

Social and Economical Analysis of Small Scale Maize Production in Kura Local Government Area of Kano State, Nigeria

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Abstract

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This research covered three villages in Kura local Government Area of Kano State. The study described the socio-economic characteristics of maize producers and their production techniques and also determined the profitability and resource use efficiency in the maize production. Structured questionnaires were used for primary data collection and 40 small scale producers were purposively selected base based on the scale of operation. The data collected were analyzed using descriptive statistics such as percentage, mean, frequency distribution table; net farm income and multiple regression models. The results of this study show that 62.5% of maize producers are young with age ranging from 25 to 34 years. Also 82.5% are married. About 78% of them have 1 to 9 number of dependent whereas 22.5% have 10-19 numbers of dependents. Majority (82.5%) of the farmers practiced farming as their major occupation mainly as a source of income and food. About 85% of these producers operate with less than 2 ha of land. The average total return per hectare of maize is in the area was estimated at N178397.30, average total cost of production is ₦ 82,461 per hectare and average profit per hectare is ₦95, 936.30. Thus result revealed that maize production enterprise is profitable in the study area. The study recommends interventions by Governmental and Non Governmental Organizations in improving maize production in the study area. [Ahmed, A. S., Suleiman, A and Aminu, A. Social and Economical Analysis of Small Scale Maize Production in Kura Local Government Area of Kano State, Nigeria. International Journal of Agricultural Science, Research and Technology in Extension and Education Systems, 2013; 3(1):37-43]

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1. Introduction

Maize (*Zea mays*) it is a cereal crop which produces grain that can be used as food for human being as well as feed for animals. Maize is highly yielding, easy to produce readily digested and cheaper than other cereal. It is also a versatile crop, grow across a range of agro ecological zones (IITA, 2001). Maize started as a subsistence crop and has gradually become a more important crop and has now risen to a commercial crop on which many agro-based industries depend on for raw materials (Iken and Amusa, 2004). Maize is an important source of carbohydrate and if eaten in the immature state, provides useful quantities of Vitamin A and C. Every parts of the maize plant have economic value. The grain, leaves, stalks, tassel and cob can all be used to produce large varieties of food and non-food products. Maize is a stable food crop for most sub-Saharan Africans of which Nigeria is inclusive with per capita 40kg per year (FAO, 2003). In Nigeria maize is the third most important cereal crop after sorghum and millet (Ojo, 2000). Maize have played a central role in the life of people of Nigeria, over the years, it is the most highly consumed grain and

accounts for two-third of the calorific intake and grown by large proportion of Nigeria households.

According to Jabaran et al, (2007), maize has a variety of uses. Its utilization is in three principal ways as human foods, feed for livestock and industrial usage. Maize as a cereal crop supplied approximately 65% carbohydrate as the major component (Iken et al 2002). Maize can be used in animal feed and as raw material for brewing beer and producing starch (IITA, 2008). Maize kernels' can also be used in place of sand in a sand box like enclosure for children's play, (Wikipedia, 2007). As a very important staple food for millions of Nigerians and residents of West Africa, maize is one of the two major crops covering about 40% of the area under agricultural production, and its production accounts for 43% of maize grown in West Africa (Phillip, 2001; Iken and Amusa, 2004; McCann, 2005). Maize production therefore has strategic importance for food security and the socio-economic stability of countries and sub regions in sub Saharan Africa, including Nigeria. In trend projections of consumption and production of major foods crops in sub-Saharan Africa to the year 2000, specifically for West Africa, production was put at 42 million metric

tons while consumption was put at 76 million metric tons, creating a deficit of 34 million metric tons (Von Braun, 1991). Oritiz (2003) submitted that if current trends continue, there will be approximately 300 million of malnourished people or 32 percent of the total population in 2010, which will convert sub-Saharan Africa to being the region with the highest number of inhabitants who are chronically malnourished. According to Ndaeyo (2007), this lopsided relationship between food demand and supply had earlier compelled the Food and Agricultural organization of United Nations to opine that as the world population is increasing by approximately 1 million every four hours, we may have more than 3000 million people to feed by the year 2025. If they are to be fed adequately, the present food production level will have to be doubled and other strategies/approaches need to be revised and/or encouraged.

Notable problems of maize production in Nigeria include, poor seed supply, inefficient marketing system, and low investment in research, inappropriate decision on how best to allocate resources (production inputs) and inadequate adoption of improved technologies by farmers are among the factors that have limited production. Effort aimed at increasing maize output cannot be achieved unless the current level of inputs utilization is scaled up. Despite human and material resources devoted to agriculture, the productive efficiency of most crops maize inclusive still fall under 60 percent (Fakayode et al., 2008). Farmers output needs to be increased using existing inputs and technology. Therefore, it is proper to estimate profitability of maize production and identified constraint in Kura Local Government Area of Kano State. Thus the specific objectives of the study are to describe the socio economic characteristics of maize farmers, determine the level of profitability of maize production as well as to describe major problems associated with maize production in the area.

2. Materials and methods

This research was conducted in Kura Local Government Area of Kano State, Nigeria. Kura Local Government area is located within the central zone of Kano State along Zaria road which is about 30 minute drive from Kano City, and it consist of about 19 villages which are Dalili, Kosawa, Karfi, Rafinduka, Tanawa, Gundutse, Danhassan, Tafasa, Dukawa, and Kura among others. Kura Local Government Area covered about 166 km² areas, with the population of about 99,809. The area lies in Savannah region, which is characterized with long dry season from October to April and short raining season which last from April to September with

average rainfall of about 134mm. Agriculture is the major occupation in the area which involve crop production, marketing and processing. These are supplemented by other Non-Agricultural activities such as transportation of grain, black smith, carpentry etc. Major crops produce in that area include rice, maize, sorghum, cowpea, groundnut and vegetables such as onion, tomato and so on.

The Respondents were identified with the help of a key informant in the study area. With the assist of the key informants, a list of important villages where maize is locally produced under rain-fed condition was formed. Three villages were purposively selected based on the availability of small scale producers of the targeted crop. The selected villages are Karfi, Gainawa and Kwarindangana, Maize producers were purposively selected for an interview in each of these villages. In each village the key informant played a role in identification of the maize farmers. On the other hand some of the farmers were identified at the respective farms.

A total of forty small scale maize producers were involved in this study. Twenty of the producers were identified at Karfi Town. Ten producers each were covered in Gainawa and Kwarandangoma villages. This is because Karfi Town has more maize producers than the other two locations. The respondents involved in this study were small scale producers with homogenous socio-economic characteristic, therefore, a sample size of 40 is considered as reasonable to achieve the objective of this study.

The data collection was carried out by three different enumerators in three consecutive days. The three enumerators were trained before the commencement of the data collection exercise. The data collection work started from Karfi and end up at Kwarindangana. Instrument used for the data collection in the study area include structural questionnaire in addition to personal observation.

The analytical tools used for data analysis include the following; Net farm Income (NFI) and Descriptive statistics such as frequency distribution tables, percentages and mean

Net Farm Income: Net farm Income (NFI) analysis was carried out by using the function mathematically expressed. The function was used to determine whether maize production in the study area is profitable or otherwise.

$$NFI = \text{Gross receipt (GR)} - \text{Total Cost of Production (TC)}$$

Where;

NFI = Net farm Income in naira per hectare

GR= TR = Total return from maize production in naira per hectare

TC = Total cost of production in naira per hectare

3. Results and discussion

3.1 Socio- Economic Characteristic of Maize Producers

3.1.1 Age of respondent

The result presented in table 1 shows that 62.5% of the farmers fall on the range of 35 - 44 years, 7.5% fall on the range of 45 - 54 years, and none of the respondent was found to be within the age of 15 - 24 years or more. The results shows 62.5% of farmers are young producers with age ranging from 25 to 34 years. This clearly showed that majority of the producer are young people who are within their productive age bracket. This result follows the assertion of Olaniyi et al. (2012) who had earlier reported that this category of youth is considered to be matured and more productive in economic enterprises.

3.1.2 Educational Background

The educational status of the interviewed farmers varied. The percent of the farmers that attended primary school was estimated at 40% while 20% and 5% of them have secondary and tertiary education qualifications respectively. Thirty five percent (35%) of the respondents have Qur'anic education. The result shows that farmers with primary education are the majority among those interviewed in the study area. The results also shows that majority of these farmers could read and understand written materials and as such extension teaching aids such as pamphlet, leaflets, posters and bulletins could be useful in communicating with them. This result does not correspond with the result of Oyetero et al. (2012) who reported that majority of maize farmers were illiterates and this implies that illiteracy can affect the interpretation of information provided by extension agents. This may be due to difference in location and gender.

3.1.3 Marital Status

Results of this study indicated that 17.5% of the farmers are single, while 82.5% are married. This result shows that majority of the maize farmers have family responsibilities which include provision of adequate quantity and quality food.

3.1.4 Household Size.

Result of this study shows that 77.5% of the respondent interviewed have 1 to 9 number of dependent whereas 22.5% of the respondent have 10-19 number of dependent. It is obvious that the producers are faced with the responsibilities of providing adequate and good quality food to their dependents. This result correspond with the findings of Olaniyi et al. (2012) who explained that large number of dependent has positive implication on family labour availability for farming enterprises.

3.1.5 Occupation

Majority (82.5%) of farmers' interview practiced farming as their major occupation, while 2.5% of the farmers are engaged in agro-processing, 15% are marketers. Therefore maize production is a major occupation among majority of the producers interviewed. This is an indication of the higher priority given to production of the crop by the respondents. The results of this study indicated that 12.5% of the respondents produce their maize mainly for home consumption, another 12.5% of the respondents produce maize mainly for income generation while 75% of them produce for the purpose of both income generation and consumption at home.

3.1.6 Membership of Farmers Association

Result of this study shows that 30% of the farmers interviewed are members of farmer's group/associations whereas majority (70%) of the respondent interviewed are not members of any farmer's group/association. This result revealed the absence of group efforts in production of the crop in the study area. The implication here is that only a few farmers would have access to credit facilities, since lending agencies prefer to give credit to cooperatives society or farmers association rather than individuals. Furthermore, groups play a significant role in boosting agriculture and fast to grab modern farming technologies. This result agree with the study of Onuk et, al. (2010) who earlier reported similar findings.

3.1.7 Farm Size Devoted for Maize Production

Result shown table 12 indicated that 45% of the farmers devoted farm size of the range 0.2 – 0.8ha, whereas 40% of the respondent devoted farm size of the range 1.0 - 1.6ha, while 10% of the respondents devote 1.8 - 2.4ha of land for maize production. The remaining 5% of the respondent devoted 2.6 -3.2ha of their farm size for maize production. Implication of this result is that majority of the farmer's interviewed are small scale farmer. This result agree with the study of Onuk et, al. (2010). This could be as a result of low accessibility to land and formal loans from credit institution.

3.1.8 Annual Income obtain from maize production

Result of this study shows that majority (72.55%) of the respondent interviewed obtained 10,000 – 59,000 naira from maize production annually, 20% of the respondent obtain 60,000 – 119,000 naira whereas the remaining 7.5% of the farmers interviewed obtain more than 119,000 naira.

Table 1. Socio- Economic Characteristic of Maize Producers

Variable	Frequency	Percentage
Age Group		
25 -34	25	62.5
35-44	12	30
45-54	3	7.5
Educational Background		
Primary	16	40
Secondary	8	20
University	2	5
Qur'anic	14	35
Marital Status		
Single	7	17.50
Married	33	82.50
Family Size		
1-9	31	77.5
10-19	9	22.5
Occupation		
Farming	33	82.50
Agro-processing	1	2.50
Marketing	6	15.0
Membership of Farmers Group/ Association		
Membership	12	30
Non-Memberships	28	70
Farm Size		
0.2 – 0.8	18	45
1 – 16	16	40
1.8 – 2.4	4	10
2.6 – 3.2	2	5
Annual Income		
10,000 – 59,000	29	72.5
60,000 – 119,000	8	20
119,000	3	7.5

3.1.9 Types of Labour Used

Majority (52.5%) farmers interviewed in this study use family labour, while 37.5% of the farmers used hired labour and 10% of the farmers interviewed use both family and hired labour but none of the respondent interviewed use communal labour. This study correspond with the work of Onuk et, al. (2010).

Table 2. Labour Used by Maize Producers

Types Of Labour Used	Frequency	Percentage
Family Labour	21	52.5
Hired Labour	15	37.5
Others	4	10

3.1.10 Source of Initial Capital

Majority (37.5%) of the respondent interviewed sourced their capital by personal saving, 27.5% sourced their capital for production by collecting loan from friends and relatives, while 15% of the producers combined capital from their personal savings and that obtain as loan from friends and relatives. The result of this study shows that personal saving is the major source of capital used in maize production. This could be attributed to poor establishment of or participation of farmers in farmers group/cooperatives in the study area.

Table 3. Source of Initial Capital for Maize Production

Source of Capital	Frequency	Percentage
Personal saving	23	57.5
Loan from friends and relatives	11	27.5
Others	6	15

3.1.11 Cost and Return in Maize Production

Maize production like other agricultural production entails incurring of costs and generation of return. The return from maize production in the study area is the revenue from sales of the maize produce. On the other hand costs components of maize production could be classified into costs of farm operations, variable inputs and depreciation value of farm tools.

Research findings depicted in table 4 shows the farm operations employed for maize production in the study area. These farm operations include land preparation, planting, fertilizers application, weeding, harvesting, threshing and spraying. The table shows the minimum, maximum and average cost in naira per hectare of the farm operations.

Table 4. Cost (Naira/Ha) of Farm Operations in Maize Production

Farm Operation	Cost in Naira Per Hectare			
	Minimum	Maximum	Average	Std. Deviation
Land preparation	1500.00	4500.00	2329.01	697.33
Planting	750.00	3750.00	2073.75	699.73
Fertilizer Application	500.00	3000.00	1840.98	697.29
Weeding	562.50	3750.00	1999.33	656.89
Harvesting	562.50	3750.00	1976.21	728.73
Threshing	187.50	5250.00	2124.24	1008.23
Spaying	500.00	1500.00	836.35	189.11

Table 5. Cost (Naira/Ha) of Variable Inputs in Maize Production

Farm Variable inputs	Cost in Naira Per Hectare			
	Minimum	Maximum	Average	Std. Deviation
Pesticide	571.43	131125	3922.281	2614.331
NPK	7000	30000	18347.54	6284.8
Urea	3750	26 250	12399.91	5556.112
Manure	333.33	7500	3114.865	1379.294
Seed	400	4000	1636.822	916.2356

Table 6. Farm tools and annual depreciation values in naira

Farm Tool	Number Owned			Total Purchased Value in Naira	Annual Depreciation in Naira
	Minimum	Maximum	Average		
Hoe	2	7	4	1256	467
Cutlass	2	7	4	1244	452
Indian Hoe	2	7	4	1435	523
Total				3935	1442

Table 7. Other Expenses in Maize Production

Other Expenses in Naira	Minimum	Maximum	Average
Bagging (sacks, thread, etc)	300	2700	746.38
Market Tariff	25	500	142.14
Haulage	300	2400	731.50
Transportation	450	3600	1116.00
Total	300	2700	2736.02
Rental Value of Land = 12500per Ha			

Table 8. Revenue from Sales of Maize

	Minimum	Maximum	Mean	Standard
Return per Hectare	56250.00	375000	178397.3	61274.68

Table 9. Major Constraints to Maize Production

Major Farmers Problems	Frequency	Percentage
Inadequate and Unaffordable Production Inputs Such As: Fertilizer, Improved Seed, Agro-Chemicals (Pesticides) and Poor Storage Facilities	33	82.5
Inadequate Capital and Unstable Market Price	5	12.5
No Constraints	2	5

Table 5 provides the minimum, maximum and average cost of variable inputs used by farmers in maize production in the study area.

Findings of this study presented in table 6 shows that hoe, cutlass and Indian hoes are the farm tools used by majority of maize farmers in the study area. The average number of the tools own by farmers, total purchased value of the tools, and the estimated annual depreciation on these tools are provided in table 6.

Apart from costs of farm operations, variable inputs and depreciation value, maize producers in the study area incurred other expenses related to bagging

of output and marketing cost. Table 7 provides details of these costs standardized per hectare. Also, the average rental value of farmland in naira per hectare in the study area was estimated at ₦ 12, 500.

The findings of this study indicated in table 8 shows that the average revenue from sales of maize produce by the farmers is ₦ 178397 per hectare of maize field cultivated. However, the revenue ranges from ₦ 56250.00 to ₦ 375000. This revenue was estimated by considering the quantities of maize sold (both green and grains) and the selling price.

3.1.12 Profitability of Maize Production

The profitability analysis was carried out by the use of the Net Farm Income (NFI) model:

$$\text{NFI} = \text{TR} - \text{TC}$$

Where:

NFI=Profit in Naira per hectare

TR=Total revenue in Naira per hectare

TC=Total cost in Naira per hectare

Total Cost (TC) = Total Farm operation expenses + Total Farm variables input expenses + Annual Depreciation value of durable asset + Rental value of land + other expenses

Where:

i. Average farm operational expenses = ₦ 26,361.53

ii. Average farm variable input expenses = ₦ 39,421.42

iii. Annual depreciation value of durable Assets=₦ 1442

iv. Other expenses =₦ 2736.02

v. Rental value of land=₦ 12,500

v. Return per hectare = ₦ 178,397.30

Therefore, average profit from maize production in the study area is:

$$\text{NFI} = 178397.30 - (26361.53 + 39421.42 + 1442 + 2736.02 + 12500) = ₦ 178397.30 - ₦ 82,461 = ₦ 95,936.30$$

The above result shows that the average total return per hectare is N178397.30, average total cost of production is ₦ 82,461 per hectare and average profit per hectare is ₦95, 936.30 in the study area. Implication of this is that maize production enterprise is profitable in the study area. This result correspond with the study of Oladejo et, al. (2012) who reported profitability of maize production in Oyo state of Nigeria. Also Mohammed et, al. (2013) reported the same in Ogori Magongo of Kogi state Nigeria.

3.1.13 Major Constraints of Maize production

Result of this study shows that 82.5% of the farmers interviewed were faced with production, storage and marketing problems which include inadequate provision of fertilizer, improved seed, pesticide, and so on at affordable prices in addition to poor storage facilities. Inadequate sources of capital to finance production and marketing activities as well as unstable market prices were recorded among 12.50% of the farmers interviewed. It is worth noting that only 5% of the farmers did not mention any constraint (Table 9). This result agree with part of result of Olaniyi et al. (2012) who stated that The commonest problems encountered by maize farmers were problems of inadequate credit facilities.

Majority (82.5%) of the farmers interviewed suggested assistant from government as a means to remedy the constraints listed above. While 17.5% of

the farmers mentioned that they required assistant from both Government and non-Governmental Organizations. The suggestions varied from seeking Government to provide adequate fertilizer, chemicals and improved seeds at affordable prices and provision of formal sources of capital for small scale producers. Also the involvement private sector in extension services was mentioned.

4. Conclusion and Recommendations

Maize production is generally profitable in the study area, though the return from maize is affected by low yield obtained largely due to poor group action in production and certain production and marketing constraints.

Based on the findings of this study, the following recommendations are given:

Government should facilitate the involvement of the private sector in input distribution to farmers, which will ensure that small scale farmers have access to them at the right time and place.

The services of the formal sources for agricultural loans (NACRDB, commercial banks) to small scale farmers need to be reorganize to improve farmer's assess to loan at lower rate of interest and at right time.

In order to sustain maize production in the study area, formation, development and continued strengthening of farmer associations is also recommended.

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