cope with their family demands in the study area. The study also shows that 34.5% and 32.1% of the respondents had 11-20 years and 21-30 years of farming experience, while 21.9% and 11.5% of the respondents had 31 years and above and 1-10 years of farming experience with an average farming experience of 19 years which is an indication that most of the respondents have been in farming for a long period of time which is a good indication for acceptance and adoption of technologies to increase yield per hectare and by implication reduce poverty level of the respondents in the study area. The result also shows



that 38.9% and 21.5% of the respondents had an annual income of above ₦151,000 and ₦10,100- ₦50,000, respectively, while 18.5%, 10.9% and 10.2% of the total respondents had an annual income of ₦51,000-₦100,000, ₦101,000-₦150,000 and ₦1,000-₦10,000 respectively, with an average annual income of ₦148,855. This is an indication that the farming households had little resources at their disposal annually to meet up with their family demands. On the other hand, the result reveals that 46.8% and 44.3% of the respondents were practicing mixed farming and mono cropping in the study area, while only 5.8% and 3% of the respondents were practicing mixed cropping and livestock production respectively. This implies that most of the respondents had strategies of increasing yield per hectare and maintaining soil fertility through mixed farming or mixed cropping which shows better way of risk aversion of crop failures due to incidence of drought or pest and diseases in the study area.

The study also reveals that majority (58.1%) of the respondents had a land size of 1-1.5ha, while 21.9%, 11.3% and 8.7% of the respondents had a land size of 1.6-2.0ha, 2.1-2.5ha, 2.6ha and above respectively, this implies that most of the respondents had a relatively large farm sizes as indicated by the average farm size of 2.0ha which is an important and primary factor of production in agriculture. The result further shows that majority (62.6%) of the respondents acquired their land through inheritance /purchase, while 18.9%, 12.8% and 5.7% of the respondents acquire their land through leasing, hiring and contract respectively. This implies that most of the respondents had full liberty and access to land as majority own land through inheritance or purchase which reduces the cost of land hiring. On the other hand, the findings reveals that most (86.2%) of the respondents had no contact with extension agents, while 13.8% of the respondents had extension contacts. This implies that there is an inadequate extension activity which is directly affecting farmers' levels of productivity, farming households had little or no knowledge or information on new technologies, methods and innovations in farming.

The result also shows that majority (54.7%) of the respondents had extension contacts annually, while 38.1% and 4.2% of the respondents had quarterly and none extension contact only 1.5% and 0.8%, of the respondents had contact with extension agents. This implies that only few respondents had access and contact with extension agents. This implies that there is an inadequate extension activity which could have serious effect on the productivity level and ultimately lead to low output/yield which in turn causes poverty among farming households. The findings further shows that most (85.5%) of the respondents had no access to credit while only 14.5% of the respondents had access to credit. This implies that most of the respondents in the study area had low production capacity as agricultural production is capital- and labour-intensive poor access to credit or funds affect farmers' production level negatively.

Incidence, Depth and Severity of Poverty among Farming Households

The result in Table 3 reveals poverty incidence of farming households, 49% of the populations were poor, this implies that almost half of the farming households were found to be poor that is they live below the poverty line as indicated by their annual income, which shows that farming households were living below average standards of living and the need to assist the farming households is of great importance so as to increase food production, eradicate poverty and improve their living standards.

The poverty depth was 0.505, which implies that income levels of farming households needs to be increased by 50.5% for them to cross the poverty line and move out of poverty and become not-poor, this implies that farming households income needs urgent attention as the need to cross poverty line is at increasing rates and if not drastically reduced or eradicated then farming households may not afford the basic necessities of life and living standards may



deteriorates beyond reasonable measures. The poverty severity measures the distance of each poor person to another among the farming households, the distance was 0.299, this implies that the distance between one poor farming household to another is 29.9% which indicates a slight difference between poverty status of farming households and if not attended to by concern authorities may leads to extreme poverty among farming households. Overall, comparison of the poverty status of the farming households indicated that the poverty status is relatively low. The result may not be unconnected to excessive expenditure incurred by head of household as a result of increase in household size, low access to farm inputs, inadequate government support and low-income occasion by subsistence nature of farming among farming households, respectively.

Table 3: Poverty Incidence, Depth and Severity of Respondents

Variables	Poverty Incidence (P ₀)	Poverty depth (P ₁)	Poverty severity (P ₂)
Respondents	0.49	0.505	0.299

Source: Field survey, 2022

Relationship between Socioeconomic Characteristics and Poverty Status of the Farming Households

The result from Table 4 reveals that educational level of farming households was positively significant at 1% ($P < 0.01$) toward influencing poverty status of farming households, this implies that one unit increase in the level of education will result to one unit increase toward poverty status, this implies that as educational level increases the poverty status also increases which could be attributed to the taste of white collar jobs among educated rural households who abandon farming to search for jobs in rural areas on the same vein the educated households feels that farming is tedious and meant for illiterates who had no opportunity to attend formal education, hence the increase in poverty status as result of insufficiency of food among such farming households.

The result further indicate that age, household size, farming experience and type of farming negatively significant at 1% ($P < 0.01$), this implies that one unit increase in age, household size, farming experience and type of farming will result to one unit decrease in poverty status of farming households, that is the older the respondents the more the responsibilities of family needs which influences farming participations, reduce hunger and eradicates poverty among farming households, on the other hand the larger the household size the higher the availability of cheap family labour to cultivate larger hectares of lands for enough food production to take of the household and to an extend create more income from the sales in the occasion of bumper harvest. Farming experience shows that farming households had good knowledge of farming and most have adopted different strategic techniques and procedures over the years aim toward increasing productivity and eradicate poverty. However, type of farming indicates that the subsistence and mixed cropping nature of the farming households give them relative advantage over any unforeseen circumstance of crop failure and increase in food security which ultimately reduces their poverty status.

The result also reveals that annual income was found to be negatively significant at 5% ($P < 0.05$), this implies that one unit increase in income will result to one unit decrease in poverty status of the farming household, that is the higher the income the lesser the rate of poverty incidence among farming households in the study area. The finding reveals that socioeconomic characteristics of the farming households had significant influence on their poverty status.



Table 4: Regression Result Showing Socio-economic Characteristics of Farming Households Influencing Poverty Status

Model	B	Std. Error	T	Sig.
Constant)	1.496	.051	29.350	.000
Income	-2.168E-007	.000	-2.096	.037**
Educational level	.053	.015	3.656	.000***
Age	-.006	.002	-3.037	.003***
Household size	-.049	.007	-7.118	.000***
Farming experience	-.020	.003	-6.750	.000***
Type of farming	-.091	.014	-6.427	.000***
R Square	.711			
Adjusted Squared	.708			

*** Significant at 1% ($P < 0.01$) **Significant at 5% ($P < 0.05$)

Source: Field survey, 2022

Constraints to the Poverty Status of Framing Households

The result from Table 6 shows the constraints faced by the respondents in the study area were inadequate access to funds, security issues and inadequate seminars/workshops ere the major constraints faced by the respondents in the study area as it is ranked 1st, 2nd and 3rd respectively in the study area. The result further depicts herders' issues, inadequate market information, climate change/inadequate improved seeds, conflict issues, poor water supply and poor fertilizer supply were ranked 4th, 5th, 6th, 8th, 9th and 10th in the study area, respectively.

Others includes; land ownership/healthcare/inadequate labour supply, inadequate farming tools, inequality/marginalization and inadequate access to farm machineries were ranked 11th, 14th, 15th and 16th in the study area respectively. This implies that respondents in the study area were faced with constraint that requires adequate attention and reduction by the authorities concerned in the study area.

Table 5: Distribution of respondents according to constraints to poverty

Variables	Percentage	Rank
Inadequate access to funds	90.9	1 st
Security issues	90.0	2 nd
Inadequate seminars and workshops	89.1	3 rd
Herders' issues	88.3	4 th
Inadequate market information	87.2	5 th
Change in climate	86.8	6 th
Inadequate improved seeds	86.8	6 th
Conflict issues	86.4	8 th
Poor water supply	85.8	9 th
Poor fertilizer supply	85.7	10 th
Land ownership	84.0	11 th
Health care issues	84.0	11 th
Inadequate of labour	84.0	11 th
Inadequate farming tools	83.2	14 th
Inequality and marginalization	82.6	15 th
Inadequate access to farm machineries	79.1	16 th
Total		

Source: Field survey, 2022



CONCLUSION AND RECOMMENDATIONS

Based on the findings, it can be concluded that the factors influencing poverty status of farming households were income, educational level, age, household size and farming experience. The finding also shows that the poverty incidence and severity were 0.505 and 0.299 respectively. The need for the farming households to increase their production activities cannot be over emphasize because it will help them to cross the poverty line and move out of poverty. Based on the findings of the study, the following recommendations were made:

1. Farming households should be proactive in terms of enterprise diversification in order to heighten their livelihoods. They should handle farm work as real business and no longer just a tradition of merely achieving food security goal while the market gains are secondary.
2. Although, it may be too late for many of them to seek for formal education, but we encourage them to limit the chances of their offspring in inheriting their poverty by enrolling them in schools.
3. Large family size should be discouraged through education and measures like birth control or family planning.
4. Government needs to provide farm inputs at subsidize rates and improve their standard of living by increasing the infrastructural development.
5. Government, financial agencies and non-governmental organizations should endeavour to provide support to farming households through provision of loans, grants so as to enable them balance their livelihood.
6. Trainings and seminars on the use of novel technologies in agriculture should be organized on periodic basis to foster and boost production among the farming households.

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