



Amina Lawan Mustapha
Centre for Dryland Agriculture,
Bayero University Kano,
almustapha.cda@buk.edu.ng

Mohammed Yusuf. Hamid
Department of Agricultural
Economics and Extension,
Adamawa State University, Mubi.

***Corresponding author:**
Amina Lawan Mustapha
Centre for Dryland Agriculture,
Bayero University Kano,
almustapha.cda@buk.edu.ng

FACTORS INFLUENCING POVERTY STATUS OF SESAME PRODUCERS IN SUDAN SAVANNAH, NIGERIA

ABSTRACT

The study analyzed the economics of sesame production in Sudan Savanna, Nigeria. Primary data were collected from 270 selected sesame producers using a multistage sampling technique across Kano, Katsina and Jigawa States and interviewed using a structured questionnaire. A logistic regression model was used for data analysis. The results of the logistic regression estimate indicated that education, farm size and average annual income were positive and significant determinants of poverty at $P < 0.05$. It was concluded that education, farm size and average annual income significantly affect poverty incidence among sesame producers in the region. The study recommends that there should be more investment in the sesame production enterprise by the sesame farmers to increase output and profit and consequently improve their poverty status. Effective extension services should be implemented to educate sesame farmers on improved production techniques, while community-based organizations should be strengthened to access agricultural loans as a group. Policies and programmes should be implemented to improve the educational status of the sesame producers in the region.

Keywords: Poverty Status, Sesame Producers, Determinants of Poverty

Introduction

Sesame seed (*Sesamum indicum* L), also called benniseed, originated in Africa and is one of the oldest oil seed crops known to man (Conquest, 1989). It belongs to the genus *Sesamum*, which comprises about 20 species (Bedigian, 2010); a few other species in the genus are occasionally cultivated for their edible seeds and leaves. It grows primarily in tropical and subtropical areas of the world and is well adapted to semi-arid regions. It is an annual self-pollinated plant with a strong woody, hairy and often many-branching stem that reaches 0.5-2.0m in height. The agricultural sector is one of the most important sectors of developing countries of the world. The growth of this sector is, however, not in consonant with its strategic importance of various countries (Ogbonna, Onyenweaku & Nwaru, 2012). Generally, agricultural production in West Africa is characterized by smallholder type production experiencing low inputs and output, aging farmers and farms, diseased plagued farms and inefficient use of resources (Leonard, Gordon & Ankoh 2011).

An increased integration of the smallholder farmers into markets at local, regional and national levels becomes an issue of paramount significance. Many policy makers and development economists have emphasized the significance of marketing in agricultural and economic development (Gani & Adeoti, 2011). In Nigeria, the growth of the agricultural sector has declined with the contribution to the national economy dropping from 34% in 2003 to 25.49% in 2016 (NBS, 2016).

The agricultural sector employs more than 70 percent of the country's population as well as plays a vital role in the food security, poverty alleviation and human development chain in Nigeria. Agriculture contributes over 40% to Nigeria's GDP, employs about 60% of the total population and provides employment to about 80% of the rural population (CBN, 2014; World Bank, 2014). Northern part of Nigeria is characterized by dryland climate where the wet season hardly last for more than five months and the annual total rainfall is usually less than 1000mm. The dryland region of Nigeria has a high population growth rate (about 3%) and is inhabited by more than one third of Nigerian population. Hunger, malnutrition and poverty are high in these areas. Nonetheless, the prevalent climatic and soil conditions in the Sudan savanna favourably support sesame production (CGIAR, 2011). Sesame is an important component of Nigeria's agricultural export. About 70% of sesame produced in the country is being traded overseas.

Since its introduction into Nigeria after the 2nd World War, it has been regarded as a crop of significant importance compared to groundnut and other cash crops in the North (NAERLS, 2010). The export and import data for Africa for the year 2000 was estimated at 232,670 and 96,455 metric tonnes respectively (RMRDC, 2004). Nigeria ranks second to Sudan in production and export of sesame with a world market share of 4% (equivalent to ₦12.8 billion) exporting about 1,700 metric tonnes to Europe and 22,000 metric tonnes to Japan (NEPC, 2010). In Nigeria, sesame is cultivated on over 80,000 ha across most of the Northern states for food and oil. Benue and Nasarawa states are the highest producers with annual average output of not less than 40,000 MT (RMRDC, 2004; Nwalem, 2015). Sesame seed is mostly grown in the semi-arid part of Nigeria. About 300,000 tonnes of sesame seeds were produced from about 26 States with largest producing States being Jigawa, Nasarawa, Benue and Taraba States. Other States producing sesame include; Kano, Kebbi, Bauchi, Kogi, Plateau, Adamawa, Kwara, Cross-River, Ebonyi, Niger, Gombe, Katsina, Yobe and Borno States (Agro Nigeria, 2016).

Thus, increasing international demand for sesame seed provides Nigeria an opportunity to increase its production to meet the demand for the commodity. Out of 90 million hectares of arable land in Nigeria, about 3.5 million hectares is suitable for production but only about 300,000 hectares of the is being used in the production of sesame seed (Tunde-Akintunde, Oke & Akintunde, 2012). By investing more in sesame seed

production, the Nigerian government could increase annual revenue from sesame seed export from ₦21 billion to about ₦86 billion annually (Ciuci Consulting, 2013). Therefore, quality characteristics has to be given due attention by producers and marketers of the product (Ray, 2011). Major destinations for export include China, Japan, Syria, European Union, Korea and Turkey.

Japan is the largest importer of sesame seeds while Nigeria is the largest exporter to Japan with United States exporting sesame seeds worth \$6.1 million to Japan (Ray, 2011). Regardless of these potentials in the agricultural sector, Nigeria's food and cash crop production subsector remained underdeveloped due to its dependence on small scale farmers who use unimproved technologies that generate only small income to them (World Bank, 2014). Nigeria was considered one of the poorest countries in the world with over 70% of its population being poor and over 35% living in absolute poverty (IFAD, 2006). This level of poverty is prevalent in a country where about 90% of the working adult population is engaged in agricultural activities as means of livelihood (Makama *et al.*, 2011). As the federal government of Nigeria has recognized, there is increasing level of poverty in the country, despite all the programmes implemented to fight poverty (Imevbore, 2012). Nigeria, in her quest to be among the world 20 largest economies by the year 2020 and to completely wipe out poverty by the year 2030, has to fight poverty among its citizenry and empower them economically to collectively improve the economy of the nation. Contribution of each region to total poverty can be used as a yardstick for allocating public resources to each region through training, capacity building, empowerment and institutional development so as to reduce or eradicate poverty. Without external intervention, the cycle will continue for generations and it is a trap that is very difficult to get out of. Poverty can be reduced in the Less Developed Countries (LCDs) through the development of productive capacities of the LCDs and the expansion of production and employment opportunities (UNDP, 2010). Therefore, poverty can be alleviated in Sudan savanna by improving sesame production due to its comparative advantage of production and high-income generating potential; being a high value cash crop suitable for production in the region.

PROBLEM STATEMENT

Sesame producers in the Sudan savanna region of northern Nigeria are mostly small-scale farmers who often face the problem of low productivity. Usman *et al.* (2010) reported that sesame yields in Jigawa State can be increased by 48% with better management practices and existing technology. There is, therefore, vast potential for increased crop production to meet the high international demand.

Although poverty has no boundary, the incidence of poverty is much higher in rural areas than in urban areas. In Nigeria, about 70% of the population lives on less than \$1.25 per day, and poverty is mostly severe in the

Northern part of the country (World Bank, 2001). Sesame producers are often not exploiting the full potential of the enterprise where the export sector is being dominated by only a few major exporters. However, studies conducted on sesame enterprise in the region was mostly concentrated in Jigawa State and focused mainly on productivity and profitability (Usman, Ahmed & Omolehin, 2010; Makama, Murtala & Abdu, 2011) with little emphasis and linkage with the poverty status of the producers vis-à-vis the poverty alleviation potential of the sesame enterprise across the Sudan savanna. The persistence of poverty in Nigeria has posed serious concerns to successive administrations. A clearer interpretation of the sesame farmers' competitiveness and opportunities as well as factors influencing poverty are very essential. Very often, the poor lack the capacity to escape from their situation by themselves without an external intervention. Information is required for this industry to be given more attention by policy makers in order to exploit the full potentials of the enterprise so as to improve productivity, income and reduce poverty of the producers in the region. The study was therefore conducted to provide answers to the following research question; What are the socio-economic factors influencing poverty among sesame producers?

OBJECTIVES OF THE STUDY

The broad objective of the study is to analyze factors influencing poverty among sesame producers in the Sudan Savanna region of Nigeria, while the specific objective was to: Determine the socioeconomic factors influencing poverty among sesame producers.

JUSTIFICATION OF THE STUDY

Sesame is an important oil crop exported in Nigeria. It provides a source of livelihood for its producers with high economic importance in the livestock feed industry and other agro-allied industries within Nigeria and beyond. In the Sudan savanna region of Nigeria, information on the factors affecting the poverty status of sesame producers is important to policymakers. Thus, policymakers will be aware of the importance of the sesame sub-sector and the potential impact that a range of policy changes could have on the sector. The contribution of each region to total poverty can be used as a yardstick for allocating public assistance to each region. The incidence of poverty in Nigeria has been on the rise since 1980, with two significant dips during 1985 to 1992 and 1996 to 2004 (Omonona, 2010). However, the survey and report by the NBS (2012) and World Bank (2014) showed that 69% of the population in Nigeria live in relative poverty, and 61.2% are living on less than one US dollar (\$) per day. So, information from this study can be useful to the government for resource allocation to sesame producers and policy recommendations for poverty reduction among sesame producers. Information provided would add to the available body of knowledge to be used by the government, NGOs/development partners, philanthropists, donor agencies, researchers, sesame farmers, sesame marketers and all stakeholders in the sesame sub-sector and provide a basis for further research.

METHODOLOGY

A multistage sampling technique was used for the study where 3 States, Kano, Katsina and Jigawa States, within the Sudan Savanna region, were selected purposively. This is because they are Northern Nigeria's prominent and major sesame-producing areas. Major producing locations were identified based on the prevalence of sesame production enterprises, and three locations were selected purposively. In Kano State, Makoda, Gabasawa and Albasu were selected purposively as locations for the study, while in Jigawa State, Mallam-madori, Maigatari and Taura were chosen purposively. In Katsina State, the purposively selected locations were Batagarawa, Batsari and Jibia. Because the sesame farmers needed to be better organized, a simple census was conducted in all the locations where 300 sesame producers were identified in Makoda, 301 in Gabasawa and 306 in Albasu. In Batagarawa, 302 sesame producers were identified, 305 in Batsari and 301 in Jibia. In Mallam-madori, 303 sesame producers were identified, while in Maigatari, 302 sesame producers were identified, and 305 sesame producers were identified in Taura. Across all the locations, 30 sesame producers were randomly selected as respondents for the study using quota sampling, making a total sample size of 270 producers. This is because there is homogeneity in sesame production enterprises across the region.

DATA COLLECTION

Data for the study was generated from primary sources. The primary data was collected through a questionnaire administered to the selected respondents with the help of trained enumerators. Data collected from the sesame producers included information on the socio-economic characteristics of sesame producers such as age, sex, educational status, household size, marital status, years of experience, production methods, main occupation, other occupation, and farm size, source of capital and membership of cooperative society. Other forms of data collected include the annual income of the respondents to ascertain their poverty status. At the same time, production variables such as quantities of sesame input and output, quantities of fertilizer, and labour and their costs were also solicited.

ANALYTICAL TOOLS AND MODEL SPECIFICATIONS

The analytical tool used to achieve the study's objective was a logistic regression model using the Statistical Package for Social Science (SPSS).

LOGIT REGRESSION

This is one of the binary choice models in which the dependent variable takes a value of 1 or 0. The logit model was designed to analyze qualitative data reflecting a choice between two alternatives. The logit model ensures prediction of probability of choice and is easier and more convenient to compute than the probit model which is based on the cumulative logistic probability function. The logistic regression model was used

to determine the factors determining poverty among sesame producers in the study area which is explicitly expressed as;

$$Y = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_5X_5 + U \dots\dots\dots (1)$$

Y= dependent variable (poverty status of sesame farmer), will be 1 or 0 i.e.

1 for sesame farmer being poor

0 for sesame farmer not being poor.

a_0, a_1, a_2, a_3, a_4 and a_5 are the regression parameters.

$X_1 - X_5$ = Explanatory variables

X_1 = Household size (Number)

X_2 = Years of experience (Number)

X_3 = Level of education (Qur’anic Education Only=1, Primary=2, Secondary=3, Tertiary=4, Others=5)

X_4 = Farm size (Hectare)

X_5 = Average annual income (₦/Annum)

RESULT AND DISCUSSIONS

This section presents the socio-economic factors influencing poverty status among sesame producers in Sudan's savanna, and the results are presented in Table 13. According to Alcock (1997), once we recognize that poverty exists, then we know that it must have a cause, and if we can identify the cause, then that should give a basis to develop a policy response to it. The maximum likelihood estimates of the logistic model for factors determining the poverty status of sesame farmers in the Sudan savanna were estimated. The variables included in the model for analysis are household size, years of experience, level of education, cooperative membership, farm size and average annual income.

Table 1: Socioeconomic Factors Influencing Poverty Status of Sesame Producers in Sudan savanna

Variables	Coefficient	S. E	Wald	Sign	Exp (β)
Household size	0.020	0.041	0.234	0.629	0.980
Years of Experience	-0.077	0.049	2.463	0.117	0.926
Education	0.577	0.194	8.837	0.003*	1.781
Cooperative membership	0.667	0.450	2.197	0.138	1.948
Farm size	0.332	0.172	3.715	0.054**	0.718
Average annual income	0.001	0.000	4.431	0.035**	1.000
Constant	2.603	0.877	8.822	0.003**	0.074
Model Statistics					
-2 Log-likelihood	170.808				
Model Chi-square	25.479				
Sample size	270				
Dependent variable	Poverty Status				

Source: Field Survey, 2024

Results in Table 1 present the logistic results on the determinants of sesame farmers' poverty status in the Sudan savanna, which indicates the statistical parameters that indicate the goodness of fit of the model specified for this study are highly significant at a 5% level of probability. The estimated coefficient for the likelihood ratio chi-square was significant at 5% with a chi-square value of 25.48 with a degree of freedom(df), indicating support for the model, implying that the model containing the intercept and the independent variables was accepted. However, the estimated -2loglikelihood of 170.808 further proved the validity and reliability of the model.

The results of the logit regression indicate that farm size ($p < 0.05$), level of education ($p < 0.05$), and average annual income ($p < 0.05$) significantly influence the probability that a household will be poor or non-poor. However, the level of education, farm size and average annual income of sesame farmers positively affect poverty, which conforms to prior expectations. In this way, farm households sampled in this region with educated heads having larger farm sizes and higher average annual income were found to be less likely to be poor when compared with those that are not educated having smaller farm sizes with lower average yearly income. Education is vital for boosting the productivity of the human factor and making people more aware of opportunities for earning a living or income generation from non-farm sources. According to Onyenweaku and Effiong (2005), education increase productivity as well as enhances farmers' ability to understand and evaluate new production techniques.

The results obtained from the study do not indicate the likelihood of being poor was more with large household size. Household size is expected to be significant and negatively related to poverty. This buttressed the findings of Essilfie (2011) who opined that a larger household size can act by reducing cost of hired labour thereby increasing profit and consequently reducing poverty. The coefficient of average annual income was positive and significantly related to poverty status of sesame farmers in the study area. Household income comprised resources from farm and non-farm income generating activities. Sesame farmers with higher average annual income are non-poor because the portion of income can be used to finance food and non-food expenditure which reduces vulnerability to food insecurity and poverty.

Education was also positive and significant at 5% level of probability. Sesame farmers that are more educated tend to understand technological innovations and put them into practice for the improvement of household production. But the result agrees with findings of Bastos *et al.* (2009) who documented that labour is by far the most important asset of the poor and increasing their education will in turn increase labour productivity and wages which will ultimately reduce their poverty.

Similarly, Omonona (2010) found out from FGT analysis that the incidence, depth and severity of poverty among farming households decreased as the years of formal education of farm household heads, extent of output commercialization, farm size, farm income and amount of agriculture loan increased. Also, Grootaert (1997), confirmed that there is a link between educational attainment, the income earning potential of the household and poverty. He pointed out that there is a minimum level of education necessary to enhance appreciation and adoption of new technologies that can be instrumental in increasing household productivity, and thereby earn more income. The increased income will enable the households to move out of poverty. Farm size was also positive and significant which implies that the larger the size of the farmers farm, the less likelihood of being poor. This is because more output can be obtained with larger farm size; thereby increasing the profit level and improving the poverty status of the sesame farmer.

Hence, the household characteristics and composition play an important role to determine the poverty status of a household. The more the number of adults in a household who are educated, the more the opportunity to generate more income which will be available for consumption and the more the likelihood to escape from poverty. The analysis of the determinants of poverty presented here can be used for policy interventions where education was found to be a key determinant of poverty of sesame farmers so that policy aimed at improving education can have important positive effect on poverty of the sesame farmers in the region. This result agrees with Bokosi (2006); Masood and Nasir (2010), Ogboin (2010); Apata *et al.* (2010); Grootaert (1997) indicating that household size, farm size, educational level and income are among the determinants of poverty where there is a link between educational level, income earning potential and poverty. Also, Omoregbee *et al.* (2013) found similar result.

CONCLUSION

Based on the findings of this study, it was concluded that sesame production is an important and profitable enterprise in the Sudan savanna region of Nigeria, providing a source of livelihood to its producers and marketers. However, there was a relatively high poverty level, with Jigawa State having the highest poverty incidence. The main determinants of poverty found in the region included education, farm size, and average annual income, which positively affect poverty.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations were made:

- i. The government should address the poverty problems of sesame farmers in this region by targeting policies and programmes towards them.

- ii. There should be more investment in sesame production enterprise by the sesame farmers thereby increasing their total output so as to have more income and ultimately improve their poverty status.
- iii. Since education positively influence poverty status, policies and programmes should be put in place to improve the educational status of the sesame producers in the region.
- iv. Effective extension service should be put in place to educate sesame farmers on improved sesame production techniques and management practices for increased productivity, profitability and income

REFERENCES

- Agro Nigeria, (2016). Feed Nigeria Summit, Agro Nigeria. May 27th, 2016.
- Alcock, P. (1997). Understanding Rural Poverty. London Macmillian Press Ltd. 2nd Edition. Pp 52.
- Apata T. G., Apata O. M., Igbalejobi O.A. and Awoniyi S. M. O. (2010). Determinants of Rural Poverty in Nigeria: Evidence from Smallholder Farmers in South Western Nigeria. *Journal of Science and Technology Education Research* Vol 1 (4) September, 2010. 85-91.
- Ashri, A. (1989). Sesame In: Oil Crops of the World. (Eds) Robbelen, G., Downey, R. K. and Ashri, A. McGraw Hill Publishing Company, New York. 375-387.
- Ayinde, I. A. (2003). Analysis of Poverty Level among Farmers in Ogun State, Nigeria. *Asset Series A*. 3(3):27-35.
- Bastos, A., Casara, S. F., Nunes, F. and Pereinda, J. (2009). Women and Poverty: A Gender Sensitive Approach. *Journal of Socio-economics*. 38(5):764-768.
- Bedigian, D. (2010). Sesame: The Genius Sesamum. St. Louis Missouri Botanical Garden. www.wikipedia.org/wiki/sesame (assessed November, 2015).
- Bokosi, F. K. (2006). Household Poverty Dynamics in Malawi. MPRA Paper No. 1222. Available from <http://mpra.ub.uni-nuenchen.de/1222>.
- CBN, (2014). Central Bank of Nigeria (CBN) Publications 2013. *Annual Economic Report*. 101-200.
- CGIAR, (2011). The importance of dryland agro-ecosystems CGIAR Consortium News: A Global Agricultural Research Partnership Website <http://www.cgiar.org/consortium-news/importance-dryland-agro-ecosystem/> assessed 11/06/2016.
- Ciuci Consulting, (2013). Harnessing the Potentials of Nigeria's ₦86billion Sesame Seed Market. Ciuci Consulting. Available at http://ciuci.consulting.blogspot.com/2013/06/harnessing-the-potentials-of-Nigeria-s-86-billions-sesame-seed-market-ks_1702131.pdf.
- Conquest, A. (1989). An Integrated System of Classification of Flowering Plants. Columbia University Press Inc. 25-33

- Essilfie, L. E. (2011). Estimation of Farm Level Technical Efficiency in Small Scale Maize Production in the Mfantseman Municipality in the Central Region of Ghana: A Stochastic Frontier Approach. *Journal of Development and Agricultural Economics*. 3(14): 645-654.
- Gani, B. S. and Adeoti, A. I (2011). Analysis of market participation and rural poverty among farmers in northern part of Taraba state, Nigeria, *Journal of Economics*, 2(1): 23-36.
- Grootaert, C. (1997). The Determinants of Poverty in Cote d'Voire in the 1980s. *Journal of African Economics*. 6(2): 169-196.
- IFAD, (2006). Enabling the rural poor to overcome poverty; IFAD Strategic Framework 2007-2010. Executive Board 89th Session, Rome, 12th-14th December, 2006.
- Imevbore, A.M.A. (2012). Alleviating Poverty through Biodiversity Prospecting, in Poverty Alleviation from Biodiversity Management (Ed) Matt F. A. Ivbijaro. Book Builders publishers, Ibadan. 11-47.
- Leonard, K., Gordon, F. and Ankoh, J. (2011). Analysis of Factors Affecting the Technical Efficiency of Cocoa Farmers in the Offinso District-Ashanti Region, Ghana. *American Journal of Social and Management Sciences*. 2(2):208-216.
- Makama, S. A., Murtala, N. and Abdu, Z. (2011). Economic Analysis of Sesame Production in Taura Local Government Area, Jigawa State. *Savannah Journal of Agriculture*. 6(2): 20
- Masood, S. A. and Nasir, I. (2010). Determinants of Urban Poverty. The Case of Medium Sized City in Pakistan. Pakistan Institute of Development Economics (PIDE), Working Paper. 3-9.
- NAERLS, (2010). Benniseed Production and Utilization in Nigeria. Extension Bulletin No. 154. Horticulture Series No. 5. Available at www.naerls.gov.ng/extension/bulleting/Benniseed.pdf.
- NBS, (2012). *Nigeria Poverty Profile Report for 2010*. National Bureau of Statistics (NBS). Pp 1-26.
- NBS, (2016). Gross Domestic Product (GDP) National Bureau of Statistics Report Q4 2016. Pp 9-10.
- NEPC, (2010). Nigerian Export Promotion Council, Expanding Nigerians Export of Sesame and Sheanut through improved Capacity Building for Private and Public Sector. A Proposal Submitted for Consideration of WTO/STDF, Abuja, Nigeria. 4-15
- Nwalem, M. P. (2015). Relationship between Level of Adverse Effect of Perceived Dimensions of Climate Change Manifestations and Production Efficiency among Sesame Farmers in Benue State, Nigeria. An unpublished M. Sc. Dissertations Submitted to the Department of Agricultural Economics, University of Agriculture, Makurdi Benue State, Nigeria. 55-56.
- Ogboin, A.I. (2010). Basic Education and Poverty Alleviation in Nigeria. State Basic Education Board, Okolobiri. 139.

- Ogbonna, M. C., Onyenweaku, C. E. and Nwaru, J. C. (2012). Determinants of Rural Poverty in Africa: The case of Yam Farm Household in Southeastern Nigeria. *International Journal of Agriculture and Rural Development*. 15 (2): 37-41.
- Omonona B.T. (2010). Quantitative Analysis of Rural Poverty in Nigeria. International Food Policy Research Institute and IFPRI, Nigeria Strategy Support Programme Brief No: 17 Pp 1-5.
- Omogbee, F. E., Ighoro, A. and Ejembi, S. A. (2013). Analysis of the Effects of Farmers Characteristics on Poverty Status in Delta State. *International Journal of Humanities and Social Science*. Vol 2 Issue 5, May, 2013, Pp 11-16.
- Onyenweaku, C. E. and Effiong, E. O. (2005). Technical Efficiency in Pig Production in Akwa Ibom State, Nigeria. *International Journal of Agriculture and Rural Development*. 6: 51-58.
- Ray, H. (2011). Sesame Profile: Agricultural Marketing Research Centre, Iowa State University. Pp 34.
- RMRDC, (2004). Raw Materials Research and Development Council Survey Report of Ten Selected Agro Raw Materials in Nigeria BENNISEED (Maiden Edition). Pp 108.
- Tunde-Akintunde, T.Y., Oke, M. O., and Akintunde, B. O. (2012). Sesame Seeds; Oilseeds (Ed) Uduak, G. A. Published by In-Tech. Available at <http://www.intechopen/books/oilseeds/sesame-seeds>.
- Usman, S., Ahmed, B., and Omolehin, R. A. (2010). Analysis of Technical Efficiency of Sesame Production System in Jigawa State, Nigeria. *Savanna Journal of Agriculture*, Vol 5 pp 10-17.
- UNDP, (2010). Human Development Report; Poor Countries Making Faster Development Gains, 20th anniversary UNDP Report, Thimphu Bhutan, 8th November, 2010.
- World Bank, (2001). World Development Indicators, 2001 Washington DC.
- World Bank, (2014). Nigeria Agriculture and Rural Poverty: A Policy Note. World Bank 2014 Report Number 78364NG. 1-55.