



Full Length Article

Analysis of Costs and Returns of Landowners and Tenants in Cassava-based Farms in Akwa Ibom State, Nigeria

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Abstract

The study investigated the costs and returns of landowners and tenants in cassava based farms in Akwa Ibom State, Nigeria. Multistage and purposive sampling techniques were employed in selecting 90 cassava farmers from each of the two categories of farmers, making a total of 180 respondents. Descriptive statistics were employed in the analysis of socio-economic characteristics of the sampled farmers. The result revealed that cassava production in the study area was dominated by females in both farms constituting 77.22% of the total sampled farmers with the males forming only 27.78% of them. This is an indication that cassava production in the study area is mostly a female oriented activity. However, a higher profit of ₦ 526,140 was realized in the tenant farms as compared to ₦ 227,568 made in the landowner farms. © 2013 Friends Science Publishers

Keywords: Costs and Returns; Landowners; Tenants; Cassava-based farms; Nigeria

Introduction

Cassava is a very important crop to Nigeria as its production figures ranks the country as the leading producer of cassava in the world. In 2004, the estimated cassava output from Nigeria was approximately 34 million tonnes (FAO, 2000). This feat is sequel to the on-going cassava multiplication programme in the country (RTEP, 2002). In 2002, cassava suddenly gained prominence in Nigeria following the pronouncement or a presidential initiative on the crop. The initiative was aimed at using cassava production as the engine of growth in Nigeria. In recent times, government has encouraged the use of the crop to produce a wide range of industrial products such as ethanol, glue, glucose syrup, and bread.

In Nigeria, cassava is generally believed to be cultivated by small scaled farmers with low resources (Ezebiro *et al.*, 2008). Akwa Ibom, Cross River, Rivers and Delta dominate state cassava production in the South-South of Nigeria with an estimated production figure of 6,268,114 tonnes in 2000; 6,533,944 tonnes in 2001 and 6,321,674 tonnes in 2002 (Echebiri and Edaba, 2008).

Cassava is able to grow and give reasonable yield in low fertile soils. It is a good staple whose cultivation if encourage can provide the nationality required food security minimum of 2400 calories per person per a day (FAO, 2000). The crop has continually played vital roles which include income generation for farmers, low cost food source for both rural and urban dwellers as well as household food security (Nweke, 1996).

This study thus evaluates the costs and returns in

cassava production between the landowners and tenant farmers in Akwa Ibom State, Nigeria. It also examines the socio-economic characteristics of the sample respondents in cassava – based farms. This study has become necessary since cassava farms being intercropped with other crops (cassava – based farms) are the most popular arable cropping system in the study area and therefore need this comparative analysis for policy implications.

Materials and Methods

The Study Area and Sample

The study was conducted in Akwa Ibom State, Nigeria. It is located in the South-South geopolitical and South-East ecological Zone of Nigeria. Akwa Ibom State is one of the coastal States in the Niger Delta Region and shares a common boundary with Cross River State in the East, Rivers State in the West, Abia State in the North and Atlantic Ocean in the South. It lies between latitude 4° 30¹ and 5° 33¹ North and longitude 7° 30¹ and 8° 25¹ East of equator. The State has a population of about 3.92 million people (NPC, 2006).

The State's vegetation consists of mangrove forest in the South coastal area and thick rain forest inland. Seventy per cent of the soil is part of the tertiary coastal plain (Epebinu and Udo, 1994). Akwa Ibom State is blessed with abundant natural and human resources including crude oil, natural gas, mineral resources and a diversity of agricultural crops such as oil palm, cocoa, rubber, plantain, cassava, yam and beans and people with wealth of knowledge.

The study used mainly primary data collected from the sampled cassava farmers using a well structured questionnaire. The State is divided into six agricultural zones by the Akwa Ibom State Agricultural Development Project (AKADEP) based on the geo-ecological and cultural characteristics of the State. Additionally, cassava is virtually grown in all the ADP zones in the State. Multi-stage and purposive sampling techniques were employed in the study. First and second stage witness the purposive selection of six (6) Local Government Areas, each from the six ADP zones and then the selection of one Village each from the six LGAs based on the introduction of cassava competitiveness programmes in these areas. The third and the last stage was the selection of the sample cassava farmers from each of the chosen villages using simple random sampling technique.

The sampled farmers included fifteen (15) landowners and fifteen (15) tenant cassava farmers from each of the six Villages, thus making a total of 180 respondents, comprising 90 landowners and 90 tenant farmers.

Analytical Technique

Descriptive statistics and gross margin methods were used in the analysis. Descriptive statistics involving measures of central tendency such as frequency, percentage and average were used to analyze socio-economic characteristics of the cassava producers and problems associated with cassava production. The gross/profit margin approach was used to determine the profitability of the cassava production using the formula.

$$GM = \sum p_i q_i - \sum r_i x_i \dots\dots\dots (i)$$

Where, GM = gross margin in naira (US\$ 1=₦ 160); p_i = unit price of cassava output in naira; q_i = quantity of cassava output in Kg; r_i = unit cost of variable input used in production in naira; x_i = quantity of variable input used in production (Kg); $\sum p_i q_i$ = value of total revenue in naira and $\sum r_i x_i$ = value of total variable cost of production in naira.

Profit margin can thus be calculated as:

$$PM = GM - \sum K \dots\dots\dots (ii)$$

Where, PM = Profit Margin in naira; GM is as earlier defined and $\sum K$ = Total fixed cost of production in naira.

Results and Discussion

Socio-economic Characteristics of the Cassava Producers

The socio-economic characteristics of the cassava producers include gender, age, marital status, education, household size, primary occupation, extension contacts, farm size, source of finance, farming experience, source of labour and the constraints. Results are presented in Table 1.

In Table 1, results show that in both the landowners

and tenants farms, females constitute 77.22% of the total sampled farmers with the males forming only 27.78% of them. This is an indication that females are mostly engaged in cassava production than their male counterparts. This assertion is in line with that of Ebong and Ebong (2006) when they posit that women constitute the bulk of small holder farmers for sustainable agricultural production in Akwa Ibom State.

Majority of the respondents in the study area were found to be within the age bracket of 31-40 years in both the landowners' and tenants' constituting 45.55%, while only 1.67% of the respondents in the landowners' were less than 21 years. However, only 8.33% of the respondents were older than 50 years in both farms. This finding justifies past studies (Rothman *et al.*, 2002; Ebukiba, 2010) who opined that the age bracket of cassava producers is the economically active age and as such will responds to any interventions aimed at improving their productive capacities. This analysis also shows that 70.56% of the respondents in both farms are married, 17.78% of them singles, while only 2.22% of the respondents are divorced. The high percentage of married respondents implies availability of more family labour for the cassava production.

Education level of the respondents reveals that about 94% of the total respondents have at least the basic primary education from both landowners and tenants farms while the household size tilted to 1- 4 people constituting 93.33% in the study area. This household size is in line with the standard recommendation by World Health Organization (WHO), while the farmers literacy levels enhances their production efficiency as confirmed by previous studies (Rothman *et al.*, 2002; Hassan *et al.*, 2005; Ebong *et al.*, 2011).

The primary occupation of the respondents in both landowners' and tenants' households is farming (48.89% and 37.78% respectively). This is followed by trading with 25.56% of landowners and 35.56% of tenant farmers. Poor extension contacts have been noticed among the cassava producers in both farms with 58.89% of the total respondents having no extension contacts, while 17.78% of them have extension visit once a year. About 80% of the cassava farmers are operating from farm size plots of not greater than 3.0 hectares, due to financial constraints to acquire more farm plots.

Majority of the farmers (64.44%) in the study area have more than 10 years of farming experience with family labour (36.67%) constituting the major source of labour supply in both landowner and tenant farms.

Inadequate production credit constitutes a major constraint in both landowner and tenant farms as reported by 36.07% of the total respondents. This is followed by high cost of land (18.18%) and poor extension contacts (13.89%), while high cost of improved cassava cuttings formed the least of the production constraints with 4.55%.

Table 1: Socio- economic characteristics of the cassava Producers

| Characteristics | Landowners | | Tenants | | Total | |
|-----------------------|------------|-------|---------|-------|-------|-------|
| | Freq. | % | Freq. | % | Freq. | % |
| Gender | | | | | | |
| Male | 20 | 22.22 | 30 | 33.33 | 50 | 27.78 |
| Female | 70 | 77.78 | 60 | 66.67 | 130 | 72.22 |
| | 90 | 100 | 90 | 100 | 180 | 100 |
| Age of Respondents | | | | | | |
| Below 21 | 3 | 3.33 | - | - | 3 | 1.67 |
| 21 – 30 | 20 | 22.22 | 17 | 18.89 | 37 | 20.56 |
| 31 – 40 | 45 | 50.00 | 37 | 41.11 | 82 | 45.55 |
| 41 – 50 | 16 | 17.78 | 27 | 30.00 | 43 | 23.89 |
| Above 50 | 6 | 6.67 | 9 | 10.00 | 15 | 8.33 |
| | 90 | 90 | 90 | 100 | 180 | 100 |
| Marital Status | | | | | | |
| Single | 12 | 13.33 | 20 | 22.22 | 32 | 17.78 |
| Married | 68 | 75.56 | 59 | 65.56 | 127 | 70.56 |
| Divorced | 2 | 2.22 | 2 | 2.22 | 4 | 2.22 |
| Widowed | 8 | 8.89 | 9 | 10.00 | 17 | 9.44 |
| | 90 | 100 | 90 | 100 | 180 | 100 |
| Educational Status | | | | | | |
| No formal education | 5 | 5.56 | 6 | 6.67 | 11 | 6.11 |
| Primary education | 10 | 11.11 | 24 | 26.67 | 34 | 18.89 |
| Secondary education | 55 | 61.11 | 42 | 46.67 | 97 | 53.89 |
| Tertiary education | 20 | 22.22 | 18 | 20.00 | 38 | 21.11 |
| | 90 | 100 | 90 | 100 | 180 | 100 |
| Household Size | | | | | | |
| 1 – 4 | 38 | 42.22 | 46 | 52.11 | 84 | 46.67 |
| 5 – 8 | 29 | 32.22 | 25 | 27.78 | 54 | 30.00 |
| 9 – 12 | 14 | 15.56 | 13 | 14.44 | 27 | 15.00 |
| >12 | 9 | 10.00 | 6 | 6.67 | 15 | 8.33 |
| | 90 | 100 | 90 | 100 | 180 | 100 |
| Primary occupation | | | | | | |
| Farming | 44 | 48.89 | 34 | 37.78 | 78 | 43.33 |
| Trading | 23 | 25.56 | 32 | 35.56 | 55 | 30.56 |
| Civil/Public service | 18 | 20.00 | 22 | 24.44 | 40 | 22.22 |
| Craftsmanship | 5 | 5.56 | 2 | 2.22 | 7 | 3.89 |
| | 90 | 100 | 90 | 100 | 180 | 100 |
| Extension Contacts | | | | | | |
| No extension contact | 51 | 56.67 | 55 | 61.11 | 106 | 58.89 |
| Forth nightly | 10 | 11.11 | 8 | 8.89 | 18 | 10.00 |
| Monthly | 1 | 1.11 | 1 | 1.11 | 2 | 1.11 |
| Bi-monthly | 5 | 5.56 | 4 | 4.44 | 9 | 5.00 |
| Quarterly | 5 | 5.56 | 8 | 8.89 | 13 | 7.22 |
| Once a year | 18 | 20.00 | 14 | 15.56 | 32 | 17.78 |
| | 90 | 100 | 90 | 100 | 180 | 100 |
| Farm Size(Ha) | | | | | | |
| Less than 1 | 17 | 18.89 | 20 | 22.22 | 37 | 20.56 |
| 1 – 3 | 56 | 62.22 | 50 | 55.56 | 106 | 58.89 |
| 4 – 6 | 12 | 13.33 | 13 | 14.44 | 25 | 13.89 |
| Greater than 6 | 5 | 5.56 | 7 | 7.78 | 12 | 6.67 |
| | 90 | 100 | 90 | 100 | 180 | 100 |
| Source of Finance | | | | | | |
| Personal Savings | 60 | 66.67 | 41 | 45.05 | 101 | 56.66 |
| Bank Loans | 2 | 2.22 | 11 | 12.22 | 13 | 7.77 |
| Cooperative Societies | 22 | 24.44 | 30 | 33.33 | 52 | 28.89 |
| Private Lenders | 2 | 2.22 | 4 | 4.45 | 6 | 3.33 |
| Relations/Friends | 4 | 4.45 | 4 | 4.45 | 8 | 4.45 |
| | 90 | 100 | 90 | 100 | 180 | 100 |
| Years of Experience | | | | | | |
| Less than 5 | 12 | 13.33 | 14 | 15.56 | 26 | 14.45 |
| 5 – 10 | 18 | 20.00 | 20 | 22.22 | 38 | 21.11 |
| 11 – 15 | 23 | 25.56 | 30 | 33.33 | 53 | 29.44 |
| 16 – 20 | 27 | 30.00 | 18 | 20.00 | 45 | 25.00 |
| Greater than 20 | 10 | 11.11 | 8 | 8.89 | 18 | 10.00 |
| | 90 | 100 | 90 | 100 | 180 | 100 |

Table 1: Continued

Table 1: Continued

| Characteristics | Landowners | | Tenants | | Total | |
|--------------------------------|------------|-------|---------|-------|-------|-------|
| | Freq. | % | Freq. | % | Freq. | % |
| Source of Labour | | | | | | |
| Family | 35 | 38.89 | 31 | 34.44 | 66 | 36.67 |
| Hired | 12 | 13.33 | 15 | 16.67 | 27 | 15.00 |
| Exchange | 5 | 5.56 | 3 | 3.33 | 8 | 4.44 |
| Family/Hired | 38 | 42.22 | 41 | 45.56 | 79 | 43.89 |
| | 90 | 100 | 90 | 100 | 180 | 100 |
| Production Constraints | | | | | | |
| Land Fragmentation | 20 | 10.99 | 12 | 5.61 | 32 | 8.08 |
| High cost of land | 28 | 15.38 | 44 | 20.56 | 72 | 18.18 |
| High cost of labour | 10 | 5.49 | 13 | 6.07 | 23 | 5.81 |
| Inadequate production credit | 63 | 34.62 | 60 | 28.04 | 123 | 31.06 |
| Scarcity of Fertilizer | 12 | 6.59 | 20 | 9.35 | 32 | 8.08 |
| Poor extension Contacts | 25 | 13.74 | 30 | 14.02 | 55 | 13.89 |
| High cost of improved cuttings | 8 | 4.40 | 10 | 4.67 | 18 | 4.55 |
| Poor infrastructures | 16 | 8.79 | 25 | 11.68 | 41 | 10.35 |
| | 182* | 100 | 214* | 100 | 396* | 100 |

Source: Field Survey data, 2011

*Multiple responses by the respondents

Table 2: Distribution of respondents by variable costs and returns

| Cost Items | No. of Respondents | Landowners | | | Tenants | | |
|--------------------|--------------------|------------|----------|----------|---------|----------|----------|
| | | TVC ₦ | AVC ₦ | % of TVC | TVC ₦ | AVC ₦ | % of TVC |
| Rent on land | 90 | - | - | - | 433800 | 4820 | 34.80 |
| Cassava cuttings | 90 | 64100 | 712.22 | 6.72 | 85800 | 953.33 | 6.88 |
| Cost of Fertilizer | 90 | 90100 | 1001.11 | 9.45 | 80700 | 896.67 | 6.47 |
| Cost of chemicals | 90 | 46000 | 511.11 | 4.82 | 13600 | 151.11 | 1.09 |
| Transportations | 90 | 43500 | 483.33 | 4.56 | 50650 | 562.78 | 4.06 |
| Labour cost | 90 | 709950 | 7888.33 | 74.45 | 582100 | 6467.78 | 46.70 |
| Total | | 953650 | 10595.99 | 100 | 1246650 | 13851.67 | 100 |
| Gross Returns (₦) | | 2053220 | | | 2547700 | | |
| Gross Margin (₦) | | 1099570 | | | 1301050 | | |

Source: Computed from field data, 2011

The result of this study is in line with that conducted by Ogbe and Olojede (2003) on economic performance of improve cassava variety and local best that inadequate production credit, uneconomic farm size arising from land fragmentation and poor extension-farmer contacts are among the factors militating against profitable cassava production.

Costs and Returns in Cassava Production

Table 2 presents the distribution of the respondents based on the variable costs and returns to the cassava producers. The result reveals that labour cost constitutes the most important variable cost component in both landowner and tenant farms forming 74.45% and 46.70%, respectively. These results collaborate with the findings of Echebiri and Edaba (2008) that labour constitutes the most important factor in agricultural production in Nigeria. The total variable cost incurred on tenants' farms at ₦ 1,246,650 is greater than ₦ 953,650 incurred on landowners' farms due rent on land by tenant farmers which constitutes 43.80% of their total variable cost in the cassava production. The gross returns and gross margin in the landowners' farms was found to be ₦ 2,053,220 and ₦ 1,099,570 respectively, while in the tenants' farms, the gross returns and gross margin were also found to be ₦ 2,547,700 and ₦ 1,301,050, respectively.

The common fixed cost items used in the cassava production in the study area includes matchet, weeding hoe, spade, wheel barrow, basin, files and axe. Table 3 reveals the cost of wheel barrow, spade and matchet to be the mostly costly fixed items in both the landowners' (52.92%, 19.16% and 12.74%, respectively) and tenants' farms (52.43%, 15.69% and 13.43%, respectively). A higher profit of ₦ 526,140 was realized in the tenant farms as compared to ₦ 227,568 made in the landowner farms.

Table 4 indicates that tenant farmers with a higher gross margin are able to make 69.81% of the total profit in the cassava based farms as against the landowners with 30.19%. This implies efficient use of the available resources by the tenant farmers than landowners who feel comfortable in their use of personal and private farms.

Conclusion

The business of cassava production in landowners and tenants' farms was found to be a profitable venture, but more profitable in tenant farms, because of the efficient use of the resources to make more returns above cost. The socio economic characteristics of the producers in the two farms also play a dominant role in taking decisions that geared towards the profitability. Based on the finding of this study, the following recommendations are proffered:

Table 3: Distribution of respondents by fixed costs and profitability

| Cost Items | No. of Respondents | Landowners | | | Tenants | | |
|------------------|--------------------|------------|---------|----------|---------|---------|----------|
| | | TFC ₦ | AFC ₦ | % of TFC | TFC ₦ | AFC ₦ | % of TFC |
| Matchet | 90 | 111070 | 1234.11 | 12.74 | 104070 | 1156.33 | 13.43 |
| Weeding hoes | 90 | 49100 | 545.56 | 5.63 | 56980 | 633.11 | 7.35 |
| Spades | 90 | 167050 | 1856.11 | 19.16 | 121630 | 1351.44 | 15.69 |
| Wheel barrows | 90 | 461450 | 5127.22 | 52.92 | 406250 | 4513.89 | 52.43 |
| Basins | 90 | 27660 | 307.33 | 3.17 | 34800 | 386.67 | 4.49 |
| Files | 90 | 24630 | 273.67 | 2.82 | 22070 | 245.22 | 2.85 |
| Axe | 90 | 31042 | 344.91 | 3.56 | 29110 | 323.44 | 3.76 |
| Total | | 872002 | 9688.91 | 100 | 774910 | 8610.10 | 100 |
| Gross Margin (₦) | | 1099570 | | | 1301050 | | |
| Profit (₦) | | 227568 | | | 526140 | | |

Table 4: Comparison of Costs and Returns to Cassava Producers

| Farm type | Revenue (₦) | TVC (₦) | TFC (₦) | GM (₦) | Profit (₦) | % of Profit |
|------------|-------------|-----------|-----------|-----------|------------|-------------|
| Landowners | 2,053,220 | 953,650 | 872,002 | 1,099,570 | 227,568 | 30.19 |
| Tenants | 2,547,700 | 1,246,650 | 774,910 | 1,301,050 | 526,140 | 69.81 |
| Total | 4,600,920 | 2,220,300 | 1,646,912 | 2,400,620 | 753,708 | 100 |

Source: Computed from field data, 2011

- Government should recruit and train more extension personnel to fill the existing gap in the extension service delivery to the farmers in the study area. The high percentage of farmers (58.89%) with no extension contact is an indication low extension agents': farmers' ratio in the study area.
- Land augmented materials/inputs such as fertilizer, agrochemicals and improve cassava cuttings should be made available to the farmers at affordable prices for increased productivity.
- The ownership of land in the study area by individuals mostly through purchase and inheritance result in frequent fragmentation of farmland to successors. This does not encourage large scale farming for crops like cassava. There is therefore the need for land reforms to make enough farmland available to willing and enterprising farmers in the study area.
- The economic empowerment programmes of the State Government to potential and enterprising farmers through Integrated Farmers' Programme (IFS), Women in Agricultural Entrepreneurial Development (WAIDEP), Commercial Farmers Scheme (CFS) and Agricultural Cooperative loan (AGL) is a welcomed development but the capital based should be increased to make room for farm expansion in the areas of crop production including cassava.

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