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LAND CONTROL AND POVERTY STATUS OF FARMING HOUSEHOLDS IN NIGERIA

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Abstract: *Poverty is pervasive among the majority of farming households in Nigeria, particularly affecting small-scale farmers. Having gained access to land, control over the land held is very important in improving the quality of life as it plays a vital role in poverty reduction among small scale farmers. This study examined the relationship between land control and poverty status of farming households in Nigeria. The Nigeria General Household Survey (GHS) 2018 was used. Analytical tools used include descriptive statistics, Land Control Index (LCI), Ordered probit regression and Logit regression models. From the results, majority of the Nigerian farmers were male (84.6%) with a mean age of 50±15years, and 81.1% were married, having a mean household size of 7±4 persons. The mean farm size held by the households was 4.42±14.9ha. Farming households had access to the highest proportion (62.79%) of their plots by inheritance, still showing the dominance of inheritance as a means of land access in Nigeria. Also, households had access to 11.80% of the plots by outright purchase, 11.20% by rent in cash or kind (farm produce), and 0.64% by sharecropping; these underscore the growing rural land market in Nigeria. Majority (88.8%) of the households had no control over all the plots of farmlands held (LCI=0) while 6.03% had total control of the plots of farmlands held (LCI=1). This implies that majority can only carry out farming activities (having use right) on the farmland and did not possess legal documents for the land (not able to dispose of the land). The mean household expenditure on food and non-food were ₦8,609.37 and ₦12,587.08, respectively. The mean total expenditure was ₦18,809.20(±10444.45) and the poverty line was ₦8,433.34. The poverty incidence was 41.03%; 41.03% were poor while 58.97% were non-poor. Location of household in the rural sector, especially in the North East, South West, and South East, was significantly positive in determining the level of land control by farming households at 1%. At 10% level of significance, low land control (HCI≤0.25) and medium land control (HCI=0.51-0.75) would significantly increase the likelihood of the household being non-poor by 27.4% and 33.6%, respectively. Land control positively influences the poverty status of the farming households in Nigeria; farming households with low land control can increase their chances of being non-poor. Rural farmers should be encouraged to obtain legal documents on their land to facilitate higher level of control.*

Keywords: *Land Access, Land Control, Poverty Status, Household Expenditure*
(JEL code: Q24)

INTRODUCTION

In many developing countries, particularly in Africa, farmers remain trapped in poverty despite the opportunities in agriculture and rising food prices, creating the need for an in-depth investigation to know the factors responsible in sub-Saharan Africa, where farming is a vital component of the economy and the main source of income for a sizable majority of the population (Sassi, 2023). According to Oguizu and Orinkpa (2020), 70 percent of people in Nigeria work in the agricultural industry, relying on it for most of their food and income. Despite the innumerable opportunities in the sector, many Nigerian farmers are still impoverished, even as food prices increase. This paradox persists because most farmers operate on a small scale, producing just enough for their consumption with minimal surplus for the market. The revenue from this surplus is often insufficient to cater for their needs outside what they produce, thereby failing to significantly improve their financial situation.

Poverty is characterized by their inability to meet basic needs such as food, shelter, and clothing. According to Ogunniyi et al. (2020), poverty is a state where individuals cannot achieve a socially acceptable standard of living; poverty is a multifaceted social issue that extends beyond economic challenges, intersecting with education, health, housing, and more. In Nigeria, nearly 40 percent of the population, approximately 83 million people, live below the national poverty line of 137,430 Naira ($381.75) per year (World Bank, 2020). This widespread poverty is particularly severe in rural areas, where agriculture is the mainstay of the economy, but remains under-

developed due to various constraints. Tackling poverty among farming households, encouraging sustainable consumption and production, and improving health and well-being are vital elements of sustainable development.

Given Nigeria's current level of agricultural growth, the availability of land for agriculture is a key determinant of sufficient food production and livelihood security. However, insufficient and unequal access to farmland contribute to many farming operations staying at subsistence level. The availability and control of land are crucial for agricultural productivity and the economic well-being of farming households. Land control is the ability of a person to own, sell and use the land to serve as collateral to access credit. It ensures tenure security. It is estimated that 95 percent of Nigeria's farmland is untitled, which severely hampers farmers' ability to use their land as collateral to obtain formal loans from financial institutions, which are crucial for investing in improved agricultural practices and expanding production (Hull et al., 2016). Land control also creates motivations for the user to invest resources in it so as to sustain its value and maintain its productivity, and to enable access to social and economic development opportunities (Dauda et al., 2022). Control on land plays a key role in reducing poverty and improving the status of the rural households.

There are different ways Nigerians could gain access to agricultural land such as inheritance, purchase, lease, rent, et cetera, yet, access to land remains a major challenge (Alawode et al., 2018). The Nigeria land law put in place to ensure equity on land control for Nigerians irrespective of the tribe, religion, level of education, occupation, political affinity and gender, has made land to be unreachable to farmers. The inability to own land is now a major challenge in rural areas, where agriculture is their primary source of livelihood. In addition, obtaining land title is burdensome, thus bringing about the land tenure system reform by government in 2007 (Makinde et al., 2024). It is important to know that access to land and control are very important criteria for Nigeria's industrial, social, economic, political, physical and total development (Dauda et al., 2022).

In Nigeria, land is expensive and unaffordable and there is an unsettled disagreement between the government and traditional owners (Makinde et al., 2024). According to the National Bureau of Statistics LSMS-Integrated Surveys on Agriculture (NBS, 2016), the average Nigerian household owns just 2.6 plots of agricultural land, averaging about 0.5 hectares. This fragmentation limits farmers' ability to scale up operations, diversify production, and achieve economies of scale. Effective land tenure systems that provide secure ownership are essential for enhancing agricultural productivity, reducing poverty, and achieving food security. The Land Use Act has birthed certain agencies of government on land issues. Most farmers do not possess official land ownership documents such as certificate of occupancy and customary certificate of occupancy (Makinde et al., 2024), and thus are unable to secure bank loans to improve on productivity, purchase agricultural inputs (fertilizers, insecticides, et cetera) and to plant perennial crops. Therefore, farmers have no choice but to use marginal lands with less productivity potentials, where they can be driven out anytime.

There is no formal land allocation for farmers compared with other land users in Nigeria, thus undermining its numerous contributions to social, economic and environmental development (Makinde et al., 2024). Agricultural output is low due to low access to land, structure of land tenure, lack of proper land ownership documents, low control over land, as well as lack of improved agricultural technology and climate change. Without the ability to use land as collateral, farmers are often unable to obtain the necessary loans to invest in high-value crops or improve their farming techniques. This lack of investment capability results in lower productivity and income, contributing to the persistence of poverty. Hence the need to investigate the relationship between land control and poverty among farming households in Nigeria

Objectives of the study

The broad objective is to investigate the relationship between land control and poverty among farming households in Nigeria

The specific objectives are to

I. Measure the level of land control among farming house holds,
II. Assess the level of poverty of farming households,
III. Examine the factors influencing land control by farming households,
IV. Determine the effect of land control on poverty status of farming households.

LITERATURE REVIEW

Hosaena and Zavale (2018) examined land access and tenure security. Two data sets; a nationally representative National Agricultural Survey of 2014 and Supplementary Land Tenure Survey (SLTS) of 2015 were used. A probit regression model was employed. It was found that land access has a positive relationship between with on-farm employment and a negative relationship with off-farm employment.

The poverty status of farming households in Ogbomoso South Local Government Area (LGA) of Oyo State was assessed by Alao et al. (2020). Employing a multistage sampling procedure, the researchers selected 110 respondents and used multiple regression analysis to investigate the impact of various factors on household poverty. The findings identified lack of access to farm machinery, inadequate road infrastructure, and the absence of storage facilities as the key contributors to poverty among the respondents. Moreover, the age of respondents, household size, and farm size emerged as significant determinants of poverty among the farming households.

Kehinde et al. (2021) investigated the relationship between land tenure and property rights among smallholder rice farmers in Northern Nigeria and the household food security (HFS). The study used cross-sectional data collected from 549 rice farmers who were selected through multistage sampling across 84 rice-growing communities, in seven states of the three geopolitical zones in northern Nigeria. The findings indicate that land titling is exogenous in the estimated models. Moreover, the study shows that households experienced a significant (p

< 0.01) improvement in food security with an increase in the shares of freehold and leasehold land in the households' farmlands, compared to reliance solely on communal holdings.

To assess the prevalence of poverty in Northern Nigeria, Jaiyeola and Choga (2021) conducted a study using the General Household Survey (GHS-Panel) wave 1 (2010–2011) and wave 2 (2012–2013). Data were analysed using Foster-Greer-Thorbecke (FGT) poverty measure and the Cumulative Distributive Function (CDF). Their findings show ongoing poverty across all zones, with the Northern region experiencing the most severe poverty, and minimal change observed between the two waves.

Mukaila et al. (2022) conducted a study to assess the poverty status of rural women in Nigeria. Data were gathered form 450 rural women using multistage sampling procedure and analysed using descriptive statistics, Foster-Greer-Thorbecke and logistics regression. They found that poverty was pervasive among the rural women in Nigeria. Age, household size, and cropping system were identified as factors contributing to the high poverty rate among them, while education, access to credit facilities, farm size, marital status, and agricultural extension contacts were identified as the factors reducing poverty rate among rural women.

A study was conducted by Onoja et al. (2022) to investigate the status and determinants of farm household poverty in South East, Nigeria. Primary data were randomly collected from 140 farm households situated in Ideato South Local Government Area of Imo State, Southeast Nigeria. Data were analysed using the multidimensional poverty index (MPI) and Ordinary Least Squares (OLS) regression models. The findings highlighted the sex of the household head, the primary occupation of the household head, household size, and household income as significant determinants of poverty within the studied population.

Dauda et al. (2022) investigated the impact of land access and ownership on farm production across gender in Southwest Nigeria. Across three states in Southwest Nigeria, 480 respondents, comprising 240 male-headed households and 240 female-headed households, were selected using multi-stage sampling procedure. The results showed a significant difference in farm yield between male and female-headed households attributed to their levels of land access and ownership (emphasizing land control) at a 5% level of significance.

Makinde et al. (2024) examined the legal issues in land acquisition for agricultural production in Nigeria. Data were sourced from books, journals, and the internet. Normative legal research techniques and qualitative content analysis were used in to determine the relationship between land acquisition and agricultural production in Nigeria. It was found that Nigeria's land tenure system supports land partitioning (land fragmentation), which leads to scattered small-scale farming. Also, tenure rules stipulated in the Nigerian Land Use Act of 1978 hinder agricultural productivity in Nigeria. Other relevant factors and challenges influencing Nigeria's agricultural production include land tenure insecurity, and political and bureaucratic bottlenecks in the acquisition of land rights for agricultural uses.

There is a dearth of research on the effect of land control and poverty status among farming households in Nigeria.

MATERIALS AND METHODS

Hosaena and Zavale (2018) examined land access and tenure security. Two data sets; a nationally representative National Agricultural Survey of 2014 and Supplementary Land Tenure Survey (SLTS) of 2015 were use

Study Area

The scope of the study is Nigeria which comprises of 36 states and the Federal Capital Territory, Abuja. It also has six geo-political zones; North East, North West, North Central, South East, South South and South West.

Type and source of data

The dataset used for the study is GHS (General Household Survey) 2018/2019. The information used for this study include the socioeconomic characteristics such as age, household size, gender, educational level, access to credit, access to extension, occupation, size of plots, membership of cooperative society, having non- agricultural activities. Data on the means of land access are; outright purchase, rented in cash or kind goods, used free of charge, distributed by community, family inheritance, sharecropping, and temporary land exchange. Also, household food and non-food expenditure were obtained.

Data Analytical Methods

Data were analysed using descriptive statistics, land control index, FGT poverty measure, ordered probit model and logit regression model.

Descriptive Statistics

Frequency counts, percentages and mean were used to profile the socioeconomic characteristics of farmers/household heads. The results are presented in frequency distribution tables.

Land Control Index

Measuring the level of land control among farming households was achieved using land control index (LCI). This was measured by the extent of control on land held by households.

$$\mathbf{LCI} = \frac{\textbf{Area of land with right to sell or use as collateral}}{\textbf{Total area of land held by household}}$$

LCI = Land Control Index

LCI ranges between 0 and 1. The closer LCI is to 1, the higher the level of control households have on the plots of land held.

LCI=0; household has no control over all the farmland held

LCI=1; household has full control over all the farmland held

0<LCI<1; household has different levels of control over all the farmland held

Higher values of LCI is desirable as it signifies high levels of household control over the land held, implying secure land rights.

Foster, Greer and Thorbecke (FGT) Poverty Measure

Assessment of the level of poverty of farming households was achieved using FGT (Foster Greer Thorbecke) poverty measure. The FGT index is given by

$$P_\alpha = \frac{1}{N}\sum_{i=1}^{q}\left[\frac{z - Y_i}{Z}\right]^\alpha$$

Where Z = poverty line defined as 2/3 of the Mean per capita household
Y_i = per capita expenditure for all households;
Q = number of poor people in the population of size N
α = poverty aversion parameter that takes values of 0, 1 or 2 (α=0 measures poverty incidence; α=1 measures poverty gap and α=2 measures poverty severity).

$$MPCHHEXP = \frac{\text{Total per capita household expenditure}}{\text{Total number of households}}$$

MPCHHEXP = Mean per capita household expenditure
Poverty line = two-thirds of MPCHHEXP

Households were categorized into 2 classes; poor and non-poor households.

Any household whose expenditure falls below the poverty line is regarded as being poor while any household above it is regarded as non-poor.

Ordered Probit Regression Model

Ordered probit regression was used to examine the factors influencing land control by farming households. The dependent variable Y*, level of land control, measured by land control index, has 5 categories; <0.25, 0.251-0.50, 0.51-0.75, 0.751-0.99, 1.0

Model specification for the ordered probit regression:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \varepsilon$$

Y = Level of land control, measured by land control index:
1 = High (1.0), 2 = High medium (0.751-0.99), 3 = Medium (0.51-0.75),
4 = Low medium (0.251-0.50), 5 = Low (<0.25)

The independent variables include:
X1 = Sector (Rural, Urban), X2 = Sex (Female, Male), X3 = Age (years), X4 = Years of education, X5 = Household size (number of persons), X6 = Involvement in non-agricultural activities (Yes, No), X7 = Geopolitical zone (North Central, North East, North West, South East, South South, South West), X8 = Marital status (married, not married), β0 = Constant term, β1 - β12 = Regression coefficients to be estimated, **ε** = error term

Logit Regression Model

Logit regression was used to determine the effect of land control on poverty among farming households.

Model specification for the logit regression:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 + \beta_{10}X_{10} + \beta_{11}X_{11} + \varepsilon$$

Y = Poverty status of farming household (poor, non-poor)

The independent variables include:
X1 = Level of land control (LCI: High (1.0), High medium (0.751-0.99), Medium (0.51-0.75), Low medium (0.251-0.5), Low (<0.25))
X2 = Sex (Female, Male), X3 = Age (years), X4 = Marital status (married, not married), X5 = Geopolitical zone (North Central, North East, North West, South East, South South, South West), X6 = Credit access (Yes, No), X7 = Involvement in non-agricultural activities (Yes, No), X8 = Extension access (Yes, No), X9 = Years of education, X10 = Household size (number of persons), X11 = Monetary assistance from non-household member (Yes, No), β0 = Constant term, β1 - β12 = Regression coefficients to be estimated, **ε** = error term

RESULTS AND DISCUSSION

Socioeconomic characteristics of farming household heads in Nigeria

The socioeconomic characteristics and enterprise characteristics of household heads in relation to land control and poverty among farming households in Nigeria are presented in Table 1. The socioeconomic variables include; sex, age, educational level, marital status, household size, involvement in non-agricultural activities, access to extension services, access to credit, and plot size.

The results in Table 1 show that majority (84.6%) of the household heads were male showing that men are the dominant group engaged in farming. This could be due to the rigours of on-farm work. This agrees with Alawode et al. (2018) that most farming households were headed by males. The highest proportion (69.8%) of the respondents were between the age range of 30-60 years, having a mean of 50.1 years (±15.2), implying that the respondents were within the active economic age. Farmers in their active years can engage in high level of farm production which can encourage productivity and in turn, reduce poverty. Results show that 73.4% had formal education, including 12.1% who had tertiary education. Farmers that are well educated will be well informed about the various ways to get control over the land they hold, and to fulfil other conditions to reduce poverty. Majority (81.1%) of the respondents were married, having a mean household size of 6.6 (±3.7). This implies that farmers were settled with their households and could encourage higher levels of farming.

Also, in Table 1, more than half (51.9%) of the respondents were involved in non-agricultural activities. This indicates that the households may use income from other livelihood activities to improve their farming activities. This implies that farmers were engaged in non-agricultural activities to increase income and thereby reduce poverty. From the results, small proportions; 15.3% had access to extension and 15.7% had access to credit. These indicate that majority of the households did not get access to extension services and innovations, as well as credit. Access to extension services is expected to improve levels of production and productivity, and thereby reducing poverty. Also, access to credit will facilitate more control on land by enhancing land access through market and the processing of land documents. The possession of land documents can also facilitate access to formal credit. These help to increase production and generate higher income, thereby reducing poverty of farmers. Results also indicate that the mean number of plots was 4.42(±14.9), implying that, on the average, farmers held less than 5 hectares of farmland

Table 1. Socioeconomic characteristics of farming household heads in Nigeria

Variables	Frequency n = 3,351	Percentage
Sex		
Male	2,834	84.6
Female	517	15.4
Age (Years)		
< 30	220	6.6
30 – 60	2,340	69.8
>60	791	23.6
Mean 50.12 (±15.24)		
Education level		
No formal education	891	26.6
Primary	1,212	36.2
Secondary	843	25.2
Tertiary	405	12.1
Marital status		
Married (Monogamous)	1,953	58.3
Married (Polygamous)	763	22.8
Informal/loose union	5	0.2
Divorced	34	1.0
Separated	49	1.5
Widowed	449	13.4
Never married	98	2.9
Household Size		
1 – 5	1,472	43.9
6 – 10	1,437	42.9
>10	442	13.2
Mean 6.58(±3.72)		
Involvement in non-agricultural activities	1,739	51.9
Access to extension services	511	15.3
Access to credit	525	15.7
Plot size (hectares)		
< 5	2,210	65.9
>5	1,141	34.1
Mean 4.42 (±14.98)		

Source: Computed from 2018/2019 Nigeria GHS Data

Means of land access by farmers in Nigeria

Various means of land access by farming households in Nigeria are presented in Table 2. Results show that farming households had access to the highest proportion (62.8%) of the plots by inheritance, still showing the dominance of inheritance as a means of land access in Nigeria. Also, households had access to 11.8% of the plots by outright purchase, 11.2% by rent in cash or kind (farm produce), and 0.6% by sharecropping. These underscore the growing land market in Nigeria. Further, households had access to 4.0% of the plots through distribution by community, 9.1% were used free of charge, and 0.4% by temporary land exchange.

Table 2. Means of land access by farmers in Nigeria

Means of land access	Frequency n = 10,270	Percentage
Outright Purchase	1,212	11.8
Rented in cash or in kind (farm produce)	1,150	11.2
Used free of charge	937	9.1
Distributed by community	414	4.0
Family inheritance	6,449	62.8
Sharecropping	66	0.6
Temporary land exchange	42	0.4

Source: Computed from 2018/2019 Nigeria GHS Data

Level of land control by farming households

Control on land is measured by the ability of the household head to sell and/or bequeath the land. Also, the possession of legal documents determine control over land. The results of the level of land control by farming households are presented in Table 3. Results indicate that majority (88.8%) had no control over all the plots of farmlands held (LCI=0) while 6.0% had total control of the plots of farmlands held (LCI=1). This implies that majority can only carry out farming activities (use right) on the farmland and did not possess the legal documents

for the land. However, 4.7% of the households had varying degrees of control on the plots held (0< LCI<1). Land control enhances high level of investment in land and access to credit. This shows why there is low level of access to credit by household heads (15.7% in Table 3).

Table 3. Level of land control by farming households

Land Control Index	Level of control	Frequency n = 3,351	Percentages
0	No control	2,976	88.8
≤ 0.25	Low	38	1.1
0.251 – 0.5	Low medium	59	1.8
0.501 – 0.75	Medium	56	1.7
0.751 – 0.99	High medium	20	0.6
1	Total control	202	6.0
Mean 0.22 (±0.2192)			

Source: Computed from 2018/2019 Nigeria GHS Data

Level of Poverty of Farming Households in Nigeria

The expenditure of the farming households is presented in Table 4. Results indicate that the mean household expenditure on food was ₦8,609.37 (±8617.15) while the mean household non-food expenditure was ₦12,587.08 (±7101.86). The farming households spent more on non-food that food items. Results also indicate that the mean total expenditure was ₦18,809.20 (±10444.45). The poverty line was ₦8,433.34.

Table 4. Household expenditure

Household expenditure	Minimum	Maximum	Mean
Food expenditure	63.2	129,846.6	8,609.37 (±8617.15)
Non-food expenditure	0.0	750,900	12,587.08 (±7101.86)
Total expenditure	294.5	200,903.3	18,809.20 (±10444.45)
Poverty line = ₦8,433.34			

Source: Computed from 2018/2019 Nigeria GHS Data

Poverty indices

The poverty indices are presented in Table 5. From the poverty line of ₦8,433.34 on Table 4, results indicate that the poverty incidence was 41.0%, poverty depth was 13.82%, and poverty severity was 6.8%. Poverty incidence shows that 41.0% of the households were below the poverty line, implying that relatively, they could not afford the basic needs of the households. The poverty gap shows that 13.82% of the poverty line (₦1,164.49) is required to move an average poor households to the poverty line. The poverty severity indicates that 6.8% of the households suffer from extreme poverty and they need attention by leaders.

Table 5. Poverty indices

Poverty index	Estimates (%)
Poverty incidence	41.0
Poverty depth	13.8
Poverty severity	6.8

Source: Computed from 2018/2019 Nigeria GHS Data

Poverty status of farming households

Table 6 shows the poverty status of the farming households. From the results, 41.0% were poor while 59.0% were non-poor. This shows that only 59.0% of farming households could afford basic necessities. This was before the Covid-19 pandemic. There is need for attention from policy makers to improve the lots of the farming households in Nigeria.

Table 6. Poverty status of farming households

Household expenditure	Frequencies (n=3,351)	Percentage
Non-poor	1,976	59.0
Poor	1,375	41.0

Source: Computed from 2018/2019 Nigeria GHS Data

Socioeconomic characteristics and poverty status of farming households

The results of the relationships between poverty status across socio-economic characteristics of household heads are presented in Table 7. All the results were significant at 1%.

Age and poverty status of the farming households

The results of the poverty status across age distribution of household heads indicate that higher proportion (65.9%) of the <30 years' age category were poor while higher proportion (63.2%) of the 30-60 years' category were non-poor. Also, more than half (53.5) of the >60 years' category were non-poor. This implies that poverty level reduces and welfare improves as household heads grow older. This may be due to better earning capability, accrued savings and better yielding investments.

Sex and poverty status of the farming households

Results indicate that higher proportion (62.7%) of the male headed households were non-poor, while higher proportion (61.3%) of the female headed households were poor. This may imply that male headed households have better earning capabilities than female headed households.

Household size and poverty status of the farming households

Higher proportion (57.7%) of households in 1-5 category were poor, while higher proportion (67.6%) of households within 6-10 were non-poor, and higher proportion (86.7%) of

Table 7. Socioeconomic characteristics and poverty status

Socioeconomic	Poor	Non poor	Total
Age			
< 30	145 (65.9)	75 (34.1)	220 (100)
30 – 60	862 (36.8)	1,478 (63.2)	2,340 (100)
> 60	368 (46.5)	423 (53.5)	791 (100)
Pearson chi2(2) = 83.1431 Pr = 0.000			
Sex			
Male	1,058(37.3)	1,776 (62.7)	2,834 (100)
Female	317 (61.3)	200 (38.7)	517 (100)
Pearson chi2(1) = 103.9389 Pr = 0.000			
Household size			
1-5	850 (57.7)	622 (42.3)	1,472 (100)
6-10	466 (32.4)	971 (67.6)	1,437 (100)
>10	59 (13.4)	383 (86.7)	442 (100)
Pearson chi2(2) = 353.8819 Pr = 0.000			
Educational level			
No education	462 (51.9)	429 (48.2)	891 (100)
Primary education	486 (40.1)	726 (59.9)	1,212 (100)
Secondary education	332 (39.4)	511 (60.6)	843 (100)
Tertiary education	95 (23.5)	310 (76.5)	405 (100)
Pearson chi2(3) = 96.1963 Pr = 0.000			
Marital status			
Married	961 (35.3)	1,760 (64.7)	2,721 (100)
Not married	414 (65.7)	216 (34.3)	630 (100)
Pearson chi2(1) = 195.3430 Pr = 0.000			
Total	1,375 (41.03)	1,976 (58.97)	3,351(100)

Source: Computed from 2018/2019 Nigeria GHS Data

households with >10 members were non-poor. This shows that poverty reduces with an increase in the number of household members. This may be due to low number of dependents and higher cumulative per capita income of the household members.

Education and poverty status of the farming households

Higher proportion (51.9%) of households who had heads with no formal education were poor. However, higher proportion (59.9%) of those with primary education were non-poor and higher proportion (60.1%) with secondary education were non-poor. Results also indicate that higher proportion (76.5%) of those with tertiary education were non-poor. This implies that educated households had better welfare status, and higher education reduces poverty more. This may be because education gives access to better information, innovations and opportunities.

Marital Status and poverty status of the farming households

Results indicate that higher proportion (64.7%) of those that were married were non-poor. However, higher proportion (65.7%) of those who were not married were poor. This implies that households of married persons had better welfare. Much more if larger households are able to pool their resources together.

Factors influencing land control by farming households in Nigeria

The results of the ordered probit regression model on the factors influencing land control by farming households are presented on Table 8. The model was significant at 1% (Prob> chi2=0.0000). The log likelihood was -1623.2262.

Sector (Rural) was positive and statistically significant in determining land control by farming households at 1%. The probability of land control by farming household increases by 27.4% if the household is in the rural sector. This implies that farming households in the rural areas had more land control than farming households in the urban areas. This can be due to more available farmlands in the rural area relative to the urban setting.

Household size was negative and statistically significant in determining land control by farming households at 5%. A unit increase in the number of persons in a household will decrease the probability of land control of the farming household by 1.8%. This implies that increased household size will lead to a lower land control for the farming households. Also, more people in the household may lead to fragmentation of the lands.

Being in the North East was positive and statistically significant in determining land control of farming households at 1%. The presence of farming households in the North East area increases the probability of land control by 33%. Also, being in the South East was positive and statistically significant in deter-

Table 8. Factors influencing land control by farming households

Land control	Coefficient	Std. Err.	Z	p>|z|	Marginal effect
Sector (Rural)	0.274442***	0.092057	2.98	0.003	0.274442***
Sex (Female)	0.018535	0.136794	0.14	0.892	0.018535
Age	0.001774	0.002067	0.86	0.391	0.001774
Years of education	-0.001298	0.006291	-0.21	0.837	-0.001298
Household size	-0.018142**	0.008888	-2.04	0.041	-0.018142**
Involvement in non-agric. activity	-0.024814	0.059929	-0.41	0.679	-0.024814
Zone					
North East	0.329735***	0.091780	3.59	0.000	0.329735***
North West	-0.045039	0.101930	-0.44	0.659	-0.045039
South East	0.246482**	0.099959	2.47	0.014	0.246482**
South South	0.041721	0.108821	0.38	0.701	0.041721
South West	0.433095***	0.156429	2.77	0.006	0.433095***
Marital Status					
Not married	-0.232747*	0.127229	-1.83	0.067	-0.232747*

Number of observations = 3,351, LR chi2(12) = 74.87,
Prob> chi2 = 0.0000,
Log likelihood = -1623.2262, Pseudo R2 = 0.0225
****, **, * significant at 1%, 5% and 10% respectively*

Source: Computed from 2018/2019 Nigeria GHS Data

mining land control by farming households at 5%. The presence of farming households in the South East area increases the probability of land control by 25%. Further, being in the South West was positive and statistically significant in determining land control of farming households at 1%. The presence of farming households in the South West zone increases the probability of land control by 43%. The positive effect of North East, South East and South West zones on land control may be due to the presence of farmlands, ease of land access and land market in the area. The effect is highest in the South West.

Marital status (not married) was negative and statistically significant in determining the land control of farming households at 10%. Farming households with unmarried head will experience a decrease in the probability of land control by 23%. This may be due to inheritance and the need to increase production and income that comes with a larger household.

Effect of Land Control on Poverty Status of Farming Households in Nigeria

The results of the logistic regression model on the effect of land control on poverty status of farming households are presented in Table 9. The model was significant at 1% (Prob>chi2 =0.0000). The log likelihood was -1878.6213.

Land Control

Low land control (HCI≤0.25) was positive and statistically significant at 10%. Low level of land control by households increases the likelihood of the household being non-poor by 27.4%. This implies that farming households with low land control can increase their chances of being non-poor. Also, medium land control (HCI=0.51-0.75) was positive and statistically significant at 10%. Medium level of land control by households increases the likelihood of the household being non-poor by 33.6%. This implies that farming households with medium land control can increase their chances of being non-poor.

Other socio-economic characteristics

Age was positive and statistically significant at 1%. An increase of 1 year in the age of the farming household head increases the likelihood of being non-poor by 0.5%. This implies that the older the farming household head, the less the likelihood of the household being poor. Farming households may have accumulated wealth and assets over the years to keep them above the poverty line.

However, marital status was negative and statistically significant at 1%. Being a married household head reduces the likelihood of being non-poor by 48.9%. This may be due to the increased expenditure of the households. Also, a household being in the North East was negative and statistically significant at 1%. The presence of farming households in the North East area reduces the likelihood of being non-poor by 26.5%. This may be due to unfavorable weather and conflicts in the area.

Being in the South East was positive and statistically significant at 1%. The presence of farming households in the South East area increases the likelihood of being non-poor by 24%. Also, being in the South South was positive and statistically significant at 1%. The presence of a farming household in the South South area increases the likelihood of being non-poor by 26.2%. This may be due to fertile lands, favorable weather and good market conditions.

Credit access was positive and statistically significant at 1%. Access to credit increases the likelihood of being non-poor by 22.1%. This implies that farming households with access to credit increases their chances of being non-poor. This is due to better investments in farm assets and improved productivity. Also, involvement of a household in non-agricultural activities was positive and statistically significant at 1%. Involvement in non-agricultural activity increases the likelihood of being non-poor by 27.8%. This implies that farming households who are involved in non-agricultural activities (livelihood diversifica-

Table 9. Effect of land control on poverty status of farming households

Poverty	Coefficient	Std. Err.	Z	P>|z|	Marginal effect
Land control					
≤0.25 (low)	0.396173	0.233939	1.69	0.090	0.396173*
0.251-0.5 (low medium)	0.073622	0.185064	0.40	0.691	0.073622
0.51-0.75 (medium)	0.335954	0.195723	1.72	0.086	0.335954*
0.751-0.99 (high medium	0.388631	0.356131	1.09	0.275	0.388631
1 (total)	-0.046344	0.097293	-0.48	0.634	-0.046344
Sex (Female)	0.054923	0.107296	0.51	0.609	0.054922
Age	0.005166	0.001735	2.98	0.003	0.005166***
Married	-0.488639	0.100114	-4.88	0.000	-0.488639***
Zone					
North East	-0.265279	0.077113	-3.44	0.001	-0.265279***
North West	0.078601	0.080488	0.98	0.329	0.078601
South East	0.239842	0.083922	2.86	0.004	0.239842***
South South	0.26207	0.087437	3.00	0.003	0.26207***
South West	0.042670	0.097214	0.44	0.661	0.042670
Credit access	0.221282	0.067284	3.29	0.001	0.221282***
Involvement in non-agric. activity	0.278673	0.048944	5.69	0.000	0.278673***
Extension access	0.206094	0.068415	3.01	0.003	0.206094***
Years of education	0.040403	0.005200	7.77	0.000	0.040403***
Household size	0.144118	0.008432	17.09	0.000	0.144118***
Monetary assistance from non-household member	0.355885	0.16648	2.14	0.033	0.355885**
Constant	-0.894917	0.168266	-5.32	0.000	

Number of observation = 3,351, LR chi2 (19) = 779.86, Prob>chi2 =0.0000
Log likelihood = -1878.6213, Pseudo R2 = 0.1719
****, **, * significant at 1%, 5% and 10% respectively*

Source: Computed from 2018/2019 Nigeria GHS Data

tion) increases their chances of being non-poor. This is due to diversified sources of income, which can lead to better investments in farm assets and improved productivity.

Extension access was positive and statistically significant at 1%. Improved access to extension services increases the likelihood of being non-poor by 22%. This implies that farming households with access to extension services increases their chances of being non-poor. This is due to better decision making from innovations and information provided to them. In the same vein, years of education was positive and statistically significant at 1%. An additional year of education of the household head increases the likelihood of being non-poor by 4%. This implies that the better educated the household head, the better their chances of being non-poor. Education presents the households to more opportunities as well as the use of modern equipment and current trends to improve their productivity.

Household size was positive and statistically significant at 1%. Increase in number of household member increases the likelihood of being non-poor by 14.4%. This implies that the larger the farming household, the better their chances of being non-poor. Large households with fewer dependents usually have more people available for labour and farm management. Likewise, monetary assistance from non-household member was positive and statistically significant at 5%. Increased assistance from non-household members will increase the likelihood of being non-poor by 36%. This implies that farming households will have more money for food and non-food expenditure.

CONCLUSION AND RECOMMENDATIONS

Inheritance is still the dominant means of land access in Nigeria although land market is growing, and households had very low level of control over all the plots of farmlands held. Also, high proportion of the farming households are poor. Land control positively influence the poverty status of the farming households in Nigeria; farming households with low land control can increase their chances of being non-poor. In addition, credit access, extension access, education, larger households and involvement in non-agricultural activity also contributed to the improvement of the poverty status (being non-poor) of farming households in Nigeria. Rural farmers should be encouraged to obtain legal documents on their land to facilitate higher level of control. The government and stakeholders should promote education in rural areas. Improving the level of education of farmers through increased access to educational facilities like schools will enhance the literacy level of farmers which will further impact the poverty status of farming household.

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