

SOCIO-ECONOMIC VARIABLES OF FARMERS AND THEIR PROFITABILITY LEVELS IN MAIZE PRODUCTION IN KOGI STATE, NIGERIA.

IBITOYE, S.J¹ OREBIYI, J.S² AND D, I.EKINE³

1. Dept of Agricultural Economics & Extension, Kogi State University, Anyigba
2. Dept of Agric Economics, Federal University of Technology, Owerri-Imo State.
3. Dept. of Agricultural & Applied Economics/Extension. Rivers State University of Science and Technology. Port-Harcourt.

E-MAIL: adewasco2k@yahoo.com GSM +234 (0) 8038822144

ABSTRACT

The study examined the socio-economic background of maize farmers as well as the cost and returns associated with maize production in Kogi State of Nigeria. A multistage random sampling technique was used in the selection of the four local government areas, eight communities and 240 farmers used in this analysis. A structured questionnaire was used to obtain information from the farmers on their sex, age, farm size, educational status, farming experience, input used, their costs, output and the revenue. Gross margin analysis was used to analyze the data. The result showed that the gross margin for maize production was ₦57,300 per hectare and benefit-cost ratio was 1.91. This implies that maize production in Kogi State is profitable. It was therefore recommended that farmers should be encouraged to go into maize production.

Keywords: Maize, Production, Yield, Gross margin, Profitability.

INTRODUCTION

It is important to note that maize (*Zea mays*) is one of the most popular food grains produced in Africa. Maize grows well under the most varied climatic conditions unlike other grains like wheat and rice which are limited by climate (Onwueme and Sinha 1991).

Maize has a higher yield of food energy than wheat and rice. For example, maize of about 93 percent extract has an average yield of 5.4 million calories

per hectare (FAO 1996). In Africa, maize consumption account for about 64percent of the daily calorie in take of the rural dwellers especially during the hunger period (Gerhart, 1995).

Worldwide, maize provided over 40 million tonnes of carbohydrates to humans annually. It was reported that maize has recently surpassed cassava as Africa's most important food crop in terms of calories consumed. It is used as staple food in the tropics, as livestock feed in the advance countries and as raw materials for many products. Industrially, distillers make alcoholic drinks from maize. Maize starch is used by various manufacturers to make toothpaste, baby powder, drugs like aspirin, cotton, cloths, paper, corn flakes, corn meal, popcorn and cellophanes, Domestically, maize oil is excellent for frying and cooking, it is also good in bakery product, margarine, salad dressing and shortenings.

In Nigeria, studies carried out by Umeh and Adebisi (1998) showed that maize contributed the largest volume of grains with 36 percent followed by sorghum with 24 percent, millet with 20 percent and rice and cowpea with 12 percent and eight percent, respectively. The studies further revealed that maize is grown in 54 percent of all the holding in Nigeria. Kogi State recorded one of the highest figures of maize grown in holding. All other states with the exception of Jigawa, Sokoto and Yobe States recorded relatively high figures. This confirms the popularity of maize production in Nigeria.

Table 1: Maize Production in Kogi State (1999-2008)

Items	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Land area Cultivated (⁰⁰⁰ Ha)	149.20	140.70	130.80	130.45	129.00	132.14	129.48	148.90	180.81	189.31
Output (⁰⁰⁰ tons)	25.167	245.80	234.00	240.85	250.00	255.00	213.95	261.80	289.29	310.01
Yields (Ton/Ha)	1.69	1.75	1.79	1.85	1.94	1.93	1.65	1.76	1.60	1.64

Source: Kogi ADP, 2009.

Table 1 shows the crop area, production output and yield estimates for maize in Kogi State from the year 1999 to 2008. The table showed gradual decline in maize production output from 251,670 tonnes in 1999 to about 213,950 tonnes in 2005. However, maize production output peaked up in the year 2006 (261,800 tonnes) and increased gradually to 310,010 tonnes in the year 2008.

As a major cereal crop, widely grown throughout the state, maize is one of the major sources of income for the rural farmers. Therefore, there is a need to encourage our farmers in their attempt to produce maize in commercial quantity. This study was primarily designed to find out the costs associated with the production of maize and the revenue accruing from it as a way of determining the profitability of maize production in Kogi State.

METHODOLOGY

The study was conducted in Kogi State of Nigeria in 2009. Kogi State was created in August, 1991 out of Kwara and Benue States. The state is located in the Central region of Nigeria. The headquarters of the state is Lokoja, which is situated at the confluence of rivers Niger and Benue making the state to be popularly known as the Confluence state. The state like any other state in the country has three senatorial districts (Western, Central and Eastern senatorial districts). The state consists of 21 Local Government Areas (LGAs). The state is located between latitude 6°3'N and 8°50'N; and longitude 5°51'E and 8°00'E.

The state share common boundaries with Niger, Plateau, Nasarawa states and Federal Capital Territory (FCT) to the North and Benue state to the East. To the west, it is bounded by Kwara, Ondo and Ekiti state and to the South by Enugu, Anambra and Edo States Kogi state has a total population of about 3,278,487 people with land area of about 30,354.74 square kilometers (KOSEEDS, 2004).

The state has about 2 million hectares of cultivable land with only about 0.5 million hectares currently under cultivation (KOSEEDS, 2004). The

state is well supplied with river valleys and swamp lands for dry season farming. The major food crops grown in the state are yam, cassava, maize, sorghum, rice, millet, cowpea, pigeon pea, groundnut, bambaranut, cocoyam, sweet potato, beniseed, melon, banana, plantain and cotton. Fruits and leafy vegetables such as okra, pepper, fluted pumpkin and spinach are highly cultivated in the area. Tree crops grown in the state are: cashew, oil palm, citrus, cocoa, coffee and kolanut. Cattle, sheep, goats and poultry are the major animals reared. Fish is common along the riverside areas.

This study was conducted in Kogi State of Nigeria in the year 2009. Kogi State is divided into four agricultural zones (A, B, C and D). All the Local Government Areas (LGA) in each zone are similar in terms of vegetation, socio-cultural activities and agricultural practices. One local government area was randomly selected from each of the four zones. Yagba-East LGA was therefore selected to represent zone A and Dekina LGA was also selected to represent zone B. Similarly, Lokoja and Ofu LGAs were selected to represent zones C and D respectively. From each of the four local government areas selected, random samples of two communities were selected making a total of eight communities involved in the survey. Finally, from each of the eight communities a random sample of 30 maize farmers was selected to give a total of 240 respondents.

Both primary and secondary data were used in the study. Secondary data were collected from Kogi State Agricultural Development Project headquarters at Lokoja, Journals, Textbooks and Annual Reports of Central Bank of Nigeria. The primary data on the other hand were collected through the use of structured questionnaire. The data obtained on socio-economic characteristics of respondents include: Sex, age, family size, educational status, farming experience and farm size. The information obtained on the profitability was on the costs of farm inputs such as labour, capital, agro-chemicals, planting materials while the revenues were obtained from the output of

maize. All the instruments were successfully completed, recovered and analysed by the researcher.

Model Specification

The data were analysed using addition, mean and percentages. Gross margin was used to determine the profitability of the maize production. The farmers used for the study are rural dwellers who inherited their farmland and depend only on hoes and cutlasses for their farm operations. Those farm tools had negligible depreciation and so were ignored in the computation of costs of production (Audu, Saliu and Ukwuteno, 2008).

Gross Margin (GM) was obtained by deducting Total Cost (TC) from Total Revenue (GM=TR-TC). Efficiency of maize enterprise was calculated by dividing Total Cost by Total Revenue and multiplying by 100 ($TC \div TR \times 100$). The Benefit-Cost Ratio (BCR) of maize enterprise in the state was obtained by dividing the Discounted Total Revenue by the Discounted Total Cost.

$$BCR = \frac{\sum \text{Discounted Benefits}}{\sum \text{Discounted Costs}}$$

RESULTS AND DISCUSSION

For the purpose of this analysis, the profit obtained by farmers from maize production during the 2008/2009 cropping season were categorized into three levels thus-less than ₦25,000.00, between ₦25,000.00 and ₦50,000.00 and above ₦50,000.00. Based on the socio-economic variables, the distribution of respondents into the various profit levels is presented in Table 2. The socio-economic variables studied were: sex, age, farm size, farming experience, educational status and family size. A careful observation of the table showed that profit level respondents (102) followed by profit level of less than ₦25,000.00 with 72 farmers. The least number of respondents was found in the profit level of above 50,000 with total of 66 farmers. The sex distribution of the respondents revealed that 84% were male while the remaining 16% were female. This result is expected because maize production according to Upton (1991) requires a lot of energy during land clearing and cultivation which most women may not possess. This means that as long as maize production remains under the traditional method of farming, men will continue to dominate.

According to the age of respondents, Table 2 showed that the two respondents in the age bracket of less than 25 years belong to the profit level of ₦ 25,000.00 to ₦50,000.00. Majority of the farmers (72%) belong to the age bracket of 25 to 50 years with about half of them in the profit level of between ₦25,000.00 and ₦50,000.00. The mean age of the respondents was 38 years. This result on age showed that majority of maize farmers in the state were young and could be productive. This is an indication that the farmers can make more profit on maize production if given the right resources.

The result on farm size for maize production revealed that 50% of the respondents had farm size of less than 1.0 hectare. Majority of these farmers belong to low profit level of less than ₦25,000.00. The major part of the remaining respondents (42%) had farm size of 1.0-3.0 hectares. Majority of the respondents with farm size of 1.0-3.0 hectares belong to the profit group of ₦25,000.00- ₦50,000.00. The average farm size of the respondents was about 1.8 hectares. This implies that majority of maize farmers in the state operated on small scale level. That is probably why majority of them obtained very low profit in their farming operations. For the farmers to improve their profit levels substantially, their farm sizes must be increased so that their scale of operation can increase, their income level will thus increase and hence their level of investment.

The result of this analysis revealed that 28% of the respondents had farming experience of 1-10 years, while the remaining 72% had farming experience of above 10 years. The mean years of farming was 18 years. About 60% of the respondents with over 10 years of farming experience had profit of less than ₦50,000.00. The result showed that even though the farmers were well experienced in maize farming, most of them still belong to low profit levels. This may be as result of small farm sizes and the outdated farming implements been used for maize production in the area.

The study revealed that about half of the respondents (54%) had no formal education, while another 35% of them had only primary education. These two educational status had fair distribution along the profit levels. Majority of the educated farmers belong to high profit

Table 2: Categorization of maize farmers by selected socio-economic variables into profit levels.

<i>Socio-economic Variables</i>	<i>No. Of Respondents in each Profit Level</i>			<i>Total Frequency</i>	<i>Percentage (%)</i>
	<i><₦ 25,000</i>	<i>₦ 25,000-₦ 50,000</i>	<i>≥₦ 50,000</i>		
Sex					
Male	36	100	66	202	84
Female	36	2	0	38	16
Total	72	102	66	240	100
Age (years)					
Less than 25	0	2	0	2	1
25-50	32	89	51	172	72
Above 50	40	11	15	66	27
Total	72	102	66	240	100
Farm size (Ha)					
Less	62	24	35	121	50
1.0 – 2.0	5	38	8	51	21
2.1 – 3.0	5	38	8	51	21
Above 3.0	0	2	15	17	8
Total	72	102	66	240	100
Yrs of farming					
Less than 5	0	4	0	4	2
5 – 10	10	14	38	62	26
11 – 15	8	10	21	135	16
Above 15	54	74	7	56	56
Total	72	102	66	240	100
Education					
Illiterates	53	22	55	130	54
Primary	12	71	0	83	35
Secondary	7	4	11	22	9
Tertiary	0	5	0	5	2
Total	72	102	66	240	100
FamilySize (No)					
Less than 5	17	0	0	17	7
5-10	52	96	61	209	87
Above 10	3	6	5	14	6
Total	72	102	66	240	100

Source: Field Survey, 2009

level of above ₦50,000.00. The general level of education of the farmers in the area could be described as low because only 11% of them had at least secondary education. This development does not augur well for improvement in maize production as Ibitoye (2010) observed that low educational status had negative effect on the adoption of new innovation.

The result of the study showed that 94% of the respondents had family size of not more than

10 persons while the remaining 6% had more than 10 persons in each household. The mean number of the people in the family was 8 persons. The distribution of the household into different profit levels revealed that most of the family with small household size belong to low profit level, while respondents in the high household size had fair distribution of farmers along the profit levels. It is expected that family with large household size could have readily available family labour all

things being equal, this could lead to timely operation on the farms and hence increase output of maize.

Table 3: Cost and Returns for Maize Production Per Hectare

S/N	Budget Items	Total Quantity	Unit Cost (₦)	Total Value (₦)
A.	Variable Costs			
	i. Labour Cost:			
	Land Clearing	18 MD	500	9,000
	Land Cultivation	18 MD	500	9,000
	Planting	4 MD	500	2,000
	Weeding	10 MD	500	5,000
	Fertilizer/Chemical Application	10 MD	500	5,000
	Harvesting	10 MD	500	5,000
	Threshing	5 MD	500	2,500
	Packaging/Bagging			
	Total Labour Cost	5 MD	500	2,500
				40,000
	ii. Other Farm Inputs:			
	Planting Seeds	50 Kg	60	3,000
	Fertilizer/Agro-Chemicals	LS	-	10,000
	Transportation	LS	-	4,000
	Miscellaneous Expenses	LS	10%	5,700
	Total Other Farm Input Cost			22,700
	Total Variable Cost (i+ii)			62,700
B.	Maize Output	2,00 kg	60	120,000
C.	Gross Margin (B-A)			57,300
D.	Benefit-Cost Ratio (B : A) —			1.91
E.	Level of Efficiency (A : Bx100)			52.25%

Source: Field Survey. 2009

Note MD = Mandays

LS = Lump Sum

The estimate was based on sole cropping, therefore, maize intercropped with melon, sorghum, cassava, yam and other arable crops were not considered in this analysis.

Total variable costs consist of two major parts: Labour cost and other farm input cost. The labour costs were made up of costs of land clearing, land cultivation, planting, weeding, fertilizer/Agro-chemical application, Harvesting, threshing, packaging and bagging. The total cost of labour was ₦40, 000.00. The second part of the variable cost include, the cost of other farm inputs like planting seeds, fertilizer/agro-chemicals and transportation which altogether was ₦ 22, 700.00. The total variable cost was ₦62, 700.00. The output of maize per hectare was 2,000 kg with total production value of ₦120, 000. The gross margin per hectare was ₦57, 300.00 and the benefit cost ratio was 1.91. This implies that every naira invested on maize production generated revenue of ₦1.91. Production efficiency showed that 52.25% of all the revenue generated went to cost of production. The lower the percentage the higher the profit realized.

CONCLUSION

From this analysis it can be concluded that maize production in Kogi State is a profitable venture, because every one naira invested in the production of maize brought a return of ₦1.91. It is therefore strongly recommended that farmers in Kogi State should take advantage of the high profitability of maize production in the area to go into maize cultivation as a way of increasing their income and reducing the poverty level in the State.

REFERENCES

- Audu, S.I., Saliu, O.J. and Ukwuteno, S.O. (2008) Analysis of Costs and Returns of Rice Production in Ankpa Local Government Area of Kogi State, Nigeria. Proceedings of 42nd Annual Conference of Agricultural Society of Nigeria (ASN) held at Ebonyi State University, Abakaliki, Ebonyi State on October 18th – 23rd, 2008. Pg 934-936.
- Food and Agricultural Organisation (FAO) (1996). World Bank Trends and Future Food Security. Rome: FAO Occasional Paper.

- Gerhart, J. (1995) Diffusion of hybrid Maize in Kenya. Centre International de Majoramieto de Maizy, Occasional Paper.
- Ibitoye, S.J. (2010). The influence of farm size, Educational status and Farm income on the adoption of maize varieties in Kogi State , Nigeria. American – Euro Asian Journal of Sustainable Agriculture 4(1) : pp 20 – 25.
- Kogi ADP (Agricultural Development Project) (2009). Crop Area and Yield Survey. Lokoja, Kogi State Agricultural Development Project (KADP) Occasional Paper, pp 17.
- KOSEEDS (Kogi State Economic Empowerment and Development Strategy) (2004). Towards Poverty Alleviation and Wealth Creation. Lokoja. Kogi State Ministry of Budget and Planning. Pp. 3.
- Onwueme, I.C. and Sinha, T.D. (1991). Field Crop Production in Tropical Africa. Netherlands. CTA. pp. 111-116.
- Umeh, J.C. and A.J. Adebisi (1998). Capital Resource Sourcing and Allocation in Food Crop Enterprises: An Emperical Evidence from the Nigerian Small-Scale Framers. *Journal of Agricultural and Rural Development*. Vol vi (1): pp 17-30.
- Upton, M (1991). Economics of Tropical Farming Systems. Cambridge Low Price Edition . pp 248.