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Full length Research

Analysis of poverty status of rural smallholder sesame farmers in some selected local government areas in Jigawa State, Nigeria

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The study examined poverty status of rural smallholder sesame farmers in Jigawa State. Multistage sampling technique was used to select 172 respondents for the study. Descriptive statistics, P-*alpha* measures of poverty (Head Count Index P_o, Poverty Gap P_1, and Squared Poverty Gap Index P_2) model was used as data analysis tools. Primary data were collected from the respondents using structured questionnaires. The result for age distribution indicated that 33.1% of the respondents fall within 31-40 years. The mean age was 38 years .The result further shows that all respondents were male and 86% of the respondents were married. The result for educational background of the respondents shows that 31.4% had secondary education. The result for household size indicated that 36% of the respondents had between 5 to 10 persons in their household with mean of 7. The result for poverty status by all age shows that 52.3% of respondents were below poverty line with P_1 and P_2 values of 0.162 and 0.026 respectively. The result also shows that incidence of poverty was very high (100%) for respondents with no access to education. The study therefore concludes that poverty status has declined in the study areas however the poverty incidence in the study area was still high. Therefore it is recommended that poverty reduction efforts among rural smallholder sesame farmers should be directed toward increasing better access to quality education and reproductive health issues awareness.

Keywords: Poverty status, rural smallholder, sesame farmers, Jigawa State, Nigeria.

INTRODUCTION

Sesame is currently the country's principal export oilseed crop and is mainly raised by small scale farmers. Different reports indicated that there is huge potential to grow sesame seed in the country and there is high market demand at international levels (Inc, 2002) .Consequently, as a smallholder farmer's crop with an export potential, it is an opportunity for rural smallholder farmers to produce sesame and change the available potential into the livelihood improvement. Jigawa state is one of the major sesame producing state in Nigeria, however, despite these huge economic potential in the state empirical evidence has indicated that majority of the farming populace remain in poverty. According to FOS(2001), Jigawa State is classified among those with relatively high severity and incidence of poverty in the country, with a Gross Per Capita Income of N35, 000 per annum (US$290), which is below the National Average. As at 2004, Jigawa State had the highest poverty rate (95 per cent), of poverty incidence. In 2010 the poverty rate in the state drop to 77.7 % however this figure is also very disturbing

Poverty is a global phenomenon which threatens the survival of mankind. It cuts across creed, race, and space. Poverty is a multifaceted event in nature with physical, economic, social and psychological dimensions (Narayan and Chambers, 2000).

In Nigeria, the incidence of poverty has been on the increase. It rose from 17.1 Million (28.1%) in 1980, 34.7Millions (46.3%) in 1985, 39.2 Millions (53.6%) in 1992, 68.7Millions (65.6%) in 1996, 87.04 Millions in 2004 and to staggering 112.47 Millions(69%) in 2010, (National Bureau Statistic (NBS), 2010)., the poverty

situation worsen with 71% in 2011(NBS, 2011) .Even though it fell to 54.4% in 2004, the population of Nigerians living in poverty has been on the increase. It rose from 18.26 m in 1980 to 34.37 m in 1985 to 67.11 m in 1996 and was put at 68.70 in 2004 (NBS, 2010) with the number of rural poor in the increase over time (Ruel *et al*., 1998).

The poorest groups depend on subsistence living but often go short of food, particularly during the pre-harvest period. The productivity of the rural population is also hindered by ill health, particularly tuberculosis and malaria. Smallholder farmers play a major role in the production, processing and marketing of food crops. Yet rural smallholder farming households are often the most chronically poor members of rural communities. It is in view of these scenarios that this research was under taken with a view to find out the poverty status of the small holder sesame farmers in jigawa state which would give an insight on the allegation that the state is the poorest in Nigeria.

METHODOLOGY

The study Area

Jigawa state lies between latitudes 11^{o}N and 13^{o}N and longitudes 8^{o}E and 10^{o}35'E with a tropical climate while the temperature varies at different times. High temperatures are normally recorded between the months of April and September. The daily minimum and maximum temperatures are 15^{o}C and 35^{o} C (JARDA2005). The rainy season lasts from May to September with average rainfall of between 600 millimeters to 1000 millimeters. The southern part of the state has a higher rainfall percentage than the northern part (JARDA, 2005). The climate condition of the state favors growing of crops such as sesame, sorghum, rice, millet, groundnut and maize. According to the 2006 census, the State has a total population of 4,348,649 million inhabitants. The population growth rate per annum of the state is estimated at 3.5 % and projected population of 4,500,851 people by 2014 with about 48 % of the population falling under the age of fifteen. This pose great challenge to the state of meaningfully engaging them in gainful economic sector, it is even worrisome that out of the estimation about 2.9 million are considered to be productive adults. Eighty per cent (80%) of the population is found in the rural areas and is made up of mostly Hausa, Fulani and Mangawa (NPC, 2006).

The pattern of human settlement is nucleated, with defined population centers; this tends to exert pressure on provision on critical infrastructure. Cross border migration between Jigawa State and neighboring states and between the State and Niger Republic is common. Migration of people into the state is highest during the dry season when cattle herders from neighboring Niger Republic migrate to the South in search of pasture and water for their animals. Outward migration is a feature of the off farming season known as "*cirani*" during which people leave the state in search of jobs in the neighboring states, particularly Kano and some major cities in the country (JARDA, 2005).

Sampling Technique

A multi-stage sampling technique was used for selection of samples for the study.

First stage involved purposive selection of one (1) Local Government Area from each of the four (4) Agricultural Zone of the state based on high concentration of sesame production in the area, for this reason the LGAs selected are Jahun in zone I, Gumel in Zone II, Malam Madori in Zone III, and Gwiwa in Zone IV.

Second stage involved purposive selection of two (2) villages from each of the four (4) selected LGAs based on preponderance of sesame farmers .The villages included are Aujara and Katika in Jahun LGA, Dan'ama and Balarabe in Gumel LGA, Kurusku and Dakido in Malam Madori and Yola and Kwarare in Gwiwa LGA. Total of eight (8) villages were selected based preponderance of sesame farmers in the respective villages.

The last stage of the sampling involved proportionate simple random selection of 30% of the estimated population of rural smallholder sesame farmers from each of the selected village.

Therefore, total of one hundred and seventy two (172) respondents were selected for the study.

Data Collection Procedure

Data for the study were collected from primary sources. Primary data were collected with the aid of sets of questionnaires was administered to the selected farmers. The data was collected by the researcher with the assistance of trained enumerators. Data collected include information on the socioeconomic characteristic of the respondents such as age, sex, educational status, marital status, household size, years of experience, access to health facilities, water, and main occupation. Data on Poverty such as income, expenditure and consumption pattern were also collected from the respondents.

Analytical Tools

The analytical tools used for achieving the objectives of the study include descriptive statistics, and poverty indices.

Descriptive Statistics

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Descriptive statistics such as frequency distribution and percentages, measures of central tendency such as

mean and standard deviation were employed in describing the socioeconomic characteristics of the respondents.

Poverty Analysis:

The poverty line and P- alpha poverty measures (Foster Greer Thorbecke Index) were used to analyze the poverty level among the respondents.

Poverty Line

The poverty line of $1.25 US Dollar per day recommended by World Bank for developing countries as basis for determining poverty status was used to establish poverty status of the Rural Smallholder Sesame Farmers in Jigawa State. The naira equivalent of the poverty line was N200 ($1.25) at N164 exchange rate per 1 dollar as at June, 2014.

P-alpha poverty Measures

P-alpha measures proposed by Foster *et al*.(1984) was used in analyzing poverty. They include the head count index P_0, poverty gap index P_1, and poverty severity index P_2. The general formula for this class of poverty measures depends on a parameter α which takes a value of zero (0) for the head count, one (1) for the poverty gap and two (2) for poverty squared gap. Foster Greer Thorbecke Index (FGT Index) has found wider application in scholarly works (Appleton, 1996; Ayinde *et al*., 2002). The model is a class of additively decomposable measure of poverty. The measure subsumes the headcount index and the poverty gap, and provides the distributional sensitive measure through the choice of a poverty aversion parameter "α"; the larger the value of the "α", the greater the weight given by the index to the severity of poverty (Anyawu, 1997).
The general specification of the model is given below:

$$P_\alpha = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{z - y_i}{z}\right)^\alpha \quad (\alpha \geq 0) \qquad \text{.....(1)}$$

P_α = Foster Greer and Thorbecke index ($0 \leq P_\alpha \geq 1$)
n = Total number of the sampled households under consideration
z = Poverty Line (1.25 US Dollar per day N200)
y_i = Daily per capita expenditure of i^{th} household
α = FGT parameter (μ $ 0)
i = individual household
The α takes on a value of 0, 1, 2, with different implications:
When α = 0, it measures poverty incidence, α =1 it measures poverty gap, α=2, it measures squared poverty gap. This translates to the headcount ratio (Anyawu, 1997), that is the proportion of the households below poverty level

Headcount Index (P_o)

This measures the proportion of the population that is counted as poor, often denoted by P_0. Formally,

$$P_o = \frac{1}{n}\sum_{i=1}^{n} I(yi<z) \qquad \text{.....(2)}$$

Here, $I(\cdot)$ is an indicator function that takes on a value of 1 if the bracketed expression is true, and 0 otherwise. So if expenditure (yi) is less than the poverty line (z), then $I(\cdot)$ equals 1 and the household would be counted as poor.

Poverty Gap Index (P_1)

This measures the extent to which individuals on average fall below the poverty line, and expresses it as a percentage of the poverty line. More specifically, define the poverty gap (Gi) as the poverty line (z) less actual income (yi) for poor individuals; the gap is considered to be zero for everyone else. Using the index function, we have
$Gi = (z - yi) \times I(yi < z)$
Then the poverty gap index ($P1$) may be written as:

$$P_1 = \frac{1}{n}\sum_{i=1}^{n}\frac{Gi}{z} \qquad \text{..... (3)}$$

Squared Poverty Gap (P_2)

Averages the squares of the poverty gaps relative to the poverty line. It is one of the Foster-Greer-Thorbecke (FGT) classes of poverty measures that may be written as

$$P_2 = SPG = \frac{1}{n}\sum_{i=1}^{q}\left[\frac{Z - Y_i}{Z}\right]^2 \qquad \text{.....(4)}$$

Where n is the size of the sample, z is the poverty line, $Gi = Z\text{-}Y$ *is* the poverty gap and α is a parameter; when α is larger the index puts more weight on the position of the poorest

RESULTS AND DISCUSSION

Socio Economic Characteristics of Respondents

The socioeconomic characteristics of respondents including age, total annual income and house hold size are presented in Table 1a. The educational level and marital status are presented in Table 1a

Table 1a: Age**,** Total annual farm income and House hold size Respondents

Socioeconomic Characteristic	Frequency	Percentage	Mean	Standard Deviation
Age in years				
21-30 years	52	30.30	37.94	10.352
31-40 years	57	33.1		
41-50 years	34	19.8		
51-60 years	29	16.9		
Total	**172**	**100**		
Total Annual Farm Income				
25000-75000	116	67.44	67634.123	12333.333
75001-125000	31	18.02		
125001-175000	17	9.9		
175001-225000	8	4.7		
Total	**172**	**100**		
Household size of respondents				
1-5 Persons	22	12.8	6.95	4.650
6-10 Persons	54	31.4		
11-15 Persons	62	36.0		
16-20 Persons	19	11.0		
21-30 Persons	15	8.7		
Total	**172**	**100**		

Source: ***Computed from Survey Data, 2014.***

Age Distribution of the respondents

The age of the decision maker is an important factor influencing change and enhancing adoption of improved agricultural technologies. Younger farmers will accept innovation more easily than the older since them likely to be higher risk takers (FAO (2001); Eze and Asumgha (2005))

The socioeconomic characteristics of the respondents by age in Table 1a revealed that 29.7% falls within 21-30 years age group , 33.1% were within 31-40 years of age, 19.8% falls within the of 41-50 years, 16.9% fell in the age group of 51-60years. The minimum age was 21 years while maximum age of the respondents was 60years with the mean age of the respondents was 38years implying that majority of the respondents were middle age category. This finding agrees with findings of Usman, (2009) who reported that 80% of the farming household were within 26-50 years. According the FAO, (2003) this is the most active and virile category of age brackets that have very high potential for sound economic engagements.

Annual income from Sesame Production

The results showed that 67.44% earned N25000-N75000 per annum from farming, 18.02% earned between N75, 001 to N125,000 , 9.9% had N125001-N175,000, while only 4.7% had between N175,001-N225,000

Household size of Respondents

The household size is the total number of individuals who live and feed in the same pot
(NPC,2006). The family size of any respondent determines the amount of workforce available for use. The result of household size distribution among the respondents showed that 36% had household size between 5 to 10 members, 31.4% had 2-5 members, 11% had between 10-15 members and 8.7% had between 8.7% while 12.8% had only one member. The minimum household size was single household while the maximum household size was 25 persons with mean household of 7 persons. This shows low level of awareness of planning and reproductive health issues among the respondents and implied that larger households would dedicate much of their income on responsibilities associated with their large family sizes, which may increase the likelihood of the respondents being poor. This finding is in agreement with findings of Ndatsa, (2005) and Tshoho, (2005) Table 1b.

Table 1b: Educational level and Marital Status of Respondents

Socioeconomic Characteristic	Frequency	Percentage
Educational status of respondents		
Never been to school	9	5.2
Adult Education	27	15.7
Qur'anic School	17	9.9
Primary School	39	22.7
Secondary School	54	31.4
Tertiary School	26	15.1
Total	**172**	**100.0**
Marital Status of Respondents		
Single	20	11.6
Married	149	86.6
Widow	2	1.2
Divorced	1	0.6
Total	**172**	**100**

Source: ***Computed from Survey Data, 2014.***

Educational Level of Respondents

According to (Liu *et al*).., 2003) Education explains the ability to read and write, it indicates the level at which one can read and write, education is important in creating positive mental attitude towards adoption of modern innovation. The results revealed that 5.2% received no education of any form of education, 15.7% had vocational education, 9.9% had Qur'anic education, 22.7% had primary of education, and 31.4% had secondary education while 15.1% had tertiary level of education. This result differs with findings of Usman, 2009 that 40%, 13%, 22% of farming households had Qur'anic education, secondary and postsecondary education. This implies that there is increase in number of farming households to formal education in the state.

Marital status

The result on marital shows that about 86% of the Sesame farmers were married while 11.6% were single. This shows that majority of the respondents were married and implied larger household size and increasing demand for socioeconomic needs of the family in terms of food, shelter and clothing among others. This finding is in agreement with findings of UN (2008) which states that "different ethno-religious group continue to attach prestige to marriage as an indicator of social responsibility, truth and achievement"

Poverty Incidence among the respondents

Table 2 present poverty incidence (P_o) among the respondents, the results shows that 52.3% of the respondents were below poverty line while 47.7% were above poverty line of $1.25 recommended by the World Bank. This implies that there more poor rural sesame farmers in the study area and the implication of this is that these poor households could not meet their daily food consumption expenditure. This finding is against what Omonona, 2010 reported that poverty incidence in northwest states of Nigeria was 76.4%

The result further shows the Poverty Gap Index (P_1) and Squared Poverty Gap (P_2) of the poor among the respondents with of values 0.162 and 0.026 respectively. The P_1 values of o.162 or 16.2% shows the shortfall in food consumption expenditure of the poor respondents. The P_2 shows the inequality among the respondents

Poverty status among the poor Respondents

The poverty line adopted for this study was N200 ($1.25.0USD) per day as recommended by World Bank. This was used to compare with the consumption expenditure per head. Result of the estimates on poverty shows that 52.3% of rural sesame farmers were below the poverty line this was against 43.4% rural poverty reported by (Oseni and McGee, 2010). As indicated in table 2 the most poverty-susceptible group of respondents were the Sesame farmers aged 51-60 years of age exhibiting 89.7%, 0.178, and 0.432 of poverty incidence, depth and severity respectively. Age group of 31-40 years follows with 59.6% poverty incidence, and 0.174 of the poverty depth. The values of P_1 and P_2 confirmed the poverty status among these age groups, this differs with findings of (Omonona, 2009) who states that as the age of head of household increases, welfare improves in north western Nigeria. This implies that as the age increases poverty status increases, the high incidence can be ascribed to large families kept by the respondents. The greater the age,

Table 2: Distribution of poverty Incidence among the respondents

Poverty Status	Frequency	Percentage	P_o	P_1	P_2
Poor	90	52.3	0.523	0.162	0.026
Non poor	82	47.7	0	0	0
Total	**172**				

Table 3: Decomposition of poverty status among the poor Respondents

Socioeconomic Variable	Demarcation	Incidence (P_O)	Depth(P_1)	Severity (P_2)	Head Count
By Age	All Ages	0.523	0.162	0.026	90
	21-30years	0.333	0.120	0.014	18
	31-40years	0.363	0.172	0.029	34
	41-50years	0.596	0.174	0.030	12
	51-60years	0.897	0.178	0.032	26
By Marital status	All	0.520	0.162	0.026	90
	Single	0.150	0.069	0.005	3
	Married	0.584	0.265	0.070	87
By level of Education	All	0.523	0.162	0.026	90
	None	1.000	0.185	0.034	9
	Adult Education	0.704	0.172	0.029	19
	Qur'anic Education	0.590	0.222	0.049	7
	Primary Education	0.412	0.123	0.015	23
	Secondary Education	0.462	0.121	0.016	20
	Tertiary Education	0. 370	0.112	0.013	12
By Household Size	All	0.523	0.162	0.026	90
	1-5persons	0.091	0.076	0.006	2
	6-10persons	0.370	0.540	0.292	20
	11-15persons	0.629	0.185	0.034	39
	16-20 persons	0.733	0.341	0.116	18
	21-30 persons	0.947	0.920	0.846	11

Source: Computed from Survey Data, 2014

the higher the probability of respondents, having large household size. The age group 21-30 years was the least affected by poverty with an incidence of 33.33% (Table 3).

Poverty was higher among the married respondents having over 58.4% of poverty incidence. Majority of the married respondents are living below the poverty line due to the pressure of family expenses on respondents' income.

100% of the rural sesame farmers that had no education exhibit 100% poverty incidence while those with Vocational Education had 70.4%, Islamic Education had 59%, Primary Education had 41%, and Secondary Education had 46.2 %, poverty incidence respectively. However, those with Tertiary Education had 37 % poverty incidence. Poverty depth and severity are least for those with Tertiary and secondary level of education this agrees with findings of Akerele and Adewuyi, 2010 that improved educational level of households reduces vulnerability to poverty. The implications of this reflect on the importance of human capital development to poverty alleviation efforts in Nigeria. Table 2 also shows that households with 2-5 members are not seriously affected by poverty. Poverty incidence for the group is 37% while incidence for households with 5-10 members is 62.9% with high poverty depth and severity of 0.185 and 0.750 respectively. The households with 10-15 members had the highest poverty incidence, depth and severity at the same time. They had 94.7%, of the incidence of poverty, 0.92 of depth and 0.770 of severity. This is in accordance with findings of (Omonona, 2009) who study rural poverty in Nigeria. He observed that, large households' size reduces welfare in rural Nigeria.

CONCLUSION AND RECOMMENDATION

The overall poverty incidence was 52.3%, the poverty gap index was 0.162(16.2%), and the squared poverty gap was 0.026 (2.6%). Poverty was very severe among respondents with no access to education at all and those with very large number of dependents who could not contribute to those household income. This implies that %52.3 of the respondents were below poverty line. The

shortfall was shown by 0.162 poverty gap index indicating that that consumption expenditure is low than poverty line by 16.2%. The squared poverty gap of 0.026 shows level of inequality within the respondents.

The study therefore, recommends that better access to quality education and orientation on reproductive health issues are necessary requirement for reducing poverty among the respondents in the study area.

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