

Gender and Net Farm Income of Cassava Farmers under Individual Land Tenure System in Abia State

A, Henri-Ukoha; J.S, Orebiyi; D.O, Ohajianya; U.C, Ibekwe; S.U.O, Onyeagocha; F.O, Nwosu; U.I, Nwaiwu

Department of Agricultural Economics, Federal University of Technology, Owerri, Imo State, Nigeria. Corresponding author e-mail: haukoha@yahoo.com



Abstract

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The study on gender and net farm income of cassava-based farmers under individual land tenure system was done in Abia State of Nigeria. The main objective was to determine the Net Farm Income (NFI) and the Benefit Cost Ratio (BCR) of the cassava farmers by gender vis-avis their income levels as well as food security in the state. A multi-stage random sampling technique was adopted while data were adopted through the use of structured questionnaire along with interview schedule. Secondary data were collected from relevant journals, internet and current literature on the study. Descriptive statistics, gross margin as well as net return analytical techniques were tools employed for analysing the field data. Results showed that, the mean farm size of the male headed farming households was 1.22ha while that of their female headed counterparts was 1ha. While only 29 members of the female headed households obtained their farmlands through inheritance, 94 of their male counterparts got their own from the same source. The Net Farm Income (NFI) results showed that the female headed households had a mean of ₦124,171 that of the male was ₦184,815 with Benefit -Cost-Ratio (BCR) of ₦1.77 and ₦1.90 respectively. Furthermore, the result also indicate that, women in this area are limited in their access to productive farm resources such as land, credit as well as modern farm implements among others etc. It is therefore recommended that, there is a need for the farmers in this area to have more access to farm productive inputs to enable them increase the scale of their farm operation thus increasing their farm profit as already shown by their BCR and hence, enhancing their farm income as well as achieving food security objective in the long run. [A, Henri-Ukoha et al. Gender and Net Farm Income of Cassava Farmers under Individual Land Tenure System in Abia State.. International Journal of Agricultural Science, Research and Technology, 2011; 1(2):47-54].

Keywords: Net Farm Income, Cassava, Individual Land Tenure, Gender

1. Introduction

One of the millennium development goals is to eradicate extreme hunger and poverty. In recent times, poverty has been on the increase (UNDP, 1998; World Bank, 1999). This is evident in the estimate that more than 70% of Nigerians live in poverty (Ayanwale, Adeolu and Alimi, 2004; CIA, 2010). However a radical approach to poverty reduction depends largely on agriculture (Ogumike, 2002). This is also because agriculture is the mainstay of Nigeria's economy as over 80% of the population are engaged in it (ISD, 2006; FAO, 2009). Agriculture is the largest employer of labour such as crop, livestock, fishing and forestry industries (NBS, 2007). Again, the sector employed about 65 million people and contributes about 41 percent of the Gross Domestic Product (GDP) of the country (NBS, 2007). Given this remarkable contributions by this sector, there is no doubt that one of the veritable means through which the resource poor farmers can mitigate

the scourging poverty scenario is agriculture. Cassava is a widely grown crop in most countries in the tropical regions of Africa, Latin America and Asia; and ranks as one of the main crops in the tropical countries (Kartz and Weaver, 2003). It is Africa's most important staple after maize in terms of per capita calories consumed and provides calories for over 160 million people of Africa (Makanjuola and Moldenhawer, 1984). In line with this, it is estimated that cassava provides about 40% of all calories consumed in Africa (IITA, 1990). Following this effort, cassava production has been on the increase from 1999 to date (FMARD 2004). Nigeria is the largest producer of cassava with about 31.4 million metric tonnes (FAO, 2006). Nigeria alone currently produces over 14 million tonnes annually, representing about 25% of sub-Saharan Africa's output (Agbetoye, 2003).

The ability of Cassava to thrive in certain peculiar conditions such as low nutrient availability,

ability to survive drought, relatively low requirement of labour, ease of cultivation and adaptability to a wide variety of soils where other crops fail has been well documented (Nweke, 1994; Hahn, 1984; Hahn, 1994; Gurshavan Singh Kainth, 2010). It is a very important food crop that is capable of providing food security (Kolawole et al, 2007). These and other features endowed it with a special capacity to bridge the gap in food security, poverty alleviation and environmental protection (Clair *et al.*, 2000). Cassava is a food security crop and a major provider of employment and income (IITA, 2010). In Nigeria, Cassava is generally believed to be cultivated by small scaled farmers with low resources (Ezebuiro *et al.*, 2008). As the potentials of this "Africa's best kept secret", Nweke et al, (2002) there is need for increased cultivation of it.

In spite of the tremendous role of this wonder crop, cassava is often perceived as a woman crop and men who go into it do that as a cash crop enterprise. Quisumbing (1994) stressed that there is a great disparity between women and men in the size of landholdings. This emanates from the fact that land rights by gender under customary systems vary from place to place. In most cases, rights to arable land are allocated by the lineage authority to the male headed household; women have secondary derived rights, obtained through their relationship with male family members (husbands, fathers, brothers or sons). However, in most cases, unlike men, women cannot liquidate, trade, or retain derived land when the male link is lost. This does not guarantee security of tenure which is one of the most serious obstacles to increasing the agricultural productivity and income of rural women (FAO, 2005). Therefore, continued access to land depends on a woman's fulfilling link or negotiating a constantly changing set of obligations and expectations defined by the men who hold the rights (IFPRI, 2000). Even with increase in the number of female headed households on migration of men to urban areas in search of higher wages, women do not acquire the actual status of household head which would afford them access to resources such as land needed for food security (UNDP, 1996; Pinstrip-Anderson and Pandya-Lorch, 1998). Unfortunately, female-headed households are getting poorer in Nigeria and other African Countries, although women play a key role in food and agriculture (Saito and Daphne, 1993; UNDP, 1996). Therefore gender based inequalities all along the food production chain from farm to plate, impede the attainment of food and nutritional security (FAO, 2009).

The Federal Government has introduced several policies such as Land Reform, Presidential Initiative on Cassava, National Poverty Reduction

Programme etc yet the level of poverty in Nigeria remains a nightmare. In view of this, the study set out to achieve the following objectives: to analyse the socio-economic characteristics of respondents determine the net farm income and benefit-cost-ratio of the cassava farmers by gender under individual land tenure system in the area.

2. Material and Methods

The study was conducted in Abia State of Nigeria. According to the National Population Commission (2006), Abia state has a population of 2,833,999 people. The predominant soil in the area is deep well drained sandy loam while the natural vegetation is tropical rain forest. Abia State has 17 local government areas (LGAs). These are grouped into three agricultural zones viz, Aba, Umuahia and Ohafia.

A multi-stage sampling technique was employed in sample selection. In the first stage, the three agricultural zones in the state were purposively selected - Aba, Umuahia and Ohafia. From these agricultural zones, three local government areas were purposively selected from the list of LGAs in each zone making a total of 9 local government areas in the second stage. In the third stage, two communities were randomly selected from each local government area. This was done from a list of communities obtained from the Local Government headquarters. The list of cassava farmers (both male headed and female headed) in the communities was compiled with the help of the ADP extension agents which formed the sampling frame.

From this list in each community, 10 male headed cassava farming households and 10 female headed cassava farming households were selected from each of the 18 communities making a sample size of 360 farmers. (comprising 180 male headed farming households and 180 female headed farming households).

Data were collected from both primary and secondary sources. Primary data were sourced through the use of structured questionnaire. Secondary data were sourced from journals, textbooks, internet and other relevant literature. Data collected were on socio-economic characteristics of the farmers such as age, gender of household head, years spent in school, farm size of a household, land ownership pattern etc., farm output and input relationships, prices of inputs based on the individual land tenure. For the purpose of the study gender is referred to only male and female adults and only processed cassava tuber (garri) was used. Again, for this study land acquired by rent, purchase and inheritance are classified as individual land tenure systems.

Data were analysed using simple descriptive statistical tools such as tables, mean, frequency distribution and percentages were used to analyse the socio-economic characteristic while the Net Farm Income model, Gross Margin analysis and Benefit-Cost-Ratio were employed to analyze the Net farm income, Gross margin and Benefit-Cost-Ratio.

The model used for the estimation of the Gross margin according to Olukosi and Ernabor (2005) is expressed as:

$$GM_{ij} = TR_{ij} - TVC_{ij} \dots\dots\dots e_1$$

The gross margin is per hectare,

$$\text{but } TR_i = \sum_{j=1}^n P_q Q_{ij} \dots\dots\dots e_2$$

$$TVC_i = \sum_{j=1}^n P_{x1} X_{1j} + P_{x2} X_{2j} + \dots + P_{xn} X_{nj} \dots\dots\dots e_3$$

Where,

GM_{ij} = Gross Margin per hectare of the i th class of gender in j th land holding access

TR_{ij} = Total Revenue generated by an i th gender in j th land holding access

TVC_{ij} = Total Variable cost of an i th gender in j th land holding access

P_q = Unit price of cassava

Q_{ij} = Quantity of cassava by an i th gender class in j th landholding access.

X_{ij} = Quantity of the i th variable input by the class of gender

The net farm income as expressed by Olukosi and Ernabor (2005) is given as

$$NFI = GM_{ij} - TFC_{ij} \text{ or}$$

$$TR_{ij} - (TVC_{ij} + TFC_{ij}) \dots\dots\dots e_4$$

Where TR_{ij} , GM_{ij} and TVC_{ij} have been previously defined.

TFC_{ij} = Total fixed cost of the i th class of gender on i th land holding access in the area.

3. Results and discussion

Table 1 shows that the mean age of male headed households was 50 years while that of the female headed households was 47 years. This could be as a result of the fact that most husbands in male headed households prefer to go into farming much later in life when they must have gone in search of greener pastures and probably failed. Their female headed counterparts however stay with the children as they are mostly involved in agriculture. Generally, majority of the farmers were within the 40-54 age bracket with 60% for male headed households and 52.78% for the female headed households. This is consistent with the findings of Mafimisebi (2008) that the farmers are in the active age range of 30-50 years with the average age being 44 years. This age bracket falls within the productive and active age

limit. This implies that these category of farmers are more productive and have higher rate of adoption than their older counterparts. The old farmers get tired easily and are slow to adoption hence the negative effect on food productivity.

The table also shows that about 10.00% of the male headed households and 22.22% of the female headed households had no education. In the male headed households, about 21.11% had primary education and their counterparts had about 53.33% attained primary education. Also, 52.22% of the male headed households and 18.89% had secondary education. Again, only about 16.67% of the male headed households and 5.56% of the female headed households had tertiary education. However, the mean number of years spent in school for the male headed households was 7 years and their counterparts had 4 years. This is due to gender imbalance in education. This is similar to the findings of Kunze and Drafor, (2003) that 46% of the women never had any formal education, compared to only 5 % of men. This implies that the male headed households are more educated than the female headed households. The low level of education among female headed households results from the refusal to train girl child in school. It is also a pointer to the fact that most educated people are not involved in cassava production and this would have negative effects on productivity (Amaza and Olayemi, 2000). Usually uneducated farmers cannot understand and evaluate production technologies and why they should be used (Obasi, 1991). Literate individuals are keen to get information and use it. Women's education affected not only household food production but also food security.

In the male headed household, majority of the farmers (54.44%) were within the house hold size of 6-10 whereas in female headed households, about 50% were within the household size of 1-5 persons. Meanwhile, the mean household size of the male headed households was 8 persons while that of their female counterparts was 6 persons. This could be due to the absence of men for procreation. As family size increases, obviously the number of mouths to feed from the available food increases. This is consistent with the findings of Adegbite et al (2008) that majority of the household sizes vary between 6-10 persons; implying that most of the farm hands (labour force) can be sourced within the household. Household size in traditional agriculture determines the availability of labour and level of production (Ani, 2004 and Nani, 2005).

As shown in table 1, both the male headed and female headed households are well experienced in farming with majority of the male headed households having 52.78% (11-20 years) while the

female headed households have 21.67% (21-30 years). However, male headed households have a mean farming experience of 16 years with the female headed households having 20 years as their mean level of experience. The younger men were more likely to be involved in activities other than farming than the older ones. With the advent of capitalism and its attendant wealth accumulation, men tend to be involved more in the labour market. (Haralambous and Horlburn, 2004). This implies that though the female headed households were not well educated, they were well experienced in cassava production with its attendant skills than their male counterparts (Uchechi and Nwachukwu, 2010). Moreover, female headed households settle for farming immediately after marriage especially when they have defacto household heads.

Table 1 also show that male majority of the male headed households have farm sizes of 0.1-0.9ha (56.67%) so also were female headed households (75.56%). This indicates that the farm sizes were small. The mean farm size of male headed households was 1.22 hectares while that of the female headed households was 1 hectare. This indicates that female headed households have smaller farm sizes than the male headed households Mafimisebi (2008) as well as C.T.A. (2000) observed that majority of the smallholder farmers have farm sizes of less than 3.0 hectares and an average farm size of 1.66 hectares per farmer. This shows that farm sizes are small in the study area because of scarcity of arable land due to erosion menace and population pressure as well as land tenure problems. Land is positively associated with the amount of crops grown (Musinguzi, 2000), larger farm sizes boosts agricultural productivity thereby enhancing food security. Therefore, access to land via agricultural production is one of the important factors that can translate growth to poverty reduction (Chirwa, 2004). The farm sizes were small and scattered but the sum of the different portions of land in various places were used and measured with global positioning system (GPS). This small and fragmented land is a threat to food security as it makes mechanization difficult, thus limiting output to subsistence level without surplus for the market.

The table also shows that in male headed households, 28.89% use family labour while 63.33% of the female headed households use family labour. This can be explained as women have small farms and few livelihood alternatives hence they have no option than to exploit their own labour and that of their families (Dyer, 1991) Women in Anambra State of Nigeria contribute more than the men in terms of labour input in farming and are solely responsible for household management duties NAERLS(2000). About 13.33% use hired labour in the male headed

households while 7.78 use hired labour in female headed households, this could be civil servants and others who have no time to go to farm. Meanwhile, 57.78% use both family and hired labour in male headed households while their counterparts (28.89%) use both. Therefore, female headed households have less income and resources to hire more labour thus resorting to family labour more than hired labour. Labour constitutes a major cost of production especially in farming (Balohun, Ugwuanyi and Ayoola (2010).

In the distribution of respondents according to Type of Enterprise, while majority of the female headed households (54.44%) grow cassava mainly as subsistence (food) enterprise, the male headed households 40% cultivate cassava for both commercial (cash) and subsistence (food) enterprise. This is in line with the report that about 70% of the economically active population involved in food production are females (Federal Republic of Nigeria, 1997).

Table 1. Socio-economic characteristics of Farmers

Variable	Male Headed		Female Headed	
	<i>f</i>	%	<i>f</i>	%
Age (Years)				
25-39	11	6.11	29	16.11
40-45	108	60	95	52.78
55-69	53	29.44	44	24.44
70	8	4.44	12	6.67
Mean	50		47	
Level of Education (Years)				
0	18	10	40	22.22
1-6	38	21.11	96	53.33
7-12	94	52.22	34	18.89
13 and above	30	16.67	10	5.56
Mean	7		4	
Household Size				
1-5	42	23.33	90	50
6-10	98	54.44	43	23.89
11-15	24	13.33	35	19.44
16 and above	16	8.89	12	6.67
Mean	8		6	
Farming Experience				
1-10	38	21.11	22	12.22
11-20	95	52.78	36	20
21-30	22	12.22	93	51.67
31-40	15	8.33	18	10
41 and above	10	5.56	11	6.11
Mean	16		20	
Farm Size				
0.1-0.9	102	56.67	136	75.56
1.0-1.9	35	19.44	24	13.33

2.0-2.9	24	13.33	10	5.56
3.0-3.9	14	7.78	8	4.44
4.0 and above	5	2.78	2	1.11
Mean	1.22ha		1ha	
Labour Use				
Family	52	28.89	112	62.22
Hired	24	13.33	14	7.78
Both	104	57.78	54	30.00
Type of Enterprise				
Commercial	72	40	25	13.89
Subsistence	47	26.11	57	54.44
Both	61	33.89	98	31.67
Total	180	100	180	100

Table 2. Distribution of respondents according to Access to Farmland

Variable	Male Headed		Female Headed	
	f	%	f	%
Access to Farmland				
Good access	100	55.6	9	5
Fair access	46	25.6	30	16.7
Restrictive access	23	12.8	46	25.6
No access	11	6.1	95	52.8
Total	180	100	180	100

Table 2 shows that majority of the male headed households (55.56%) had good access to farmland while only (5.00%) of the female headed households had good access. Good access guarantees tenure security. Also in the table, (25.56%) of the male headed households had fair access to farmland while (16.67%) of the female headed households had fair access. This could be from the inherited from either their sons, male relatives or spouse which only accord use rights to them, but men inherit land hence their good access. Fair access does not also guarantee tenure security. Also (12.77%) of the male headed households had restrictive access whereas (25.56%) had restrictive access. This could be due to the fact that women do not inherit land in the state. The restrictive access they have were acquired through family/lineage coupled with the matrilineal system that is predominant in certain parts of the state (Ohafia and its environs) where ownership of assets tend to go to the maternal side. Also customary norms that is applicable in some parts of the state where community farmlands are shared usually according to age grades could also be the cause. Meanwhile, (6.11%) of the male headed households had no access with (52.77%) of their female counterparts having no access to farmland. The farmlands were female headed households had good access was probably purchased farmlands. The men on the other hand have better access to farmland as traditionally they inherit land and even when it

belongs to their wives, the land is usually registered in their names. This is consistent with the findings of Adebayo et al (2007) who observed that the greater number of women got their farmlands through their spouses while the remaining 46% acquired theirs through purchases, lease and other sources. This picture of access to land shows that women may not be able to make long term commitments to the land; it also hinders them from getting credit. If tenure is insecure farmers will not be able to maximize the use of their farmland. This impacts negatively on food security.

Table 3 shows the analysis of cost and return of cassava based production enterprise per hectare for the male and female headed households, The total variable cost was ₦123,812.00 for female headed households and ₦14,4776.00 for their male counterparts. The revenue was ₦286,320.00 for female headed households and ₦351,580.00 for male headed households, this could be as a result of the fact that the yield per hectare was higher in male headed household farms due to larger farm size, higher rate of fertilizer and use of improved cassava varieties. The gross margin was ₦162,508.00 and ₦206,804.00 for female and male headed households respectively. Meanwhile, the net farm income were ₦124,171.00 and ₦184,815.00 for female headed and male headed households respectively. However, the benefits cost ratio was 1.77:1.0 for female headed households and 1.90:1.0 for their male counterparts. This implies that male headed households have higher income than the female headed households hence they are more food secure than their female counterparts.

4. Conclusion

From the analysis, it implies that for every Naira spent by both group of farmers, a profit of 77 kobo and 90kobo respectively were made for the female and male headed households respectively. Hence, cassava farming is profitable in the area, with male headed farmers having more returns on investment due economies of scale. Since the male headed households have higher income, they are likely to be more food secure than their female headed counterparts. However, female headed households have smaller farm sizes than their male counterparts.

Table 3. Analysis of Net Farm Income of Cassava Farmers by Gender under individual land tenure in the study area.

ITEM	FEMALE HEADED			MALE HEADED		
	Qty	Unit Pr(₦)	Total	Qty	Unit Pr(₦)	Total
Revenue						
Garri	2.31ton	112000	258720	2.73ton	112000	305760
Stem	60bundles	460	27600	85bundles	460	39100
Total Revenue			286320			351580
Variable Costs						
Stem	38bundles	460	17480	42bundles	460	19320
Fertilizer	4bags	4100	16400	6bags	4100	24600
Manure	12 bags	350	4200	5bags	350	1750
Land Prep.	20m/d	800	16000	23m/d	900	20700
Planting	10m/d	700	7000	13m/d	700	9100
Weeding	37m/d	700	25900	40m/d	700	28000
Harvesting	12m/d	700	8400	14m/d	700	9800
Transportation			28432			31506
Total Variable Cost			123812			144776
Fixed Cost						
Rent on land			35288			36113
Interest on Loan			1241			1895
Depreciation on tools			1808			2031
Total Fixed Cost			38337			40039
Total Cost			162149			184815
NFI/Ha			124171			166765
GM/Ha			162508			206804
BCR			1.77			1.90

Source: Field Survey Data (2011)

*At the time of this study \$1 dollar = ₦165.00

5. Recommendations

If females who are the custodian of food security is empowered by employing measures that will intensify women's agricultural production by improving women's access to resources such as land and labour, improved seeds and fertilizer and their access to services such as credit, extension and education as their male counterparts. This way food security and income of people will be enhanced.

Female headed households should overcome their society induced handicap by the formation of co-operatives. This would enable them pool their resources together to have larger farm sizes, higher income level then with the attendant use of family labour, there will be a boost in cassava production.

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