# Socio-Economic factors influencing Sesame Production among Farmers in Bade Local Government Area, Yobe State, Nigeria

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## ABSTRACT

Sesame is one of the major crops produced in Yobe State, Nigeria. However, its production is influenced by some socioeconomic factors. The socio-economic determinants of sesame (Sesame indicum L) production among farmers in Bade LGA, Yobe State, Nigeria were investigated. Primary data were collected with the use of a structured questionnaire from 180 respondents selected using two-stage sampling technique. Data were analyzed with descriptive statistics and multiple regression analysis. Findings show that sesame farmers between the age of 20-39 years old dominated sesame production (57.22%) in the study area. About 61.11% of the respondents were male while 38.89% female were involved in the sesame production in the study area. Age, sex and marital status had a positive and significant influence on sesame production in the study area. The major constraints to sesame production were poor access roads, high cost of input and insecurity. The findings suggest that improved sesame production could be achieved by giving consideration to some significant variables identified; farmer's cooperative should be initiated to offer opportunities to members to have access to capital/credit and other inputs. Government should make policies that will facilitate farmers' access to education and training. Also, consideration should also be given to rural infrastructure and inputs subsidies not limited to fertilizer as these were among the notable constraints faced by farmers. Government should look into the inherent potential of sesame business as that will increase foreign earnings and local industries for processing sesame into industrial usage.

**Keywords:** Socio-economic, sesame, constraints, Yobe State

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## INTRODUCTION

Agriculture plays an important role in the economies of most developing countries. Almost 90% of the Nigerian population particularly those living in rural areas depend on it for their livelihood (Amogu, 2004; Desire et al., 2021). Livelihoods describe the way in which people make a living in adverse circumstances such as economic and political adversity (Dekker, 2002).
Sesame (*Sesamum indicum* L.) is an East Indian flowering plant that comes from the family of pedalliaceae and the genus Sesamum. The plant is an erect tropical annual herb having white and purple flowers that bear tiny, flat, nutty flavoured seeds that are oval in shape. Sesame is renowned for its seeds, which are a source of very useful sesame oil and are also used as a flavouring agent (National Multi Commodity Exchange of India, 2007). Nigeria is a major exporter of sesame, which is rated second to cocoa in export volume. Sesame from Nigeria is exported to markets in North America, Europe and East Asia. Benue and Nasarawa States are the highest sesame producers in Nigeria with annual outputs of not less than an average of 40,000MT each per annum (Raw Materials Research

and Development Council, 2004). It is one of the major crops produced in Yobe State. The seeds (approximately 50% oil and 25% protein) are used in baking, candy making, and other food industries. Oil from the seed is used in cooking and for the production of salad oils and margarine. The oil can also be used in the manufacture of soaps, paints, perfumes, pharmaceuticals and insecticides. Sesame meal, left after the oil is pressed from the seed, is an excellent high-protein (34-50%) feed for poultry and livestock (Olaiya and Makinde, 2015). The socio-economic characteristics such as age, gender, household size, and sex, etc of the farmers are important factors to consider when examining crop production, particularly among African smallholder farmers (Lottering et al., 2021). For instance, it has been shown that women are often resource-poor farmers, because in many cases they do not hold rights to land and have less opportunity for off-farm work. Accordingly, most of the studies on gender and crop production have focused on male-female differences in patterns of labor allocation and resource use and control (Atinkut et al., 2022). However, comprehensive studies relating the socio-economic conditions of household members to their decision to produce sesame are lacking in the study area. To come up with recommendations for specific strategies for sustainable sesame production and to predict the effect of improved variety on the livelihoods of sesame farmers, it is important to first understand the socio-economic factors driving household members' decision to independently produce sesame seed in the study area. This study aimed to identify socio-economic determinants of sesame production among farmers in Bade LGA, Yobe state, Nigeria. Specifically, the study explored the socio-economic characteristics of farmers; identified the constraints to sesame production, and determined the relationship between socio-economic characteristics and sesame production.

## METHODOLOGY

### Study Area

The study was conducted in Bade Local Government Area of Yobe State, Nigeria due to the large number of sesame farmers. The headquarter is in the town of Gashua. It has an area of $772km^2$ and Coordinates: 12°52′5″N 11°2′47″E with a population projection of 219,800 at the 2006 census (Annual population change, 2006 → 2002). The postal code of the area is 631(NIPOST, 2009). Gashua is a community on the Yobe River, a few miles below the convergence of the Hadejia River and the Jama'are River. The average elevation is about 299 m. The hottest months are March and April with temperature ranges of 38-40° Celsius. In the rainy season, June-September, temperatures fall to 23-28° Celsius, with rainfall of 500 to 1000mm. The Bade and Duwai languages are spoken in Bade LGA. Bade is one of seven languages of the Chadic family

indigenous to Yobe State. The town lies near the Nguru-Gashua Wetlands, an economically and ecologically important ecological system. The town is the location of the court of Mai Bade, the Emir of Bade. Gashua is well-known for its fishery. Subsistence agricultural production is one of the major livelihood activities of the people. There are 10 wards under Bade LGA, these are Sugum/Tagali, Dagona, Sarkin hausawa, Lawan fannami, Zango, Katuzu, Lawan musa, Gwio-Kura, Usur/Dawayo and Sabon Gari wards.

### Sampling Techniques, Data Collection and Analysis

Two-stage sampling procedure was used to select 180 respondents for the study. There are 10 wards under Bade LGA, namely; Sugum/Tagali, Dagona, Sarkin hausawa, Lawan fannami, Zango, Katuzu, Lawan musa, Gwio-Kura, Usur/Dawayo and Sabon gari wards. In the first stage, random sampling technique was used to select six (6) wards out of ten wards in Bade Local Government. In the second stage, 30 respondents were selected from each of the selected wards giving a total of 180 respondents for the study. The wards were selected because of the important position they hold in the state in terms of sesame production and marketing. Structured questionnaires were administered among the respondents. Direct surveys and oral interviews were also conducted among the selected sesame farmers. Data collected includesocio–economic characteristics, production systems and constraints to sesame production.

### Method of Data Analysis

Both descriptive (frequency, percentage and mean) and multiple regression models were used for analyzing the data generated from the study.

### Descriptive Statistics

For grouped data, the mean;

$X = \Sigma xi/N$ ……………………………… (1)

Where,
N= number of observations
X= mean
$\Sigma xi$ = Sum of variables (i = 1, 2, 3….n)
For grouped data;
$X = \Sigma fxi/ \Sigma f$ ……………………… (2)
Where x = mean
$\Sigma fxi$ = sum of products of all variables (I = 1, 2, 3 ….n)
$\Sigma f$ = sum of all frequencies

### Multiple Regression Model

Regression analysis was used to ascertain the contributions of selected farmers' socio-economic Characteristics of sesame production. The multiple

regression equation estimated model is given as:

$$Y = a + b_1X_1 + b_2X_2 + b_3X^3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + e \text{ ----------------------(1)}$$

where,

$Y$ = Sesame production (kg)

$A$ = Constant

$X_1$ = Age (in years)

$X_2$ = Sex (dummy, male =1 female =0)

X3 = Years of educational level (years)

$X_4$ = Household size (number of people)

$X_5$ = Farm size (hectare)

$X_6$ = Farming experience (in years)

$e$ = error term assumed to be independently and normally distributed.

The model shows the coefficient of multiple determination ($R^2$), which explains the 'goodness of fit' for the relationship between the dependent variable and each independent variable in the equation.

## RESULTS AND DISCUSSION

### Sex of respondents

The distribution of respondents according to sex is presented in Table 1. About 61.11% of the respondents were male while 38.89% female were involved in the sesame production in the study area. Ogunlade (2007) established male dominance of agricultural production activities in most parts of Nigeria, including Yobe State. Sex could be male or female. Sex plays a vital role in rural communities. It also determines to a larger extent the activities or roles which an individual performs in society.

### Age of respondents

Table 1 showed that the highest percentages of the respondents (57.22%) were between the ages of 20-39, while (34.44%) were between 40-60 years of age. This implies that the majority of those involved in sesame production in the study area were within their economically active, productive and energetic age. Hence, they will be able to withstand the pressure and rigors involved in sesame production activities. About 2% of the respondents were less than 20 years of age while about 6.11% were older than 60 years of age.

### Marital Status of respondents

The relevance of marital status is to determine the size of the family which influences the decision-making of farmers. Large family sizes may have large and readily supply labour. The marital status of respondents is presented in Table 1 which shows that 93.33% were married while only 5.00% were single. This finding agrees with that of Mohammed et al (2015) who opined that marriage is a sacred institution that is cherished among humanity which confers and expands the frontiers of responsibilities on an individual. Also, 1.11% of respondents were widowed while 0.56% were separated.

### Household size of respondents

A household is a group of people who eat from the same pot. The result presented in Table 1 shows that the majority (48.33%) of respondents had between 6 and 10 household sizes, 23.89% reported a range of between 1 and 5 persons, 17.22% reported a range of between 11 and 15 persons, while only 10.56% respondents fall within 16 and 20 household size (average household size of 18). The result reveals that the majority of respondents maintained large household sizes, probably given the need to complement their sesame farm labour requirements.

### Sesame farming Experience (Years)

The result in Table 1 reveals that 28.33% of the respondents had sesame farming experience ranging from 1-5 years, 23.33% had 6-10 years sesame farming experience, 12.22 % had between 11 to 15 years of farming experience, 11.67% had 16 to 20 years farming experience while 24.44% had above 20 years experience, this implies that only few of the respondents have many years of sesame farming experience. The combination of sesame farming experience with the ability to manage resources efficiently is expected to translate to higher returns for sesame production in the study area. The more the farmers experience, the more their abilities to manage general and specific factors which affect sesame production and other household activities.

### Educational Level

Education is the process of acquiring knowledge, experience, skills and sound attitude through the teaching and learning process.

The findings in Table 1 shows that 3.33% had no education, while 16.11%, 16.67%, 11.11% and 52.78% had primary, secondary, tertiary and Qur'anic education, respectively. The result suggests that a substantial number of the population of respondents had Qur'anic education.

This implies that education may likely enhance the awareness and adoption of new technologies needed to enhance sesame production. Agwu and Anyanwu (1996) established that the educational status of farmers had a direct influence on farmers' perception and adoption of improved technologies.

### Farm size (ha)

The result in Table 1 shows that the majority of the respondents (58.89%) had 1.1 – 5.0 ha of farmland while 36.11 % had 5.1 -10.0 ha, 3.33 % had <1.0 and

**Table 1.** Distribution of respondents according to Socio economic characteristics.

| Variables | Frequency | Percentage |
|---|---|---|
| **Sex** | | |
| Male | 110 | 61.11 |
| Female | 70 | 38.89 |
| **Total** | **180** | **100.00** |
| **Age** | | |
| <20 | 4 | 2.22 |
| 20 – 39 | 103 | 57.22 |
| 40 – 60 | 62 | 34.44 |
| >60 | 11 | 6.11 |
| **Total** | **180** | **100.00** |
| **Marital Status** | | |
| Single | 9 | 5.00 |
| Married | 168 | 93.33 |
| Widowed | 2 | 1.11 |
| Separated | 1 | 0.56 |
| **Total** | **180** | **100.00** |
| **Household Size** | | |
| 1 – 5 | 43 | 23.89 |
| 6 – 10 | 87 | 48.33 |
| 11 – 15 | 31 | 17.22 |
| 16–20 | 19 | 10.56 |
| >20 | 0 | 0 |
| **Total** | **180** | **100.00** |
| **Farming Experience (Years)** | | |
| 1–5 | 51 | 28.33 |
| 6–10 | 42 | 23.33 |
| 11–15 | 22 | 12.22 |
| 16–20 | 21 | 11.67 |
| >20 | 44 | 24.44 |
| **Total** | **180** | **100.00** |
| **Level of Education** | | |
| None | 6 | 3.33 |
| Primary Education | 29 | 16.11 |
| Secondary Education | 30 | 16.67 |
| Tertiary Education | 20 | 11.11 |
| Qur'anic Education | 95 | 52.78 |
| **Total** | **180** | **100.00** |
| **Farm size (ha)** | | |
| <1.0 | 6 | 3.33 |
| 1.1 -5.0 | 106 | 58.89 |
| 5.1 – 10.0 | 65 | 36.11 |
| >10 | 3 | 1.66 |
| **Total** | **180** | **100.00** |
| **Fund source** | | |
| Personal saving | 162 | 90 |
| Credit | 13 | 7.22 |
| Loan | 3 | 1.67 |
| Gift | 2 | 1.11 |
| **Total** | **180** | **100.00** |
| **Production goal** | | |
| Profit | 102 | 56.67 |
| Food security | 6 | 3.33 |
| Both | 72 | 40.00 |
| **Total** | **180** | **100.00** |
| **Land acquisition** | | |
| Inheritance | 143 | 79.44 |
| Government | 24 | 13.33 |
| Rent/Lease | 4 | 2.22 |
| Purchase | 9 | 5.00 |
| **Total** | **180** | **100.00** |

**Source:** Field Survey, 2018.

**Table 2.** Regression Coefficients of socio economic factors influencing sesame production.

| Variables | Coefficients | Standard error | T – value |
|---|---|---|---|
| **Age** | 9.004 | 4.808 | 1.87* |
| **Sex** | 402.152 | 116.318 | 3.46*** |
| **Marital status** | 351.492 | 177.761 | 1.98** |
| **Household size** | 9.735 | 12.805 | 0.76 |
| **Education level** | 12.301 | 43.721 | 0.28 |
| **Farm size** | 16.668 | 17.628 | 0.95 |
| **Farm experience** | 4.008 | 7.723 | 0.52 |
| **R-squared** | 0.697 | | |
| **Adjusted R-squared** | 0.685 | | |
| **Prob>F** | 0.000 | | |

$R^2$=0.697. *significant at 10%, **significant at 5%, ***significant at 1%. **Source:** Field Survey, 2018.

only 1.66% had >10 ha.

## Fund source

Table 1 indicates that a substantial number (90%) of the respondents got their funds from personal savings, 7.22 % got funds from credit, 1.67% got funds from loans and 1.11% got funds as gift.

## Production goals

Result in Table 1 reveals that the majority of the respondents (56.67%) engaged in sesame production for profit purpose, 3.33% produced sesame for food security purpose and 40% produced it for both.

## Land acquisition

The findings in Table 1 show that 79.44% acquired their land through inheritance, while 13.33%, 2.22% and 5.00% had acquired their land through government, rent and purchase respectively.

## Socio economic factors influencing sesame production in the study area

Some of the socio economic factors influencing sesame production in the study area were presented in Table 2. The R-square (coefficient of determination) is 0.6850 indicating that about 68.50% variation in sesame production is explained by the explanatory variables included in the model. From the T-value of the regression, three independent variables (age, sex and marital status) out of the seven variables included in the model were found to be statistically significant at 10%, 1% and 5% levels of probability, respectively. They all have positive coefficients and directly influenced sesame production in the study area.
**Age:** As shown in Table 2, the coefficient of age was positive (1.87) and statistically significant at 10% level of probability indicating a direct relationship with the

dependent variable. This implies that a unit increase in the age of sesame farmers will increase the sesame production of the respondents. For instance, as the respondent increase in age, the likelihood of an increase in sesame production is high. This can be justified based on the fact that the more aged an individual sesame farmer was, the more the tendency to increase the number of experiences needed to increase sesame production. This is in line with the findings reported by Abu et al (2012), who found that age significantly influenced profit efficiency among sesame farmers in Nasarawa state, Nigeria.
**Sex:** As revealed in Table 2, the coefficient of sex was positive (3.46) and significant at 1% level of probability indicating a direct relationship with the dependent variable. This indicates that sesame production was higher among men than women. Women are mostly found in harvesting and processing stages of sesame production. Traditionally, women mostly worked as subordinates to men and cultivate less hectare of land.
**Marital status:** as shown in Table 2, the coefficient of marital status was positive (1.98) and significant at 5% level of probability indicating a direct relationship with the dependent variable. This implies that sesame production was higher among married households compared to those who are single in the study area. This indirectly affected labour availability.
It is envisaged that married households would have access to family labour, especially where family members are older than 18 years of age. Traditional Africa agricultural production is labour intensive and mostly done through family labour.

## Constraints of sesame production in the study area

The constraints to sesame production encountered by the respondents were measured using a five point Likert Scale. This refers to the superiority of the constraints gotten as serious by the respondents scores from 3 and above were considered as severe constraints, while those below 3 were taken as not

**Table 3.** Constraints to sesame production in the study area.

| Constraints | SD(1) | D (2) | U (3) | A (4) | SA (5) | SUM | MEAN | RANK |
|---|---|---|---|---|---|---|---|---|
| Poor access roads | 1 | 27 | 18 | 126 | 625 | 797 | 4.42 | 1st |
| High cost of farm inputs | 2 | 44 | 30 | 302 | 325 | 703 | 3.90 | 3rd |
| Insecurity at the market | 2 | 16 | 57 | 310 | 375 | 760 | 4.22 | 2nd |
| Disease and pest | 4 | 80 | 99 | 214 | 230 | 627 | 3.48 | 9th |
| Climate change | 5 | 75 | 126 | 262 | 130 | 598 | 3.32 | 11th |
| Poor storage facilities | 7 | 70 | 78 | 250 | 235 | 640 | 3.56 | 7th |
| Unstable government policy | 4 | 57 | 110 | 242 | 255 | 668 | 3.71 | 5th |
| Price fluctuation | 4 | 40 | 97 | 314 | 210 | 665 | 3.69 | 6th |
| Land tenure | 10 | 35 | 57 | 300 | 275 | 677 | 3.76 | 4th |
| Farmers/Herdsmen clash | 6 | 69 | 90 | 250 | 225 | 640 | 3.56 | 7th |
| Inadequate Extension Service | 7 | 43 | 57 | 220 | 275 | 602 | 3.34 | 10th |

severe constraints. The result in Table 3 shows that the lack of good roads with a weighted mean score of 4.42 was the most critical challenge. This was followed by insecurity at the market, high cost of farm inputs, land tenure, and unstable government policy with weighted mean scores of 4.22, 3.90, 3.76 and 3.71 respectively, while farmers/herdsmen clash, and poor storage facilities were ranked 7th with a mean score of 3.56. Some of these constraints were observed among sesame farmers in Nasarawa and Bauchi states, Nigeria (Umar et al., 2010; Gizaki et al., 2014). On the other hand, disease and pest, inadequate extension service and climate change with weighted mean scores of 3.48, 3.34 and 3.32 were ranked 9th, 10th and 11th respectively.

## CONCLUSION AND RECOMMENDATIONS

The findings of the study suggest that selected socio-economic characteristics could be linked with sesame production. More importantly, the production of sesame was positively influenced by age, sex and marital status. Government should make policies that will facilitate farmers' access to education and training. Also, consideration should also be given to rural infrastructure and inputs subsidies not limited to fertilizer as these were among the notable constraints faced by farmers. Government should look into the inherent potential of sesame business as that will increase foreign earnings and local industries for processing sesame into industrial usage.

## ACKNOWLEGEMENTS

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