



SHORT COMMUNICATION

**SOCIOECONOMIC FACTORS INFLUENCING MAIZE PRODUCTION IN GIWA
LOCAL GOVERNMENT AREA OF KADUNA STATE, NIGERIA**

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Introduction

Maize production is of utmost importance to the Nigerian economy, considering its commercial prominence and food values. Maize is one of the staple crops in Nigeria and featured among the major food grains produced in Nigeria. According to NAERLS (2020) the crop is the first most cultivated in Nigeria in terms of area (12,403,330 ha). In 2019, Africa had a total production volume of about 90MMT and Nigeria averaged production volume of about 11 MMT thus making it the 2nd largest producer in the continent, after South Africa with 16 MMT (PricewaterhouseCoopers Nigeria, 2021). The NAERLS (2020) reported that Nigeria produced about 12.40 million tons in the year 2020 which when compared to the year 2019 had decreased by about 1.55 %. This decrease, according to them was as a result of rainfall deficit in southwest, some parts of southeast zones and flooding in some parts of northeast and northwest and inadequate fertilizer application on maize farms.

In the Savannah region, the enormous potentials for maize production can be realized only with the use of high levels of fertilizers, improved seeds, hectare expansion and adequate weed control. With adequate supply of these inputs and the provision of adequate storage facilities, the rapid expansion of maize could be sustained. In Nigeria, the largest volumes of maize are produced in the Northern region, particularly in Kaduna, Borno, Niger, and Taraba and in the South-Western States including Ogun, Ondo and Oyo. The country has comparative advantage in the production and export of maize in Africa over its counterparts for it has large cultivable land area for production and conducive climatic condition.

However, one of the most pronounced problems constraining the production of maize in Nigeria as reported by its farming community (majority of whom are small-scale producers) is stagnant production technology and high cost of inputs as well as poor price at harvest. Above reasons coupled with the fact that most of the studies were mainly on other production constraints other than the socio-economic factors, gave the motivation to conduct this study on socioeconomic factors influencing maize production. Therefore, this paper attempted to find out the socioeconomic factors that influence maize production as well as to examine the constraints faced in maize production by the farmers in the study area.

Methodology

Study area

The study was conducted in Giwa Local Government Area (LGA) of Kaduna State, Nigeria. It is located in the plain of the northern part of Kaduna State. The LGA lies between latitude 12.20°N to 12.52°N and longitude 7.0°E to 7.5°E. It had an estimated population of 286,427 people in 2006 (NPC, 2006) which is projected to be 445,174 in 2020. The mean annual rainfall varies from 635 mm to 1,524 mm. The lowest mean temperature is usually recorded during the harmattan period. This occurs between November and February with the range from 18°C - 23°C. The major source of livelihood in this area is agriculture and the bulk of agricultural production is undertaken by small scale farmers. Major crops grown in the area includes maize, cowpea, tomatoes, pepper, onions, sugarcane.

Sampling procedure

A multistage sampling procedure was employed. The first stage involved the random selection (using balloting) of three districts out of eleven. The selected districts were Giwa, Shika, and Yakawada. In the second stage, three villages from each of the selected district were purposively selected due to security reasons and these villages were Giwa town, Shika town and Yakawada town. Finally, a total of 84 maize farmers were purposively selected from the selected villages. This is due to the unavailability of reliable sampling frame of maize farmers in the study area.

Data collection and analysis

Primary data were collected based on 2019 cropping season using detailed structured questionnaire. Data on socio-economic characteristics of the respondents, farm production information as well as prices of input and output were collected. Descriptive and inferential statistics were employed in analyzing the data.

Log linear model was employed and is thus specified as:

$$\log Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + + + \beta_{10} X_{10} + \varepsilon_i \dots \dots 1$$

Where:

Y = Total farmer's yield (Kg/ha)

X₁ = sex of respondents (1 =male, 0= female)

X₂= Age of respondents (Years)

X₃=Marital status (1 =Married, 0= Single),

X₄= Household size (Number),

X₅=Exp in maize farming (Years),

X₆=Membership of association (1 =Yes, 0= No)

X₇=Access to credit (1 =Yes, 0= No),

X₈=Extension contact (Number of visit),

X₉ =Farm size (Ha),

X₁₀ =Availability of labour (1 =Yes, 0= No)

$\beta_1 - \beta_{10}$ are coefficient of explanatory variables to be estimated and ε_i is the error term,

Results and Discussion

Factors influencing maize production

To examine factors influencing maize production in Giwa LGA, a log linear regression model was used. The variables used in the model were for dependent variable (Y); farmers' total output which stand as a proxy for maize production, while for the independent variables; sex, age, marital status, household size, maize farming experience, access to credit, access to extension, farm size, and labour availability were used.

Result of the analysis is presented in Table 1 and it showed that for the log linear model, 86% of the variation in the dependent variable was influenced by the independent variables included in the model. However, four (4) variables (Marital status, cooperative membership, access to credit and labour availability) were found not to be significant but all other variables sex (-0.394), age (-0.003), household size (-0.022) and farm size (0.007) were found to be significant at 1 percent level of probability while farming experience (0.252) and extension contact (0.470) were significant at 5 percent level of probability. Sex, age and household size impacted negatively on maize production in the study area and this is not contrary to apriori expectation. Sex showed a negative relationship with production leading to a decrease in production by about 39% as a result of a unit increase.

Table 1: Socioeconomic factors influencing maize production

Variables	Coef.	Std. Err.	t-value
Sex	-0.394	0.121	-3.25 ***
Age	-0.003	0.000	-5.77***
Marital status	0.069	0.110	0.62
Household size	-0.022	0.004	-4.95***
Maize farming experience	0.007	0.003	1.94**
Membership of association	-0.147	0.126	-1.17
Credit access	-0.005	0.087	-0.05
Extension contacts	0.252	0.125	2.01**
Farm size	0.470	0.043	10.86***
Labor availability	0.002	0.001	0.08
_cons	7.382	0.206	35.82***
F (73)			50.7
Prob> F			0.000
R-squared			0.874
Adjusted R-squared			0.857
Root MSE			0.253

As number of age increases by 1%, maize production will likely be reduced by 0.3%. Meaning that, increase in age of the farmers implied moving towards nonproductive stage as younger age is needed for rigorous farm activities. This tallies with finding of Ayoola *et al* (2011) who reported age to have influenced rice production negatively, implying that the older the rice farmers the less the vigour for farming. Household size was equally found to significantly reduced maize production, though contrary to expectation, increase in

household size by one (1 person) would result in 2.2% decrease in maize output. The result implied that, as household increases, farmers faced more financial constraints, thus divert resources off the farm. The finding corroborates with that of Ibrahim *et al.* (2019), who reported a decrease in gross margin of QPM among farmers by ₦2.53 in Katsina State. Other variables that impacted positively on maize production were; number of years of experience in maize production, extension contact and farm size, a unit increased in those variables raised output by 0.7%, 25% and 47% respectively.

Constraints to maize production

The study found five major constraints bedeviling the maize farmers in the study area. The first being low access to credit (36.4%) which could be due to bureaucratic processes involved in accessing the loan. This finding is in line with Mohammed *et al.* (2006) who reported that that majority 68.75% of the farmers lacked adequate capital to finance their maize production. This is followed by climate change (30.3%) where cases of extended rainfall were reported, high cost of fertilizer (24.2%), Labour (7.6%) and transportation (1.5%) were reported as a constraint by the farmers in the study area.

This is in agreement with the findings of Opaluwa *et al.*, 2015 who reported scarcity of labour, and poor credit accessibility to be among the major constraints affecting maize production activities in North Central zone of Nigeria.

Table 2: Constraints to maize production

Constraints	Frequency	Percent	Rank
Low Credit Access	24	36.4	1 st
Climate change	20	30.3	2 nd
High Cost of Fertilizer	16	24.2	3 rd
High Cost of labour	5	7.6	4 th
Cost of transportation	1	1.5	5 th
Total	66	100.0	

Conclusion

This paper studied factors that influences maize production in Giwa Local Government Area of Kaduna State. Based on the finding of this study, it can be concluded that, all the variables used in the model have a significant influence on maize production in the study area as the study found that 86% of the influence on maize production were associated with all the independent variables included in the model. The study also concluded that, the higher the age of the farmers the more they move towards non-productive stage as younger age is needed for rigorous farm activities. Also, the study concluded that an increase in household size leads to decrease in maize output, this could be due to the fact that any addition to the family would make the household to face more financial constraints, thus divert resources off the farm thus leading to decrease in maize production. The study further concluded that, higher the farm size, higher the output to be obtained by a farmer. Farm size is one of the limiting factors of production considering the land tenure system in existence.

Thus, it is recommended that a system that would make youth engagement in to farming should be availed in order for better output. Also, better linkages of farmers with financial institutions for credit delivery, use of improved seed varieties to stem effect of

climatic variability and formation of farmers' associations/groups for bulk purchase of fertilizer and other farming inputs is recommended.

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