Journal of Biology, Agriculture and Healthcare
ISSN 2224-3208 (Paper) ISSN 2225-093X (Online)
Vol.5, No.10, 2015

Economic Analysis of Cassava Production in Saki-West Local Government Area of Oyo State

[1] Daud S.A., [1] Amao O., [2] Ganiyu M.O., and [1] Adeniyi B.A
1Department of Agricultural Technology, School of Plant Sciences,Oyo State College of Agriculture and Technology, P.M.B 10, Igboora, Oyo State, Nigeria. 2Department of Agricultural Economics, Faculty of Agric Science, Ladoke Akintola University of Technology P.M.B.4000,Ogbomoso, Oyo State, Nigeria
Corresponding email: saidatdaud@gmail.com

ABSTRACT
This study focused on analyzing the economics of cassava production in Saki–West LGA of Oyo state, Nigeria. Simple random sampling technique was used to select 121 cassava farmers. Descriptive statistics and regression model were employed as analytical techniques. Descriptive statistics was used to describe the socio-economic characteristics of the respondents, to identify the constraints being faced by the cassava farmers and the type of cropping system they practiced. Budgetary and regression analyses were used to determine the profitability of cassava production in the study area. The result of the descriptive analysis of the respondents revealed that their mean age is 50.71 years, 84.3% of the farmers were male while the rest percentages (15.78%) were female, a large percentage (86%) of the cassava farmers were married and most (68.7%) of the respondents have family size ≤ 10. From the BCR analysis, the benefit cost ratio of 1.7 showed that cassava production was highly profitable in the study area. The result of the regression analysis showed that farm size and Family labour were statistically significant at 1% and had positive influence on farmer's revenue. This is because the larger the farm size, the longer the hours spent on farming activities by the household and the higher the revenue. However, the age, labour cost, cost of cassava cuttings and years of farming experience were not statistically significant to the farmer's revenue. Policies that will make more land available to farmers will increase the farmer's revenue and total output, thus reducing the plague of poverty and unemployment.
Keywords: Benefit Cost Ratio, Cassava, Constraints and Profitability

1.0 INTRODUCTION

Cassava as a crop originated from South America and it's extensively propagated as an annual crop in the tropical and subtropical regions for its edible starchy tuber as root. It is an annual crop that may often be left longer than 12 months and usually planted as a sole crop or in combination with other crops. Production is all year round activity and it does well in a warm, moist climate. Cassava is very tolerant and has the ability to grow on marginal land where other food crops cannot grow well, but for its highly yield and productivity moderate climatic condition and best soil properties like a light, sandy loam soil of medium fertility and good aerations or drainage are all crucial Akanbi *et.al.,* (2004)
According to IITA (2001), cassava provides daily source of energy in Africa. Foods are processed into wide variety of granules, pastes, flours etc. or consumed freshly boiled or raw. In most of the cassava growing countries in Africa the leaves are also consumed as a green vegetable, which provides and vitamin A and B.
According to FAO estimates, 172 million tons of cassava was produced worldwide in 2000. Africa accounted for 54%, Asia for 28% and Latin America and the Caribbean for 19% of the total world production. However in 2002, world production of cassava root was estimated to be 184 million tons, the majority of production is in Africa where 99.1 million tons were grown, 51.5 million tonnes were grown in Asia and 33.2 million tones in Latin and the Caribbean (FAO, 2003). According to the presidential initiative on cassava production (2005), Nigeria grows more cassava than any other country in the world. Its production is currently put at about 34 million metric tons in a year. Total area harvested of the crop in 2003 was 31 million hectares with an average yield of about 11 tons per hectare. The production of cassava is concentrated in the hands of numerous small holder farmers located mostly in the south and central religious of Nigeria.
In 2002, cassava suddenly gained national prominence following the pronouncement of a presidential initiative. The intent of the initiative was to use cassava as the engine of growth in Nigeria. To put Nigeria in the global context for competition the country needs to upgrade the use of cassava in to primary industries such as starch, ethanol, chips and flour in order to provide an industrial base for further diversification of its national economy. Cassava can be used to improve rural and urban income and development in Nigeria if investments in the downstream sector of the industries are made more effective.
Also in 2004, President Olusegun Obasanjo gave January deadline for compulsory use of at least 10 percent cassava flour in the production of bread in Nigeria (Josephine, 2004). He canvassed for a home grown agricultural mechanism technology to enable the country to meet the growing food demands of her mass population of the citizens. He also added that Nigeria could in deed earn $5 billion from cassava alone if investor takes interest in the production of chips, ethanol, garri, flour and other cassava products (Tunde, 2004). Cassava from which President Olusegun Obasanjo

targets a yearly income of 20 billion can overtake oil as the nation's top most revenue earner (Emeka, 2004). Hence, it is very important to Nigeria economy

1.1 Problem statement

There are some constraints to cassava production in Africa especially in Nigeria. Some of them are pest related. These include cassava green mite, cassava mealy bug and the variegated grass hopper. The disease related ones are cassava mosaic disease, cassava bacterial blight, cassava anthracnose and the root rot. According to IITA (2001), these together with poor cultural practices combine to cause yield losses that may be as high as 50% In Africa.

According to IITA (2001), improved cassava varieties that are disease and pest resistant, low cyanide content, drought resistant, early maturing and high yielding are very important in production. However, availability of these improved varieties of planting stock has not been consistent because up to 40% of the farmers do not have access to improved planting stock (IITA, 2001). Hence this study intends to identify the factors that affect the productivity and or the profitability of cassava.

In essence, the study attempts to provide answers to the following question:

1. What are the socio-economic characteristics of cassava farmers in the study area?
2. What are the constraints faced by the cassava farmers in their production activities in the study area?
3. What types of cropping systems are practiced by the cassava farmers in the study area?
4. What is the level of profitability of cassava farmers in the study area?

1.2 Objectives of the study

The general objective is to analyze the economics of cassava production in the study area.

The specific objectives are to:

1. describe the socio-economic characteristics of cassava farmers in the study area.
2. identify constraints faced by the cassava farmers in their production activities in the study area.
3. identify the type of cropping system practiced by the cassava farmer in the study area.
4. determine the profitability of cassava production in the study area.

1.3 Justification of the study

Cassava is very important to Nigeria economy. The cassava plant is the highest producer of food calories among crop plants (FAO, 2003). It is therefore a very important crop to food security to the extent that any factor that affects cassava production may affects food security.

The factors that affect cassava production in Nigeria are significant; principal among these factors is the availability of planting stock i.e. improved variety from the research stations especially IITA. Farmers have to continuously depend on planting stock from the research station, because over the years, improved varieties with farmers would have been contaminated with various pests and diseases organisms.

According to IITA (2001), incidence of pest and disease contribute up to 50% of yield loss to cassava production in Africa. This is significant enough to attract the attention of agricultural development stakeholder to see how these factors can be influenced to enhance increased crop yield to promote food security in Nigeria.

Hence, the relevance of this study cannot be over emphasized. It will be useful for the economic policy makers especially those formulating policies relating to agricultural product to make important decisions about cassava production. It will also be useful for any prospective investor in the cassava industry.

2.0 METHODOLOGY

2.1 Study Area

The Study was carried out in Saki- west Local Government Area of Oke-Ogun in Oyo State. It is located in the Western part of Nigeria. The vegetation within the study area can be described as typical Guinea Savannah vegetational Zone with favourable rainfall and adequate soils. It has an annual rainfall of about 900-100mm in the wet days with an average of 72.7% relative humidity and temperature range of 21.8^{o}c and 31.2^{o}c in 5 selected meteorological stations (OYSADEP Annual Report, 2001). It consists of about 224 villages (A Report of village listing survey in Oyo State, 2001) which include Idi-apa, Sannisala, Alabafe, Aba-Adenye, etc.

The predominant occupations of the people in the study area are farming and trading. Those who have other occupational means combine these with either farming or trading.

2.2 Sample Size and sampling Techniques

The population of the study comprises of cassava farmers in the study area. Simple random sampling technique was used to select 121 cassava farmers in the study area. Structured questionnaire and interview guide were used to elicit information from both literates and illiterates respondents.

2.3 Data Analysis

Descriptive statistics such as frequency counts, mean and percentages were used to analyze the socio-economic characteristics such as age, sex, marital status and family size

Inferential statistics such as budgetary analysis and Ordinary Least Square regression (OLS) were used to study production relationships of the study.

Model specification: - Two equation systems namely linear and exponential functions are fitted to the data obtained from the farmers.

The equation of best – fit was selected based on the value of R^2

2.3.1 Linear Model

$Y=a+b_1 X_1+ b_2X_2 + \ldots\ldots\ldots\ldots\ldots\ldots b_7X_7 + U$

2.3.2 Exponential Model

$Y = aX_1^{b1} + X_2^{b2} \ldots\ldots\ldots\ldots\ldots\ldots X_7^{b7} e^u$

$\text{Log } Y = a+b_1X_1 + b_2 X_2 + \ldots\ldots\ldots\ldots\ldots\ldots b_7X_7 + U$

Where Y = Cassava output in tons.

X_1 = Family labour in man dayss

X_2 = Farm size in hectares

X_3 = Capital (the worth of various input in Naira) e.g. Cassava stem, Pesticides, herbicides, fertilizers etc**.**

X_4 = Age of farmer in years.

X_5 = Years of farming experience in years.

X_6 = Years of formal education.

X_7 = Hired labour (₦) u=error term

3.0 RESULT AND DISCUSSION

3.1 Result of socioeconomic characteristics

Analysis on table 1 shows the age, sex, marital status, family size, educational level, farm size, and years of farming experience. The age distribution revealed that the mean age is 50.71 years and it implies that more older people are engaged in cassava production than young people in the study area. It also reveals that 84.3% of the farmers were male while the rest percentages (15.78%) are female. It means that the male are involved in cassava farming than their female counterpart. A large percentage (86%) of the cassava farmers were married, this may reduce the cost of hired labour, if farmers engage their families in the farming activities. Most (68.7%) of the respondents have family size < 10. It implies that farmers with large family size spend less on labour.

The result of educational status shows that 95.9% of the respondents were educated and only 4.1 of them were not and this have positive influence on their productivity. On the average the farmer had mean of 4.6ha of land for cassava production. It implies that most of the cassava farmers are smallholder farmers which follow *apriori* expectation that the production of cassava is concentrated in the hands of numerous small holder farmers located in the South and Central regions of Nigeria. The mean farming experience of cassava farmers is 24.4 years. This shows that most of the farmers had been into production for quite some time and would had positive influence on their production.

3.2 RESULT OF CONSTRAINTS FACED BY CASSAVA FARMERS

The cassava farmers in the study area are faced with certain constraints in the course of cassava production: constraints of availability of improved varieties, constraints caused by pest infestation, constraints caused by diseases infestation on the farm, transportation and marketing problems

From table 2 below, all of the cassava farmers had constraints of availability of improved varieties. Also all of them had problem of pest infestation on their farm though at different level. The high percentage in the numbers of respondents having problems of diseases infestation .This is perhaps as a result of high cost of chemical required to plead the diseases. Most of the respondents (88.4%) had problem of transportation. This may be caused by poor road network between the farm and the market and persistence fuel scarcity. Also, most of the cassava farmers (98.3%) faced problem of marketing their farm produce. This is a result of inability of the local market to regulates fluctuations in price and the poor information about supply and demand as characterized by the imperfect market

3.3 Cropping system of Cassava farmers

The type of cropping system adopted by the cassava farmers was examined and presented in table 3; this includes sole cropping and multiple cropping. The table reveals that most (93.4%) of the cassava farmers in the study area adopted multiple cropping systems, while the remaining 6.6% adopted sole cropping system. And all of them had contact with extension agents and this help them to improve their productivity

3.4 RESULT OF CASSAVA PRODUCTION PROFITABILITY ANALYSIS

Net Farm Income (NFI) = Gross Margin (GM) – Total Fixed Cost (TFC)

NFI = GM – TFC

GM = Total Revenue (TR) – Total Variable Cost (TVC)

TR =302,847.29
TVC = 140,360.22
GM = 302,847.29 – 140,360.22
= 162487.07
TFC = 33,784.33
Total Cost (TC) = TVC + TFC
TC = 33,784.33 + 140,360.29
TC = 174,144.55
NFI = 162,487.07 – 33,784.33
= 128,702.74
BCR = =
BCR = 1.7

Since BCR is greater than one, cassava production is considered profitable in the study area. The business is profitable with about 70% profit on investment. The study revealed that for every ₦1.00 invested on cassava production will yield a return of ₦1.70, a gain of ₦0.70.

3.4 .1 Regression analysis

Table 4 showed the relationship between the revenue and the following selected variables; age, farm size, farming experience, family labour, hired labor, cost of cassava cuttings and cost of agrochemicals using the OLS regression analysis. The Cobb-Douglas (the exponential form) function was adopted based on the value of the adjusted R2.

Adjusted R^2 value of 0.712 implies that 71.2% variability in the cassava farmer's revenue was accounted for by the independent variables, while the remaining 28.8% of the variability in their revenue was accounted for by the error term and the excluded variables.

It can be deduced from the table that the coefficients of farm size and family labour were positively correlated to the farmer's revenue at 1% significant level. This implies that for every increment in farm size by 1 hectare and family labour by 1 unit, the farmer's revenue increases by 0.011 units and 0.0018 respectively. It is economical to increase family labour considering social and economic implications.

The age of the farmer, farming experience, hired labour, cost of cassava cuttings and cost of land acquisition were not statistically significant to the farmer's revenue. Thus, these could be as a result of inadequate information (extension service) on the adoption of modern technology by the respondents and the emphasis they placed on the use of family labour rather than hired labour.

4.1 CONCLUSION AND RECOMMENDATION

4.2 Conclusion

Following conclusions were made based on the findings:

Cassava production in the study is done on a medium scale

Most of the cassava, farmers had constraints of availability of improved variety, disease, infection, pest infestation, transportation and marketing problems though at different levels

Most of the cassava farmers operate multiple cropping systems.

All of them had contact with extension officer.

Cassava production is profitable in the study area

4.2 Recommendation

The following recommendations were made based on the findings and conclusions of this study

1. It is recommended that the level of contact with the extension agents should be improved
2. Improved cassava stem variety stocks should be made available to the farmers at a subsidized price
3. It is economical to increase family labour, considering social and economic implications

5.0 References

Adegeye A.J and Dittoh J.S 1985.Essentials of Agricultural Economics Centre for Agriculture and Development, University of Ibadan.

Akanbi, W.B, Olabode, O.S, Olaniyi,J.O and Ojo, A.O (2004): Introduction to Tropical Crops. Published by Raflink Computer Eleyele, Ibadan

Emeka, A.2004. Cassava can displace oil as income earner, Says minister GUIDIAN, December, 17 2004.Abuja,Nigeria.

FAO (2003): Cassava market assessment URL Fao.org/es/esc/en20953/21029/highlight_28829 en.htm. Accessed on 10 December, 2005

IITA (2001): Research projects and Annual report.
Josephine, L (2004): Obasanjo gives January deadline for cassava bread, THIS DAY, November, 26, 2004 Abuja, Nigeria.
OYSADEP (2001): A report of village listing survey in Oyo state P_P 236-24)
OYSADEP (2001): Annual progress Report.P_P 13,No 12

Table 1: Socioeconomic characteristics of the respondents

Variable	Frequency	Percentage
Age range		
Less than or equal to 30	4	3.31
31-40	18	14.88
41.50	34	28.1
51-60	46	38.01
Above 60	19	15.7
Total	**121**	**100**
Sex		
Male	102	84.3
Female	19	15.7
Total	**121**	**100.00**
Marital status		
Single	7	5.8
Marriage	104	86.0
Divorced	6	5.0
Widowed	4	3.4
Total	**121**	**100.0**
Family size		
Less than or equal to 10	83	68.7
11-20	34	28.2
Above 20	4	3.3
Total	**121**	**100.0**
Educational level		
Non-literate	5	4.1
Islamic education	16	13.2
Primary education	52	43.0
Modern school	14	11.6
Secondary school	19	15.7
Tertiary institution	15	12.4
Total	**121**	**100.0**
Farm size range		
Less than or equal to 5	89	73.6
6-10	26	21.49
11-15	6	5.0
Total	**121**	**100.0**
Years of farming experience		
Less than or equal to 10	15	12.4
11-20	33	27.3
21-30	41	33.9
31-40	25	20.6
41-50	4	3.4
Above 50	3	2.4
Total	**121**	**100**

Source: Authors' computation from survey data

Table 2: Distribution of respondents according to constraints faced during cassava Production

Improved variety constraints	Frequency	Percentage
No response	0	0
Never	0	0
Rarely	4	3.3
Sometimes	49	60.5
All the time	68	56.2
Total	**121**	**100.0**
Disease constraint		
No response	0	0
Never	0	0
Rarely	19	15.7
Sometimes	63	52.1
All the time	39	32.2
Total	**121**	**100.0**
Pest constraints		
No response	1	0.8
Never	0	0
Rarely	23	19.0
Sometimes	56	46.3
All the time	41	33.9
Total	**121**	**100.0**
Transportation constraint		
No response	2	1.7
Never	0	0
Rarely	12	9.9
Sometimes	82	67.8
Total	**121**	**100.0**
Marketing constraint		
No response	2	1.7
Never	0	0
Rarely	30	24.8
Sometimes	71	58.7
All the time	18	14.9
Total	**121**	**100.0**

Source: Authors' computation from survey data

Table 3: Distribution of respondents according to their cropping system

Cropping system	Frequency	Percentage
Sole cropping	8	6.6
Multiple cropping	113	93.4
Total	**121**	**100.0**

Source: Authors' computation from survey data

Table 4: Regression Analysis

Variable	Coefficient	t-ratio
Constant	-	-
Age	0.088	0.842
Farm size	0.011	10.926***
Farming Experience	-0.058	-0.599
Hired Labour	-0.094	-1.348
Family Labour	0.0018	2.298***
Cost of cassava cuttings	-0.027	-0.632
Cost of Agrochemicals	0.016	0.713

*** implies significant at 1%

Source: Authors' computation from survey data

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:
http://www.iiste.org

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: http://www.iiste.org/journals/ All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: http://www.iiste.org/book/

Academic conference: http://www.iiste.org/conference/upcoming-conferences-call-for-paper/

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digtial Library , NewJour, Google Scholar