

Full Length Research Paper

Profitability of Cassava (*Manihotesculenta*) Production in Kebbi State

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Abstract: *This study was conducted to analyze profitability of cassava production in Kebbi State, Nigeria. Based on intensity of cassava production, One Local Government was selected from the Four Agricultural Development Zones of Kebbi State. Simple random sampling was used in selecting the villages and the farmers. Five villages were selected from each of the four Local Government Area. Inputs-output data was collected from fifty farmers each from one Local Government, making a sample size of 200 farmers. Data analysis was done using farm budgeting analysis. The result shows that the average cost of production was ₦63,900/ha and average gross-margin was ₦34,400/ha. This shows that cassava production is profitable in study area.*

Keywords: cassava, production, profitability.

INTRODUCTION

Cassava is the chief source of dietary food energy for the majority of the people living in the lowland tropics, and much of the sub-humid tropics of West and Central Africa (Awoyinka, 2009) according to Food and Agriculture Organization of the United Nations database (FAOSTAT, 2009). Nigeria is the largest producer of the cassava with 45,721,000, 43,410,000 and 44,582,000 million tons in 2006, 2007 and 2008 respectively, (USAID, 2013). The national concern for cassava production is because in Nigeria, cassava production is well-developed as an organized agricultural crop. It has well-established multiplication and processing techniques for food products and cattle feed. Therefore, its production and utilization must be given prime attention in food policy formulation (Lange, 2009). Even though farmers have not yet attained the desired

technical efficiency in cassava production as a result of weak access to external inputs such as fertilizers and herbicides, the wide scale adoption of high yielding varieties and the resulting increase in yield have shifted the problem of the cassava sector from supply (production) to demand issues, such as finding new uses and markets for cassava (Lange, 2009)

Nigeria produces more than 40 million metric tons of cassava, thus emerging as the world's largest produce (USAID, 2013). In spite of this volume the full yield potential has not been realized since smallholder production rarely exceeds 2 metric tons per hectare as against 25-40 MT per hectare recommended by experts (USAID, 2009). This yield per hectare is indicative of the low yield experienced in the North- west region of Nigeria Kebbi State inclusive. Kebbi State has been experiencing fall in cassava productivity and

situation is due to number of factors including small scale farming (on plots that are usually less than 1hectare), manual operation, little or no use of fertilizers and limited knowledge in the use of high yield root to name a few. Farming at this level makes it difficult to achieve efficiency and economies of scale. This call for investigation into the cassava production activities of farmers in Kebbi state so that suggestion for improvement can be made.

The broad objective of the study was to conduct an economic analysis of cassava production in Kebbi state Nigeria.

The specific objectives are to:

- i. describe the socio economic characteristics of the farmers in the state.
- ii. determine the costs and returns of cassava production in the state
- iii. examine the resource use efficiency in cassava production in the state
- iv. identify the constraints encounters in cassava production in the study area

METHODOLOGY

Kebbi State was created on 27th August, 1991, out of the then Sokoto State. It is located between latitudes 10°8'N and 13°15'N and longitudes 3°30'E and 6°02'E, the State is bounded by Sokoto State to the north and east, Niger State to the south, and Benin Republic to the west. It has a total of population of 3.8 million people (Lange, 2009). Kebbi State has a total land area of approximately ' 36,985sq km. Out of this, only an estimated 13, 209 sq. km is currently being used for cultivation, while 293 sq km is the built up area thus far, leaving a large proportion of land still underutilized. About 200,000 ha of fertile land is fadama land, mainly situated along the flood plains of the Rima and Niger valleys. The rest is upland, where season cultivation by mainly small holders dominates.

Kebbi State enjoys a Tropical Continental type of climate. Mean annual rainfall is about 800mm in the north and 1000mm in the south. Temperature is generally high with mean annual temperature of about 26°C in all locations. Relative humidity is generally low (40 per cent) for most of the year except during the wet season when it reaches an average of eighty percent.

Cassava is produced in almost all the twenty one Local Government of the State. Base on the

concentration of cassava production, one (1) Local Government was purposively selected from Agricultural development programme (ADP) zones of the state. The Local Government areas are; Augie, Maiyama, Shanga and Zuru. Simple random sampling was used in selecting both the villages and the farmers. Five villages were selected from each Local Government. The lists of the farmers were collected through the use of district heads that help in calling the cassava farmers. Fifty (50) interview schedules were administered in each local government making a sample size of two hundred (200) cassava farmers.

Both primary and secondary information were collected for the study. The primary data were collected using interview schedule. The data were collected by trained enumerators. The data were collected during 2012 and 2013 rainy seasons. Data was collected on quantity of fertilizer applied (kg), labor (man-days) used, and cuttings used (kg), agro-chemicals (insecticides and herbicides) (litres) and farm tool (no.). The secondary data was collected by consulting libraries, journals, text books and other relevant materials.

The information collected was analyzed using gross-margin analysis.

$$GM = GI - VC$$

Where GM = Gross margin.

GI = Gross income which is the total value of output harvested by the farmers during the research season that include the cassava tubers and the cassava stems.

$$GI = Y \times Py$$

Where Y = cassava output (kg)

Py = unit price

VC = Variable costs which include sum of all expenses on cuttings, fertilizer, labor, agro-chemicals, transportation cost and sacking bags etc.

RESULTS AND DISCUSSION

The socio economic variables described includes the age, gender, marital status, family size, educational level, main occupation, farming experience and farm size of the sampled cassava farmers.

Table1: Socio Economics Characteristics of Cassava Farmers

Characteristics	Frequency	Percentage
Age		
15-35	16	8
36-55	42	21
55 >>	142	71
Marital Status		
Married	199	99
Single	1	1
House hold Size		
1-10	81	40
10-20	118	59
20 >>	1	1
Educational Level		
Qur'an Only	200*	78.1
Primary	52	20.3
Secondary	2	0.8
Tertiary	2	0.8
Occupation		
Farming	205*	54.7
Civil Servant	20	5.3
Business	150	40
Farming Experience (years)		
1-10	14	7
11-20	23	12
21-30	48	24
30 >>	114	57
Land Acquisition		
Lease/Rent	87*	23.2
Inheritance	122	32.4
Purchase	90	23.9
Combination	77	20.4
Farm Size (hectare)		
<< hectare	14	7
1-2	82	41
2.5-5	44	22
5 >>	60	30
Total	200	100

Sources: Field Survey, 2013.

*multiple responses were allowed.

Age is an important factor in agricultural production because according to (Ebukiba, 2010), age composition among other things especially for family heads has implication on decision making

on the farm and also indicate the feature scope for the agricultural change. The results in Table 1 shows that 71% of the cassava farmers were

between the age of 56 and above, with an average age of 35 years.

The dominant of old aged may be attributed to the migration of young people to the urban areas in search of white collar jobs and to avoid drudgery associated with farming. This result is in agreement with that of (Alimi, 1992) and (Adamu, 1998) who reported the dominance of aged people in farming.

Information pertaining marital status (table 1), shows that 99% of the cassava farmers are married. The result is in line with the findings of (Martins, 2013). In his study on the socio-economic characteristics of cassava production in Nigeria reported that 65% of the cassava farmers are married people. This may be an added advantage to the farmers because it may helped in reducing the cost of production by using the family labor but if the farmer has the children and are at their working age.

Family is of paramount important, because it determines family labor under traditional small scale agriculture. As it was noted by (Adamu, 1998), that large family size might not give added advantage since the larger the family the larger the hectare required to feed them. However, this may be when the children are not active that is they cannot contribute to the labor, but if they do contribute to the labor, then is an added advantage.

The result in Table 1 shows that 59% of cassava farmers have family size ranging from 11-20 persons with an average family size in the study area of 15 persons. These results is an added advantage to farmers, because this may help in reducing the cost of labor, the farmer can also increase the size of his farm which would lead to producing more output of cassava which also lead to having more revenue. This result is in line with the findings of (Bello, 2001) who found that 66% of the cassava producers have a household size of between 7 –16 persons. Agricultural production activities are labor intensive and large household size can provide labor at no cost.

Farmers' education is very important as it involves the understanding of farmers on new practices and techniques. The result on Table 1 shows the level of education attained by the farmers. It shows that 78.1% of the cassava farmers had qur'anic education. This high level of qur'anic education can be attributed to the predominance of Muslims in the study area. However western education is also gaining some acceptance with 21.9% of the cassava farmers having western education at various levels. The result on Table 1

also reveals that farmers with qur'anic education only participate more in cassava production than people with the western education. This may not have any impact on cassava production in the study area, because these farmers may not have western education but still produce most of the cassava in the state.

The occupational distribution of the farmers in Table 1 shows that 54.7% of the farmers have farming as their major occupation. The 45.3% that diversify their occupation may find it easier when they encounter problems in their farming. The study also reveals that farming is their main activity but do participate in other businesses like rearing, marketing and fishing. This may be an added advantage to the farmers, because it provides some incomes to the farmers which may be used in the farming activities.

Farming experience is an important variable because it helps the farmers in avoiding past mistakes and increase production where necessary. The result on Table 1 shows that 93% of the farmers have more than 10 years of farming experience in the study area. This may be an added advantage to the farmer because this experience will help them in avoiding problems encountered in the previous farming which will lead to the reduction of cost of production and increase the output of cassava. This increase in output may lead to the increase in total revenue of the farmer.

Land is very important in agricultural production because it serve as factor of production, a store of value and wealth [12]. The mode of land acquisition in Table 1 shows that land ownership by inheritance still dominates all other forms of ownership. The study also agrees with (Ebukiba, 2010), in his study revealed that land acquisition through inheritance still remained a popular mode in Nigeria.

(FAO, 2004) argued that land tenure by inheritance leads to endless land fragmentation with much smaller and perhaps non-economic unit increase in inheritance lineage, which makes mechanization more or less impracticable. He added that acquisition through purchase gives more secure title to a land devoid of danger of fragmentation. This result has a negative impact on cassava production in Nigeria because the strategies were set in motion to achieve, on annual basis, 5 billion dollars (US \$5.0 billion) from export of cassava (PIC, 2003). Another aspect is that although the farmers in the study area are not educated, they would have had about the presidential initiative on cassava production which air marked 5 billion naira for the export of cassava annually, which would have made them

increase their land either by buying or leasing to increase the size of their farm land to produce cassava.

The size of the land in agricultural production is very important for it determines the quantity of output to be produced especially when coupled with good management. The result on Table 1 shows that more than 48% of cassava farmers have a farm size of less than 2 hectares. This result implies that farmers in the study area are small scale farmers which lead to low production of cassava. These results may be attributed to the increase in population which led to the sharing of this land among the family members and the problems associated with cassava production in the study area that include marketing aspect of the product, inadequate government participation, and inputs, finance and so on. This may lead to the reduction of cassava production in the study area which may hinder the target of having 150 million tons of cassava by the year 2020 (Iwene, 2002). This agreed with the findings of (Elias, 2013) which confirmed that majority of rural farmers have small and few farm plots.

Costs and Returns of Cassava Production

The cost components in cassava production are cuttings/bundles, fertilizer, labor, agro chemicals, sacking bags and farm tools. The results on Table 11 provide the summary of the costs and returns for producing cassava in one hectare of land. The average quantity of bundles planted per hectare

was 8 bundles at the cost of ₦500 per bundle (30 kg). About 2 bag of fertilizer (NPK) costing ₦5000 per bag was applied by few farmers to each hectare. An average of 34 man-days was employed to produce one hectare of cassava at a wage rate of ₦500 per day. An average of 2.6litres of chemicals costing of ₦1000 per liter was applied by some farmers in the study area. The total of 25 farm tools was used in the cassava production per hectare in the study area by the farmers. The total labor cost is ₦17,000. The cost of sacking bags was ₦5000 and transportation cost is ₦9000. An average of 3000kg was harvested per hectare at ₦2000 per 60kg of cassava bag. This yielded a market value of ₦100,000. Subtracting a total variable cost of ₦61,600 from the market value of ₦146,000, the gross margin equals ₦38,400. This value gives a benefit cost ratio of 1.6, implying that for every ₦1 invest in cassava production, ₦1.6 is realized. In a researches similar to these, (Toluwase and Raheem, 2013). And (Ebukiba, 2010). In their separate research on costs and returns analysis on cassava production in Ekiti State and economics analysis of cassava production in Akwalbom state found different results in their costs and returns computation with different benefit cost ratio. The first got ₦68,662 gross-margin with the benefit cost ratio of 2.19 and the later got a gross-margin of ₦141,950 with benefit-cost ratio of 1.6. These show that cassava production is profitable in the study areas.

Table 1: Average Costs of Cassava Production per Hectare

Item	Unit	Quantity	Price/unit	Value	Percentage of TVC
Variable inputs					
Fertilizer	Kg	100	5000	10,000	15
Cuttings	Kg	244	500	4,000	6
Labor	man-day	34	500	17,000	0.02
Agro chemical	litre	2.6	1000	2,600	4.1
Farm tools	no.	25	500	12,500	
Sacks		50	100	5000	
Transport				9000	14
Spraying				1,500	2.3
Total variable cost				61,600	
Gross revenue					
Yield	Kg	3000(50bags)	2000	100,000	
Gross-margin				34,400	
Benefit-cost ratio				1.6	

Sources: Field Survey, 2013.

*average weight of bag is 60kg

Problem of Cassava Production in the Study Area

The problems associated with cassava production in the study area include inputs, pest and diseases, financial problem, transportation, government participation, marketing, erosion, rainfall, weed, wind and storage.

From the Table 15, the result shows that the major problems of cassava production in the study area are scarcity and high cost of inputs and inadequate capital which recorded 25.1% and 25.3%. The inputs include cassava cuttings, fertilizer and chemicals, while the problem inadequate capital to buy the inputs required for the production. If the inadequate capital problem is solved, the farmers in the study area will increase the rate of production. Another problems attached to cassava production in the study area are pest and disease which has 11.3%.

These problems of pest and diseases are rodent, grass hopper, white fly, cassava leaf spot and bacterial blight which sometimes eat off the leaves and the stem and or making some spot on the leave or sometimes make it dried and fall. Other problems associated with the cassava production in the study area include poor transportation network which will the movement of both the inputs and outputs of cassava to the area where needed. Ineffective marketing system which play a vital role in deciding the next production. If the farmer get more of income from what he produced, it will boost his moral to produce more. Other problems are soil erosion and inadequate storage facilities. If these entire problems can be solved, the cassava production will take new dimension in the study area.

Table 15: Distribution of Farmers by the Problems faced in the Cassava Production

Problems	Frequency	Rank	Percentage
Inadequate capital	143	1	25.3
Scarcity/high cost of inputs	142	2	25.1
Pests and diseases incidence	138	3	24.4
Poor transportation facilities	72	4	12.7
Weed infestation	27	5	4.8
Ineffective marketing system	21	6	3.7
Soil erosion	18	7	3.2
Inadequate storage facilities	4	8	0.7
Total	*565		100

Sources: Field Survey, 2013.

*= Multiple responses were allowed

CONCLUSION

From the result of gross margin analysis, it can be concluded that Cassava farming is a profitable venture in the study area. It recorded a gross margin of ₦ 38,400 per ha. The benefit Cost ratio shows that for every one naira invested in the enterprise, a profit of ₦1.6 kobo will be realized.

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