



Poverty Status of Madagali and Michika Farm Families of Adamawa State Nigeria: Aftermath of Boko Haram Insurgency

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ABSTRACT

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The study analyzed the effect multidimensional poverty of farm families in Madagali and Michika local government areas of Adamawa State, Nigeria after the Boko Haram Insurgency of 2014. Specifically, the study described the socio-economic characteristics of the farm families and examined the multidimensional poverty status of the farm families in the study area. Multistage and simple random sampling techniques were employed in drawing 100 respondents from various communities. Data were analyzed using descriptive statistics and Foster-Greer-Thorbecke (FGT) poverty indices. Results showed that majority (57.58%) of the farm families were females, 47.89% were aged between 20 to 29 years, 79.8% were married, 55.56% had SSCE/GCE/Teachers Grade ii, 69.47% had farming as primary occupation, 33.33% had trading as secondary occupation, 61.46% had between N1100 – 10000 as income from primary source, 56.47% had between N1100 – N10000 as income from secondary source, 95% of the respondents owned land, 91.92% owned house. Majority (48.96%) of the respondents roofed their houses with thatch while 61.22% had mud as the wall material of their house. Majority (89.55%) of the respondents used firewood as cooking fuel, 49.47% lived in a single room apartment, 63.53% had borehole as main source of drinking water, 46.24% used uncovered pit latrine and 71% of the household lived without electricity. Monthly income of respondents, farm size and age of household head were the determinants of food security in the study area. The Foster-Greer-Thorbecke (FGT) headcount ratio/poverty incidence ($\alpha = 0$) was 0.78. The study analyzed that there were cases striking multidimensional poverty issues in the study area which call for immediate government intervention in the study area.

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Introduction

The National poverty survey carried out indicates that the high tropic areas have moderate poverty while the northern regions have poverty levels that are as high as 60% (National Bureau of Statistics (NBS), 2009; Odusola, 1997; Okunmadewa et al., 2005; Ndaghu et al, 2005) with higher incidence in the rural areas.

There are five approaches to poverty. Firstly, as put forward by the World Bank, poverty is usually measured as either absolute or relative poverty (the latter being actually an index of income inequality). Absolute poverty refers to a set standard which is consistent overtime and between countries. The World Bank defines extreme poverty as living on less than US\$1.25 per day, and moderate poverty as less than US\$2 day (Unidimensional) (Akinbile & Ndaghu, 2005; World Bank, 2008). Secondly, UNDP approach to poverty as defined under the UNDP is the total absence of opportunities, accompanied by high levels of undernourishment, hunger, illiteracy, lack of education, physical and mental ailment, emotional and social instability, unhappiness, sorrow and hopelessness

for the future. Thirdly, is the Physical Quality of Life index (PQLI) approach developed by David M. Morris. The physical quality of life index combines measurements of life expectancy, infant mortality and literacy rates as indicators to poverty. Fourthly, Sen, in his basic approach for the deterioration of poverty focuses on capabilities. These capabilities, he termed as the ends of a person and the resources only being a means of achieve the ends for example, the age of a person, the infirmities he suffered from, the social responsibilities he was burdened with and so on, determine his capabilities. Hence, he relied on this capabilities deprivation approach for determining whether a person was poor or not. The fifth is the Alkire and Foster (2007) methodology, which is a new approach to global poverty and focuses on 3 dimensions 10 indicators, the first of such dimensions is health and its indicators are nutrition and child mortality, education-years of schooling and children enrolled, living standard, cooking fuel, sanitation, water, electricity, floor and assets.

The first, through the fourth lie substantially outside the scope of this study, the first approach is uni-dimensional, the second, third and fourth approaches are multidimensional to an extent with their various weaknesses and strength. This study will adopt the approach of Alkire and Foster 2007 with little modification to the additions of dimensions and indicators which by and large is within the context of the MDG to eradicating poverty by 2020 and to the best of our knowledge, this kind of approach has never been carried out in Northern Eastern Nigeria in general and Adamawa state in particular.

Madagali and Michika Local Government Areas are the worst hit in terms of attack by Boko Haram insurgents, as a result, people deserted their homes, while livestock, farm produce (on the farm and stored) were either destroyed/burnt or carted away (Search for Common Ground (SfCG) (2014). Now, the people are back, what are their socioeconomic characteristics? What are the determinants of food securities amongst the farming household? How severe is food insecurity among the farming households? And what is the multidimensional poverty status of the farming households? The study will attempt to provide answers to the aforementioned questionnaire. This will inform policy makers on possible areas where interventions are required to give hope to the people that are food insured and lift the poor out of poverty. The objectives of the includes: Describe the socio-economic characteristics of the farm families, identify the determinants of food security, examine the severity of food security, and determine the multidimensional poverty status of the farm families.

Methodology

Study Area

Madagali and Michika Local Government Areas (LGAs) are located in Northern senatorial district of Adamawa State. The coordinates of Madagali and Michika are $10^{\circ}44'66.09''N$, $13^{\circ}24'57.32''E$ and $10^{\circ}37'N$, $13^{\circ}23'E$, respectively (Figure 1). These were the two out of five local government areas that made up the Northern Senatorial District of Adamawa State that were worse hit by Boko Haram insurgents. The two LGAs share border with Borno State to the north and west and to the east Cameroon republic. At present, due to attack on the LGAs, financial institutions such as banks and security posts such as police stations have been destroyed completely, other security agents such as Immigration, Customs, Nigeria Security and Civil Defense (NSCD) and Department of Security Services (DSS) were also not visible. Four Bridges that link up the LGAs with the state capital have also been destroyed.

Majority of the inhabitants are farmers who, at a point were all internally displaced. The LGAs were completely seized by Boko Haram insurgents in August and September 2014. Residents fled to mountainous areas of Mubi town and other towns in the wake of a failed attempt by government troops to retake the town from the insurgents.

Madagali and Michika local government areas form one of the Federal constituencies in Adamawa State and are 4 and 3.40 hours drive from the state capital, respectively.

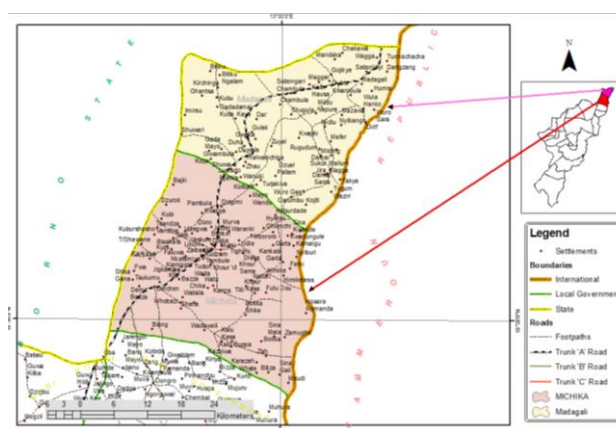


Figure 1. Map of Adamawa State showing the Study Area

Data Collection and Source of Data

Primary data were only used for this study. The data were obtained through semi-structured questionnaires administered on sampled farm families in the year 2019, with “household” a unit of analysis. Household heads were enumerated in this study. Where the household was not available the next on the hierarchy was enumerated. Information was elicited on demographic, socio-economic, income and expenditure, food availability, health, education, labor, nutrition and general welfare of the farm families.

Sampling and Sampling Procedure

Purposive and multi-stage random sampling techniques were adopted in this study. Madagali and Michika local government areas were the most hit by the Boko Haram insurgents. Madagali and Michika LGAs have 10 and 16 wards respectively. The first stage was the proportional selection of 10 wards from both LGAs using a simple random sampling technique.

The second stage was the random selection of 5 communities from each ward to make a total of 50 communities in all, while the third stage was the selection of 2 households each from the selected communities to make a total 100 households, using a random sampling technique. The household heads of the selected 100 households became automatically the respondents and representatives of their households. Where the respondents totaled less than 100 is either due to missing questionnaire or ambiguous response from the respondents and where this is applicable, the response (s) was dropped.

Data Analysis

The study employed the use of descriptive statistics such as mean, frequency and percentage to describe the socio-economic characteristics of the farming household, inferential statistic such binary logistic regression model were used to identify the determinants of food security, while frequency, percentages and real limit mean were used to determine the severity of food insecurity. To determine the multidimensional poverty status and its severity on the farm families, the study combined Factor Analysis (FA) and Foster Greer Thornback (FGT) to address it. The data generated from the survey were coded and analyzed using Statistical Package for Social Science (SPSS)

Foster Greer Thornback (FGT).

Unit of Analysis

The unit of analysis was the household. Household in this study is a collection of individuals most often family members who eat from the same pot. What the study meant by one pot is eating food cooked for consumption by a section of people who live together in the environment. Therefore, as long as the section of people in the environment eats from the kitchen the food is cooked (pot), they are termed household. The choice of household over individual as the unit of analysis is based on the household nature and communal living being practiced in the area.

Results and Discussion

The result on table 1a, and 1c showed the socioeconomic characteristics of the respondents in Madagali and Michika local government areas of Adamawa state. Result on table 1a showed that majority (57.58%) of the respondents were female. This may not be far from the truth because males were the most target of insurgents during the attack hence most communities lost mostly males in terms of dead and or carried away by the insurgents, good number of females, especially the married once were left widowed.

Table 1a. Frequencies and percentages for the socioeconomic characteristics of respondents

Respondent options	Frequencies	Percentages
Sex		
Male	42	42.42
Female	57	57.58
Total	99	100.0
Age		
20 to 29 years	45	47.87
30 to 39 years	26	27.66
40 to 49 years	15	15.96
50 to 59 years	8	8.51
Total	94	100.0
Marital status		
Single	19	19.19
Married	79	79.8
Divorced/separated	1	1.01
Total	99	100.0
Highest completed education		
No formal education	13	14.44
Junior secondary education	4	4.44
SSCE/GCE/Teachers Grade II	50	55.56
OND/ND/NCE	6	6.67
Degree/HND	17	18.89
Total	90	100.0
Primary occupation		
Farming	66	69.47
Fishing	4	4.21
Trading	11	11.58
Civil servant	9	9.47
Technician/Artisan	1	1.05
Builder/Contractor	2	2.11
Others	2	2.11
Total	95	100.0

Source: Survey 2018

Table 1b. Frequencies and percentages for the socioeconomic characteristics of respondents

Respondent options	Frequencies	Percentages
Secondary occupation		
Farming	32	32.29
Fishing	3	3.13
Trading	31	33.33
Civil servant	24	25.0
Technician/Artisan	2	2.08
Builder/Contractor	1	1.04
Others	3	3.13
Total	96	100.0
Monthly income from primary income source		
500 to 1000	59	61.96
1100 to 10000	23	23.96
11000 to 20000	10	10.42
21000 to 30000	2	2.08
31000 to 40000	1	1.04
51000 to 60000	1	1.04
Total	96	100.0
Monthly income from secondary income source		
500 to 1000	48	56.47
1100 to 10000	30	35.29
11000 to 20000	6	7.06
31000 to 40000	1	1.18
Total	85	100.0
Respondent own land		
Yes	95	95.0
No	5	5.0
Total	100	100.0
Respondent own house		
Yes	91	91.92
No	8	8.08
Total	99	100.0
Roof material of respondent house		
Mud	-	-
Thatch	47	48.96
Wood	-	-
Iron sheet	42	43
Cement/concrete	-	-
Roofing tiles	7	7.29
Total	96	100.0

Source: Survey 2018

The age distribution of the respondents showed that majority (47.87%) were within the ages of 20 to 29 years, most of the respondents were less than 40 years of age, meaning that they were strong and energetic to be able to carry out farming operations and any other businesses they lay their hands on. More so, the marital status of the respondents showed that majority (79.8%) of the respondents was married. Marriage goes with responsibilities. This indicates that most of the respondents had the responsibilities of sending their children to school, feeding the families and other upkeep.

Furthermore, the result for the highest education attainment of the respondents showed that majority (55.56%) of the respondents showed that they had OND/ND/NCE,SSCE/GCE/Teachers Grade II. Majority had the basics of the educational attainment under the sustainable Development Goals (SDGs) they may not be gainfully employed with those qualifications and may also not be able to write and communicate well in English

Language which is one of the dimensions (capability deprivation) of poverty, (Osowole & Bamiduro, 2013). The level of education determines the level of opportunities available to improve livelihood strategies, enhance food security and reduce the level of poverty. The primary occupation of the respondents showed that majority (69.47%) had farming as their primary occupation. The result showed that the respondents were predominantly farmers who were left with fragmented land and local implements used in tilling the land.

Table 1c. Frequencies and percentages for the socioeconomic characteristics of respondents

Respondent options	Frequencies	Percentages
Wall material of respondent house		
Mud/bricks	60	61.22
Stone	6	6.12
Cement/concrete	20	25.51
Wood /bamboo	5	5.10
Iron sheet	2	2.04
Total	98	100.0
Cooking fuel of respondent		
Firewood	60	89.55
Charcoal	6	8.96
Gas	1	1.49
Total	67	100.0
Housing unit of respondent		
Single room	47	49.47
Flat	5	5.26
Duplex	19	20.0
Whole building	24	25.26
Total	85	100.0
Respondent main drinking water source		
Treated pipe borne water	-	-
Untreated pipe borne water	-	-
Borehole/hard pump	54	63.53
Protected well	7	8.24
Unprotected well	20	23.53
703River/lake	4	4.70
Total	85	100.0
Toilet facility of respondent		
Pit latrine uncovered	43	46.24
Modern waste system	6	6.45
VIP toilet	7	7.53
Pit toilet covered	20	21.51
Bush	17	18.28
Total	93	100.0
Main electricity source of respondent		
Private generator	29	71.0
None	71	29.0
Total	100	100.0

Source: Survey 2018

Table 2. Foster-Greer-Thornback (FGT) Poverty Indices for Multidimensional Poverty Status of Farming Households

All observations	Indices
Headcount ratio/ poverty incidence ($\alpha =0$)	0.78
Average normalized poverty gap ($\alpha =1$)	1.19
Average squared normalized poverty gap/poverty severity ($\alpha =2$)	2.46

Source: Survey 2018

More so, the insurgents invaded their communities and destabilized all farming activities including carting away with stored farm produce and setting ab lazed those that could not be carried by the insurgents.

The result presented on table 1b showed that 96 respondents indicated their secondary occupation. Majority (33.33%), of the respondents had trading as their secondary occupation.

The income from the primary occupation was N1,000 to N10,000 making up to 61.46% of the respondents. This is a confirmation that the great majority of the respondents live on barely \$0.65 a day and that the rural poor account for 80% poverty (Collier & Gunning, 1999; Nwaobi, 2000; World Bank, 2001). The result here is in no small way showcased how poor the respondents are of which the menace of Boko Haram may have contributed so much to such low income level.

For the income from the secondary occupation of the respondents, it showed that majority (56.47%) earned between N11,000 – N10000 from their secondary occupation, this depicts that the respondents leaved on an absolute poverty to an extent that their incomes were below bare subsistence. The result for respondents' household ownership of land showed as expected that 95% of the respondents indicated that they owned land. Land is the most valuable kind of property one may have, it safeguards households from being food in-secured for the production of food, especially when not fragmented. The study ascertained whether households owned their houses. The result showed that majority (91.92%) of respondents owned a house. From the multidimensional outlook of poverty, is one thing to own a house and another thing to consider the make-up or type of the house in terms of the roofing materials, walls and floors of the house. As showed on table 1b majority (48.96%) had their houses roofed with thatch and 43.7% with iron sheets. This implies that the respondents do not leave in modern houses hence there are poor, from the multidimensional perspective. Same applies to table 1c where it indicated that 61.22% of the respondents had the walls of their house in mud. As much as 89.55% of the respondents used firewood in cooking, while 8.96% and 1.49% of them use charcoal and gas, respectively. For the fact that use of firewood lead to environmental degradation as a result of unchecked cutting down of trees, use of firewood by households other than kerosene and cooking gas is an indication of poverty. On the housing unit, 49.47%, 5.26%, 20% and 25.26% of them live in single room, flat, duplex and whole building, respectively. Leaving in single rooms instead of flat or duplex is also an indication of multidimensional poverty.

On the main source of drinking water as showed on table 1c, majority (63.53%), had borehole/hand pump as main source of drinking water, 23.53 % from unprotected well while 4.71% from the river. Pipe borne water do not exist in all the communities. This is an indication that either of borehole or hard pump were available in Madagali and Michika local government area of Adamawa state and it serve as source of drinking water to most people in the local governments as the result depicted. Majority (46.24%) of the respondents had pit latrine uncovered, as the main toilet facility. This shows that majority of the respondents use pit latrine/ pit toilet while good number 18.28 % still use bush to defecate even in the 21st century.

This result implies that members of these communities are vulnerable to disease such as cholera. Conversely, the study ascertained the main electricity source of the respondents. The result showed that 29% of the respondents used private generator as their primary source of electricity. Majority (71%) had no power supply of any kind. The high use of private generating set as the primary source of electricity was expected. This is because since the Boko Haram menace in 2014, no community in Madagali or Michika has seen power supply (electricity) up to the time of carrying this research. Because, when insurgents were destroying those communities, they did not spare electrical lines and transformers and that has led to total black out till today. This has affected small and medium scale businesses vis-a-vis livelihood of the community members which therefore plunged them into poverty.

Table 4 shows the multidimensional poverty status of farming households in Madagali and Michika local government area of Adamawa state. Five dimensions of poverty were considered in the study which included Health, Consumption, Income, Education and Assets. To get the multidimensional poverty status of farmers in the local government, the study employed factor analysis. In using the factor analysis, the principal component analysis of it was used to extract the key information which was transformed to a variable of poor and non-poor. Having gotten that, the study employed the Foster-Greer-Thornback (FGT) poverty indices for multidimensional poverty measurement to ascertain the proportion of the farmers that are multi-dimensionally poor. From the result on table 4, the headcount ratio which the FGT poverty indices for multidimensional poverty measurement called $\alpha = 0$ depicted the proportion of households who were poor in the local government areas based on the ones sampled was 0.78. This shows that 78% of the farming households sampled were multi-dimensionally poor. This was expected considering the result for the food security which depicted that there was no food security but food insecurity. The result here was even worrisome considering that the poverty rate in Madagali and Michika local government areas of Adamawa state after the Boko Haram attack increased and it has given the local governments a striking multidimensional poverty status which is worse than the national poverty rate of 69%. This calls for concern and need urgent intervention to reduce such rate of poverty because if it is not solved soon could worsen and could even spread to other local government areas with its impending result of high crime rate in the state and the country at large.

On the other hand, the $\alpha = 1$ which captures how far the poor are from the poverty line was 1.19. The poverty gap is usually very important in poverty alleviation programmes. This is because it captures the extent or intensity of poverty as it reflects how far the poor are from the poverty line which the headcount poverty measure does not consider. Also, the method shows the amount of income that is needed to be transferred to the poor to close the gap so as to eradicate poverty. To use this method to determine the amount of money to be spent to bring the poor out of the poverty line, the poverty gap figure need be multiplied by the poverty headcount and the population of people in the area. The product of the multiplication shows

the amount of money which will be transferred to the poor to get them out of poverty. Specifically, it is showed that, N92.8million is required annually to move the poor farming households out of poverty. Therefore, for any meaningful poverty eradication to be done in the local government areas, the government will need an investment of N92.8million a year to move them out of poverty.

Furthermore, for the $\alpha = 2$ which captures the inequality among the poor, the figure was 2.46. This measure is equally important as it addresses the potential inequality which exists among the poor. It went farther than the poverty gap which captures how far the poor are from the poverty line by addressing a key part of poverty which is inequality among the poor. The importance of this method is its ability to cater for the inequality among the poor if an income transfer is to be given to the poor. So with this method, such inequality will be considered which will ensure that the income transfer as an intervention package will be very effective. In using this method, the distribution or transfer of the N92.8million to eradicate poverty among the farming households in Madagali and Michika local government area of Adamawa state will not be evenly done. Preference will be given to areas where the gap is more as this method shows the inequality among the poor and not just how far they were from the poverty line.

Conclusively, as the result above showed 78% of the population were poor. However, the poverty gap of 1.19 which is higher than the poverty status or headcount poverty depicts that though so many of the farming households were poor, the gap between them and the poverty line was much. This means that a wide gap exists between the poor and the poverty line and this could be the reason for the need to transfer as many as N92.8million in a year to them to move them out of poverty. On the other hand, the poverty severity of 2.46 is an indication that though the gap between the poor farming households and the poverty line was much, the inequality that exists between these poor households was much more than the poverty gap.

Conclusion

The study was on the effect of insurgency on food security and multidimensional poverty of farm families in Madagali and Michika local Government areas of Adamawa state, Nigeria. The study described the socioeconomic characteristics of the respondents of the farm families, identified the determinants of food security, examined the severity of food security, and determined the multidimensional poverty status of the farm families in the study area. The overall socioeconomic characteristics of the farm families revealed a disturbing situation of food insecurity and multidimensional poverty. The study revealed that income, farm size and age of household head were the determinants of food security in the study area. It also revealed that there was very high extent food security while the Foster-Greer-Thorbecke (FGT) headcount ratio/poverty incidence ($\alpha = 0$) was 0.78, implying that 78% of the farm families were poor. Generally, the insurgents have impacted negatively on food security status and multidimensional poverty of the farm families in Madagali and Michika Local Government Areas of Adamawa State.

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References

- Abebayo AA 2010. Food security status in Nigeria: pre and post economic deregulation review, *International journal of Economic development research and Investment*, 1(1), 135-146.
- Alkire S. 2007. The missing dimensions of poverty data: an introduction; *Oxford development studies*, 35 (4), 347-359.
- Alkire S, Eli K. 2010. Multi-dimensional poverty in developing Countries: a measure using existing international data; mimco, Oxford poverty and human development initiative, Oxford department of international development, University of Oxford.
- Alkire S, Foster J. 2010. Counting and multidimensional poverty measurement; Oxford poverty and human development initiative, working paper No. 7, Oxford Department of international development university of Oxford.
- Alkire S, Foster J. 2007. "Counting and multidimensional poverty measurement" Oxford poverty and human development initiative, OPHI Unpublished manuscript.
- Alkire S, Sunman S. 2009. "Measuring Multidimensional poverty in India: A new proposed OPHI working paper 15". Oxford University: Oxford poverty and Human Development Initiative.
- Akinbile LA, Ndaghu AA. 2005. Poverty level and poverty alleviating strategies of farm families in Michika LGA of Adamawa State, Nigeria, *Journal of Economic and Rural development*, 14(2), 101-108.
- Amaza P, Abdoulaye T, Kwaghe P, Tegbaru A. 2009. Changes in household food security and poverty status in PROSAB area of southern Borno State, Nigeria, *International Institute of Tropical Agriculture Ibadan, Nigeria*.
- Atkinson A. 2003. "Multi-dimensional deprivation: contracting social welfare and counting approaches, *Journal of Economic Inequality*, 1, 51 – 65.
- Babatunde RO, Omotesho OA, Sholotan OS. 2007. Factors Influencing Food Security Station of Round Farming Households in North Central Nigeria, *Agricultural Journal*, 2(3): 351-357
- Batana Y. 2008. "Multidimensional measurement of poverty in sub-Saharan Africa, OPHI working paper 13." Oxford University: Oxford Poverty and Human Development Initiative.
- Bourguignon F, Chakravaty SR. 2003. The Measurement of Multidimensional Poverty, *Journal of Economic Inequality*, 1, 25 – 49.
- Basu K, Foster J. 1998. On Measuring literacy; *Economic Journal*. 108 (451), 1733 – 1749.
- Beer CF. 1975. The politics of peasant groups in western Nigeria. Ibadan university press Ibadan, Nigeria 276pp.
- Canagarajah S, Nwajon J, Thomas, S. 1995. Evolution of poverty and welfare in Nigeria; 1985 – 1992, hold west central African Department, World Bank Washington D.C.,
- Clunies-Ross A, Forsyth D, Huq, M. 2010. *Development Economics*, McGraw-Hill, Uk, 10-16.
- Duclos JY, Sahn DE, Younger S.D. 2007. Robust multidimensional poverty comparison with Discrete indicators of well-being in: Jenkins S.P. Mickle wright, J. (Eds), *Poverty and Inequality Re-examined*. Oxford University Press, Oxford University press, 185 – 208.
- Edet GE, Nsikak-Abasi AE, Esu, BB. 2009. Estimating the determinants of poverty among farming households in Akwa-Ibom State, *Global Journal of Agricultural Science*, 8(2), 159 – 162.
- Etim NA, Edet GE, 2007. Determinants of rural poverty among Brui farmers in Akwa-Ibom State proceedings of 32nd Animal conference of the Nigeria Societies for Animal Production held in Calabar, March 18 – 22, 401 – 411.
- Mustafa S. 1996. An appraisal of the socio-political and economic environment for food security in Nigeria. Proceedings of the strategic grains Reserve programme; nucleus for national food security, Federal Ministry of Agriculture, Abuja, Nigeria.
- Ndaghu AA, Taru VB, Usman IS. 2010. Determinants of poverty among Higgi farm families in Michika Local Government Area, Adamawa state, Nigeria; *J. Arid Agric* 19, 133 – 138.
- Okunmadewa FY, Yusuf SA, Omonona BT. 2005. Revised Report submitted to Africa Economic Research Consortium (AERC), Nairobi Kenya.
- Olagbon OAC, Idowu AO, Oyebanjo O, Akerele EO 2014. Multidimensional poverty character among riverine household in South Western Nigeria *Journal of Sustainable Development in Africa*. 16 (6), 126 – 144.
- World Bank. 1996. Nigeria: Poverty in the midst of plenty, the challenge of Growth with Inclusion Washington D.C. No 14133, May 1-70