

Evaluation of Earning Performance of Maize Enterprise in the Dry Savannah Ecological Zone, Nigeria

Aina O. S.¹, Ajijola S.^{2,*}, S. K. Odetola³, J. M. Usman⁴, J. E. Daniel¹

¹Department of Agricultural Extension and Management, Federal College of Horticulture, Dadin-kowa, PMB 108, Gombe State, Nigeria ²South West Farming System Research and Extension Programme, Institute of Agricultural Research & Training, Ibadan, Nigeria ³Department of Agricultural Economic, University of Ibadan, Ibadan, Oyo State, Nigeria

⁴Department of Agricultural Extension and Management, Federal College of Forestry, Jericho, Ibadan, Nigeria

Email address

ajsik1967@yahoo.ca (Ajijola S.)

To cite this article

Aina O. S., Ajijola S., S. K. Odetola, J. M. Usman, J. E. Daniel. Evaluation of Earning Performance of Maize Enterprise in the Dry Savannah Ecological Zone, Nigeria. International Journal of Agriculture, Forestry and Fisheries. Vol. 3, No. 2, 2015, pp. 52-56.

Abstract

The widening gap between food demand and supply in the country which necessitated massive food imports continued to swell Nigeria's agricultural import bills in spite of all remedial measures to assuage the problem. This study examined the earning performance of maize enterprise in Gombe State, Nigeria. Multistage random sampling technique was used in selecting 160 respondents and data were collected using structured questionnaire. Descriptive statistics and budgeting techniques were used to analyze data collected. The results show that majority (78.75%) had above 10 years farming experience, married (83.75%) with formal education (92.5%) and (65%) farming 2 hectares and below. Total cost of production was №20,035, total revenue was №31,075 and net farm income was №11,040. Maize production in the study area was profitable with №1.55 derived from every naira invested. It was recommended that more extension services should be provided for maize farmers in the area in order to expose them to better technology and educate them on rational use of inputs in view of the profitable nature of maize enterprise in the area.

Keywords

Profitability, Maize, Enterprise, Savannah, Nigeria

1. Introduction

Agriculture is the mainstay of Nigeria's economy in terms of providing employment for over 50% of the economically active population, provision of food, contribution to Gross domestic production (GDP), provision of raw materials for agro-allied industries and generation of foreign exchange earnings. Although petroleum resources have taken over the agricultural sector's traditional function as the major source of foreign exchange earnings and highest contributor to GDP, the need for food production in the sector is still very much recognized and desired.

Despite the great potential of Nigeria in cereal production, the frequent occurrence of drought occasioned by erratic rainfall distribution and/or cessation of rain during the growing season is the greatest hindrance to increased production and this is more serious in the northern part of country where most of the cereals are produced (Olaoye, 1999). The awareness of the importance of cereals in the food economy of Nigeria is on the increase. In terms of agricultural land use under major crops, the cereals such as rice, guinea corn, millet and maize accounted for about 72% of the area devoted to food crops in 2005. In terms of area cultivated and volume of production, maize comes third, after guinea corn and millet (FAO, 2010). Maize is particularly important for its versatility, both in growth and uses as would be highlighted. It is the most important cereal crop grown in southwestern Nigeria where it attains special significance in view of the limited amount of protein-rich cereals in Southern diets. Maize (Zea mays L.), or corn, is the most important cereal crop in sub-Saharan Africa and, with rice and wheat, one of the three most important cereal crops in the world. Maize is high yielding, easy to process, readily digested, and cheaper than other cereals. It is also a versatile crop; growing across a range of agroecological zones. Every

part of the maize plant has economic value: the grain, leaves, stalk, tassel, and cob can all be used to produce a large variety of food and non-food products.

In industrialized countries, maize is largely used as livestock feed and as a raw material for industrial products, while in developing countries, it is mainly used for human consumption. In sub-Saharan Africa, maize is a staple food for an estimated 50% of the population. It is an important source of carbohydrate, protein, iron, vitamin B, and minerals. Africans consume maize as a starchy base in a wide variety of porridges, pastes, grits, and beer. Green maize (fresh on the cob) is eaten parched, baked, roasted or boiled; playing an important role in filling the hunger gap after the dry season. The cultivation, processing and marketing of maize provide employment opportunities for several farming and non-farming households. The employment opportunities in turn provide important sources of income and livelihood to growers, processors and the market women who engage in maize marketing activities.

The economic and agricultural transformation policies in Nigeria have further put maize in a prominent position in the country's food economy. The ban placed on the importation of rice and wheat flour further makes maize a very important raw material being sought after by several feed mills, flourmills and breweries in Nigeria because it is a close substitute to crops like wheat and rice. For instance 'maize rice' is now becoming a popular diet more also that its price is about half the price of rice. Maize-rice is produced by simple de-husking dry maize grains or by hulling and degerming it to get a product that resembles ground rice. Also government now compels manufacturers. Notably flour mills and breweries to source their material locally. The incremental food production is necessary to make food production surpass average population growth rate and guarantee national food security which cannot be attained without recourse to supplementary staple crops for the major food production areas of the country (Ayanwale and Alimi, 2004). The import substitution policy has thus encouraged using for instance, maize as a substitute for wheat flour while maize and sorghum are substitute for barley in the brewery industry (Osundare, 2008). The labour requirements for maize have been found to be lower than some root crops and the use of improved seeds varieties as well as the application of fertilizers and pesticides greatly enhances crop yields such that yield often double (Chianu, 2000).

1.1. Objectives of the Study

The overall objective of the study was to undertake an economic analysis of maize enterprise in Gombe State, Nigeria. The specific objectives were to:

- (1) Examine the socio-economic characteristics of maize farmers
- (2) Sources of maize seed
- (3) Determine the profitability of maize enterprise in the study area.

2. Methodology

2.1. Area of Study

The study was carried out in Gombe State in North eastern Nigeria. It is situated between longitude $10^{0}15^{1} - 10^{0}50^{1}$ N and latitude $11^{0}00^{1} - 11^{0}45^{1}$ of the equator. The study area falls in to the dry savannah ecological zone of Nigeria and experience dry season from November to April while wet season begins from late April to October. This is characterized by the North easterly wind blowing across the country from Sahara desert known as Harmattan wind. The temperature ranges from 13.6^{0} C - 31.9^{0} C in January and 9.0^{0} C - 28.5^{0} C in August. The annual rainfall in the Area is between 800mm and 900mm with rainfall duration from 4 – 5 months (GSADP, 2001).

The commonly practiced religion is Islamic, although some settlements had sizable number of Christians. The area is dominated by families which are polygamous in nature. The area is mainly an agrarian. The major crops grown include food crops like sorghum, maize, cowpea, rice, cassava, sweet potatoes and wide varieties of vegetables such as tomatoes, pepper, onion etc. Other major crops produced in the area include groundnuts and cotton.

The people are also engaged in other trades such as hunting, fishing, cattle and other livestock rearing. The ethnic groups found in the area include Terawa, Bolawa, Tangale, Waja, Jukun, Chamawa, Kwamawa, Tulawa, Shom, Gomawa,Hausa Fulani communities (GSADP, 2001).

2.2. Sampling Techniques

The target population for this study was the maize famers in Gombe State. Multistage random sampling technique was used in selecting the respondents. The state had 3 agricultural zones. Two zones were purposively selected, (zones 2 and 3) that were noted for large maize production. Two Local Government Areas (LGAs) were randomly selected from each zone. Two communities were randomly selected from each LGA to give a total of 8 communities. Twenty famers were randomly selected from each community making a total of 160 farmers.

2.3. Method of Data Collection

Data were collected using structured questionnaire.

2.4. Data Analysis

Descriptive statistics, which include frequency and percentage were used to discuss the socio-economic characteristics of maize farmers while budgeting technique, was used to determine the profitability of maize production.

2.5. Model Specification

The budgeting technique involved the use of Gross Margin (GM) and Net Farm Income (NFI) to determine the profitability of maize production. The gross margin of an enterprise is defined as the difference between total value of

production and the variable costs of production (Colman and Young, 1989). Variable costs (VC) refer to those costs whose level varies with the level of production. For this study the average farm income per hectare were determined. Farm budget can be expressed as follows:

NFI = TR - TC TC = TVC + TFCTherefore; NFI = TR - (TVC + TFC)Where; NFI = Net Farm Income TR = Total Revenue TVC = Total Variable Cost TC = Total Cost

3. Results and Discussion

Table 1, shows that modal age group for maize farmers as 50-59 years which accounted for 36.25% of the respondents. Farmers age from 50 years and above totaled 102 which was 63.75% Of the respondents. One of the general trends in Nigerian farming environment is its aging population. Reasons for this could be found in the rural-urban migration of the youth since late 1960s and 1970s, and the reluctance of young school leavers to work on the farm. Yet age is an important determinant of an individual's stamina to do manual labour especially farming. This is because the older a person becomes the weaker his strength to perform farming operations manually. The number of maize farmers that had formal education was high and accounted for 92.5%. This can be attributed to the fact that some of the maize growers were civil servants both serving and retired, while only 7.5% had no formal education. The level of education is one of the determinants of farmers awareness and interest in the use of new technologies. This will encourage the adoption of new technology. Majority (73.125%) of the farmers were male while 26.875% were female. According to established gender roles, women are responsible for feeding the family (Paola, 2003).

Results show that the modal class for respondents farming experience lied between 11 - 20 years. Farmers are more experienced with 78.75% had more than 10years of farming experience. A large proportion of the respondents (83.75%) were married while the remaining 5% and 11.25% were single and divorce/widow respectively. The household size of the respondents was large with majority (68.75%) having 6 members and above. Large household could be advantageous in Nigeria's agriculture where there is dependence on family. On the other hand, it could constitute a threat to commercialization of agricultural produce because of increased large household consumption. The farm sizes of the maize growers in the study area ranged between less than 1.0 to 5.0 hectares which accounted for 94.375%. Going by Olayide's (1990) definition of small farms, "as farms with less than 5.0 hectares", with 65% of maize growers farming 2 hectares and below. It could be said that maize production in the study area is in the hand of small scale producers. Farm size is a significant contributor to the quantity and types of technology required (Osundare, 1998).

Table 1. Socio-Economic Characteristics of Maize Farmers

Variables	Frequency	Percentage
Age (years)	• •	Ŭ
< 30	2	1.25
30 - 39	26	16.25
40 - 49	30	18.75
50 - 59	58	36.25
60 - 69	36	22.5
≥ 70	8	5
Level of Education		
No Formal Education	12	7.5
Primary Education	70	43.75
Secondary Education	64	40
Tertiary Education	14	8.75
Household Sizes		
1-5	50	31.25
6-10	86	53.75
11 – 15	20	12.5
16-20	4	2.5
Farming Experience (year)		
1-10	34	21.25
11 – 20	56	35
21 - 30	47	29.375
31 - 40	18	11.25
>40	5	3.125
Farm Size (ha)		
<1.00	12	7.5
1.00 - 2.00	92	57.5
2.01 - 3.00	25	15.625
3.01 - 4.00	16	10
4.01 - 5.00	6	3.75
>5.00	9	5.625
Marital status		
Single	8	5
Married	134	83.75
Divorced/Widow	18	11.25

Source: Field Survey, 2012

Table 2. Sources of Maize Seed

Sources	Frequency	Percentage
Friends	24	15
Market	36	22.5
ADP	22	13.75
Old Stock	78	48.75

Source: Field Survey, 2012



Computed from Field Survey, 2012

Figure 1. Bar Chart of Sources of Maize Seed

Figure 1 reveals that, old stock which accounted for (48.75%) was the most common source of seed available to farmers while only 13.75% obtained their seeds from Agriculture Development Program (ADP). This is an indication of low level of awareness due to inefficient extension services.

Table 3. Cost and Returns for Maize Enterprise

Variables	Amount (N/ha)	Percentage (%)
Seed Cost	670	3.34
Labour Cost	7,800	38.93
Herbicide	1,255	6.26
Fertilizer Cost	2,444	12.2
Mechanization	4,000	19.97
Marketing Cost	876	4.37
Transportation Cost	520	2.6
Other Operating Cost*	750	3.74
Total Variable Cost (TVC)	18,315	91.42
Total Fixed Cost (TFC)	1,720	8.58
Total Cost (TC)	20,035	100
Total Revenue (TR)	31,075	
Gross Margin (GM/ha)	12,760	
Net Farm Income (NFI)	11,040	
Rate of Returns on	1.55	

Source: Computed from Field Survey Data, 2012

*Cost of Maize Shelling and Storage.

Table 3 shows that the percentage contribution of labour to TVC was the highest (38.93%) followed by Mechanization (19.97%). This was an indication that maize production was labour intensive in the study area. Total Variable Cost was №18,315 and Total Revenue was №31,075 while the Gross Margin per hectare was №12,760 and Net Farm Income was №11,040. Maize enterprise was profitable in Gombe State with Rate of Returns on Investment of №1.55 for every naira invested.

4. Conclusion

The farmers operate on a small scale with 65% maize grower farming 2 hectares and below. Majority (92.5%) of the famers were literate, married (83.75%) with (53.75%) household size of 6 – 10. Majority (48.75%) source their maize seed from old stock while the least proportion (13.75%) of farmers' accesses their seeds from ADP. Maize production was profitable with Net Farm Income of \$11,040 and \$1.55was derived from every naira invested.

Recommendations

- (1) Re-establishment of farm settlement scheme; where literate and other interested farmers are allocated plots of farm land. This will serve as an avenue for farmers to have access to improved maize production technologies.
- (2) More facilities should be provided for the ADPs in the study area, especially in the area of seed multiplication and distribution so that improved farm inputs

particularly maize seeds can be made available at the right time.

- (3) More extension services should be provided for maize farmers in the area in order to expose them to better technology and educate them on rational use of inputs in view of the profitable nature of maize enterprise in the area.
- (4) Farm service centers where inputs such as farm machines, improved seeds, fertilizer, herbicides etc are stocked for sale at affordable prices should be established in accessible locations to compliment the efforts of the ADP in inputs distribution and where they are still existing they should be invigorated and funded.
- (5) Farmers should be encouraged to form cooperative societies so as to enjoy the advantage of credit facilities. This will enhance the capital base of the farmer.
- (6) Effort to promote expansion and commercial production of maize should be targeted at improved production technology which will give high economic returns.

References

- Ayanwale AB, Alimi T (2004): The Impact of the National Fadama Facility in Alleviating Rural Poverty and Enhancing Agricultural Development in South-Western Nigeria. *Journal* of Social Science, 9(3): 157-161.
- [2] Chianu, J.N. (2000): A Comparative Analysis of Labour Use in Fallow Management System in South-West, Nigeria. A PhD Thesis in the Department of Agricultural Economics, University of Ibadan, Ibadan, Nigeria.
- [3] Colman, D. and Young T. (1989): Principle of Agricultural Economics, Cambridge University Press, New York.
- [4] FAO (2010): Production year book, 2010 Rome.
- [5] GSADP (2001): Gombe State Agriculture Development Program Hand book.
- [6] IITA (2009). Guide to maize Production, IITA Annual Report.
- [7] Olaoye, O (1999): Developing drought tolerant varieties for thesavannah agro-ecologies of Nigeria in 25th year commemorativepublication of Genetic Society of Nigeria (1999) pp. 173-182.
- [8] Olayide, S.O. (1990): Characteristics, Problems and Significance of small farmers, in Nigerian small farmers; Problems and Prospects in Integrated Rural Development. Edited by S.O. Olayide, J.A. Emeka and V.E. Bello-Osagie, Card, University of Ibadan, Nigeria.
- [9] Osundare, F.O. (1998): An Analysis of Demand for Certified Maize and Rice Seeds in Ondo State, Nigeria. Unpublished M.Tech Thesis, Department of Agricultural Economics and Extension, Federal University of Technology, Akure.
- [10] Osundare, F.O. (2008): Comparative and Technical Efficiency and Profitability of Maize Enterprise in South-Western Nigeria. A PhD Thesis in the Department of Agricultural Economics and Extension, Federal University of Technology, Akure.

[11] Paola, I.I. (2003). The problem of access land in Diuo in Urban Agriculture Magazine No 11, pp 18 - 19