

Full Length Research Paper

Gender differences and challenges in cassava production and processing in Abia State, Nigeria

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Received 2 April, 2014; Accepted 19 May, 2015

The study investigated the level of involvement of male and female farmers in small scale production and processing of cassava in Abia State, Nigeria. The objectives of the study were to determine the socioeconomic profile of the cassava farmers, identify the constraints in cassava production and suggest the possible remedies to improve cassava production in the study area. The result revealed that despite the fact that both male and female farmers were actively involved in cassava production and processing, but in terms of labour, the women dominated in most of the activities like planting, weeding and harvesting of cassava. There is also a significant difference in the labour involvement both in production and processing. It also revealed that land ownership was one of the major problems in the area. Women do not own land according to the tradition, and this discourages agricultural production among women. Other constraint like lack of input, lack of fund and high cost of labour were militating against cassava output in Abia State, Nigeria. Based on the constraints, the farmers suggested ways to improve cassava production in the study area. The major suggestions were provision of input, provision of agricultural subsidy/labour. It was recommended that state government should address the problem of farmers by assisting them with improved inputs. Loans should be given to farmers. Land ownership in the rural areas should be addressed by government so that everybody will have equal right to land ownership.

Key words: Gender differences, challenges, cassava production, cassava processing and food security.

INTRODUCTION

Cassava (*Manihot esculenta* Cranz) originated from South America and is grown in over ninety countries of the world mostly in the tropics where it constitutes one of the most important sources of energy in the diet and provides livelihood for over 500 million people

(Okogbenin et al., 2008). Cassava is an important root crop that is widely grown throughout the tropical areas. It ranks fourth in terms of production and output after wheat, rice and maize (International Institute of Tropical Agriculture, 2000). Cassava is particularly important

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because it has the ability to tolerate drought condition and poor soil, and has relatively low requirement for labour which makes it attractive for nations in search of food securities for their people (Anuebuwa and Iloka, 1998).

Cassava is a major crop consumed in various processed forms in Nigeria (Anuebuwa and Iloka, 1998). It is a major source of energy with high food security value similar to most cereal crops (Achnewhu and Owuamanam, 2001). Every part of cassava is useful. The roots of some varieties are eaten boiled or roasted. The roots are processed into flour and garri. Cassava flour is mixed with maize flour and steamed to make fufu which is a major food in many homes in Nigeria (Ugwu, 1996). The flour is increasingly being partly substituted for wheat flour in bakery and fast food industries. Cassava leaves are a significant source of protein, minerals and vitamins (Philips et al., 2004; FAO, 2004). It is also found to be important for feeding livestock and as an industrial raw material e. g. flour and starch for food industry (Anuebuwa et al., 1998). The peels are used as livestock feed (Unanma, 2003). Cassava is gaining more recognition as a cash crop for international trade.

Cassava is a major cash crop for most of the farmers in Nigeria. Reports have further revealed that a higher proportion of cassava farmers, in Nigeria get a higher income from its production than they get from most other major staples (Ugwu, 1996). Hence, it has great potentials and plays a crucial role in contributing to food security, income generation, poverty alleviation and socioeconomic growth of Nigeria. World food monitoring reports indicated that Nigeria has consistently maintained the leading position as world largest producer of cassava in the recent years (Philips et al., 2004). The annual production record of cassava in the country stands at about 38.17 million metric tones (FAO, 2005). Yet most of the starches for the food industries are being imported while Nigeria has the potential of producing all the starch required by the food industries.

Cassava based farming communities coped better in hunger stressed times and uncomfortable situations (Moses et al, 2007). Cassava can be processed into a number of important food products including 'gari' that can store for over a year without any loss in food quality. Cassava chips, when properly fried, can store a year or more without any loss in quality. Cassava roots (traditional varieties) can be stored in the ground for up to 24 months, and some varieties for up to 36 months. Harvest may be delayed until market, processing, or other conditions are favourable (Onyeka et al., 2005). These attributes make cassava an important food security crop in Nigeria and several other sub-Saharan African countries that produce the crop.

In South eastern Nigeria, before the Nigeria civil war in 1967-1970, cassava was regarded as a women's crop (Unamma, 2003). Then it was only women that cultivated cassava. They earned their money from growing cassava either as intercrops within their husbands' yam field or

intercropped it with other minor crops. The trend has change in the recent times as men are going into cassava production and processing even though their level of involvement and contributions along side with their female counterparts are not equal. However, it is a known fact that men and women perform different functions, have unequal decision power and differences in access to production resources in agricultural production (Ironkwe et al., 2007). Because of these differences, their views, needs and priorities to improve their productive potentials also differ. This could strongly affect their various outputs even in cassava production and processing. Hence, the understanding of gender contributions to food output in rural households in Nigeria is important in view of the recent global food crisis and the need to increase and sustain agricultural production in the country. This will ensure effective allocation of production resources for increased and sustainable production within the rural household. In effect, the increase in agricultural production arising from this will increase the farm output of the households, and improve their standard of living (Onyemauwa et al., 2007).

Objective of the study

The general objective of the study was to determine the differences in the level of involvement of both gender in production and processing of cassava in Abia State, Nigeria. Specific objectives include:

- (1) Determine the socio-economic characteristic of the male and female farmers.
- (2) Determine the level of involvement of male and female farmers in cassava production and processing in the study area.
- (3) Identify and analyze the constraints militating against cassava production and processing by male and female farmers.
- (4) Suggest remedies to improve production by the male and female farmers.

Research questions

In view of the objective of this study, these research questions were asked:

- (1) Is there any difference between the level of involvement of male and female farmers in cassava production and processing in the study area?
- (2) What are the constraints militating against cassava production and processing in Abia state.

Hypothesis

- (1) There is no significant difference in the level of involvement of male and female farmers in cassava

production

(2) There is no significant difference in the level of involvement of male and female farmers in cassava processing

(3) There is no significant difference in the constraints militating against the male and female farmers in the area.

METHODOLOGY

The survey research design was adopted in this study. The approach was used because it provided the researchers the opportunity of sampling the opinions of large representative sample. According to Isangedighi et al. (2004), survey approach enables a researcher to study large and small populations by selecting and studying samples from the population in order to discover the relative incidence, distribution, interrelation of sociological and psychological variables.

The study was conducted in Abia State in 2012. Out of the seventeen local government areas in the State, five local government areas were randomly selected. They were Umunneochi, Bende, Umuahia South, Isiala Ngwa North and Ukwu East Local Government Areas. Two communities were randomly selected from each Local Government Area making it a total of 10 communities. The population comprised of all cassava farmers in the ten selected communities. From each community, a stratified random sampling technique was used to select five female and five male cassava farmers making 50 male and 50 female cassava farmers. A total of 100 cassava farmers were used for the study.

A well structured questionnaire was used as an instrumental guide to interview the respondents. Information sought from respondents included their personal characteristics, activities carried out on production and processing of cassava, cost of production and income from cassava per hectare, production resources used, constraints faced etc. The questionnaire was initially validated by two test experts in Department of Agricultural Economics, University of Nigeria, Nsukka. Thereafter, it was trial tested on 10 cassava farmers in Umuahia urban. Cronbach Alpha Analysis was used to ascertain the internal consistency of the items. Result gave overall Reliability Coefficient value of 90.

Data were analyzed using descriptive statistics such as mean, frequency and percentages. The t-test was used to analyze the extent of involvement of male and female cassava farmers in production and processing of cassava. A three point likert continuum of (3) serious, (2) less serious and (1) not serious constraints were used to determine the level of constraints in cassava production and processing in the area. The mean calculated as follows: $3+2+1=6/3=2$. Anything less than 2 is not a constraint while 2.0 and above is a constraint (Alfred, 2006).

RESULTS AND DISCUSSION

The socio-economic characteristics of the cassava farmers are presented in Table 1. Table 1 revealed that more of the younger female farmers than male were in cassava production in the State. This shows that cassava farmers in Abia State are more of female youths than male youths who are between 20 to 40years. This agrees with Pur et al. (2007) that the level of male youth involvement in agriculture has reduced due to urban migration, schooling and part-time farming. Majority of the respondents were married though greater population of

the female (84%) were married than the male (70%) farmers. Majority 42% of both of the male and female farmers had the same household size (6-10). This indicates that they are involved in farming in order to take care of their large household. This is in agreement with Imoudu (2005).

Greater proportion of the women (36%) had no formal education while more than half of the male (76%) had both primary and secondary education; that is why (Heidi and Uday, 2001) emphasized on girl-child education for economic development, poverty alleviation and food security. However, greater proportion of the male (40%) had more years of farming experience (21-30 years) than the female folks. On the other hand, a greater percentage (64%) of female than male (24%) is full time farmers. The male 56% had larger farmer size (4 to 6 ha) than the female 44% (less than 1 ha). This shows that women are small scale farmers and this agrees with Ironkwe et al. (2007) who observed that women farm sizes are small and scattered. According to them this affects their production. The table also revealed that farm land was mostly owned by men as indicated by majority (88%) of male and (6%) of female respondents. This result agrees with Ironkwe and Asumugha (2007) that women do not own land due to culture and tradition in Africa.

In order to determine the level of involvement of male and female cassava farmers in cassava production and processing, the activities carried out in cassava production and major processed products were examined as shown in Tables 2 and 4 respectively. Table 2 reveals the distribution of respondents according to the activities carried out in cassava production. From the table, the total female farmers (married and single) dominated mostly in five major production activities out of eight. These include cutting of planting materials 85%, planting 75%, weeding 82%, harvesting 88% and fertilizer application 70%. The male dominated in two major production activities which include land clearing 83% and ridging 56%. Both genders participated equally in haulage and transportation 60% each. Also the table shows the female gender level involvement to be 62.5% that is $\frac{5}{8} \times \frac{100}{1} = 62.5\%$ while the male involvement

is $\frac{2}{8} \times \frac{100}{1} = 25\%$. This indicates that females are more

involved in the activities carried out in cassava production. This result also shows that women, both married and single are involved in less tedious farm activities than men. The tedious farm works were done by the men. For those whose husbands are sick or weak and single women, they hire the men to do the tedious work for them. This is in conformity with Achinowhu and Owuamanam (2001) that men are more involved in tedious farm activities than women.

The t-test on Table 3 showed that there was a significant difference between the male and female farmers involvement in cassava production. The t-

Table 1. Socio-economic Characteristics of the Respondents (Cassava Farmers).

S/N	Variables	Male		Female		Total	
		F	%	F	%	F	%
	Age range (years)						
1	21-30	0	0	3	6	3	3
	31-40	10	20	30	60	40	40
	41-50	28	56	10	20	38	38
	> 50	12	24	7	14	19	19
	Marital status						
2	Single	15	30	8	16	23	23
	Married	35	70	42	84	77	77
	Household size						
3	1-5	6	12	13	26	19	19
	6-10	21	42	21	42	42	42
	11-15	14	28	9	18	23	23
	>15	9	18	7	14	16	16
	Educational status						
4	No formal education	4	8	18	36	22	22
	Primary education	20	40	16	32	36	36
	Secondary education	18	36	12	29	30	30
	Tertiary education	8	16	4	8	12	12
	Farming experience (yrs)						
5	<1-10	5	10	7	14	12	12
	11- 20	15	30	22	44	37	37
	21-30	20	40	17	22	31	31
	> 30	10	20	10	20	20	20
	Farm involvement						
6	Full time	12	24	32	64	14	14
	Part time	38	76	18	36	56	56
	Farm size (ha)						
7	<1	0		22	44	22	22
	1-3	10	20	15	30	25	25
	4-6	28	56	8	16	36	36
	>6	12	24	5	10	17	17
	Land ownership						
8	Yes	44	88	3	6	47	47
	No	6	12	47	94	53	53

Sources: Field survey 2012.

calculation of 2.44 exceeded the t-critical of 1.96 thereby the hypothesis which states that there is no significant difference in the involvement of male and female farmers in cassava production is rejected. Table 4 shows the major processed products by the respondents.

Table 4 revealed that both gender processed their cassava into the same products. Such products were garri, fufu, tapioca, alibor, starch etc. The result shows that both gender equally produced alibor and starch. However it was observed that more of females than the

Table 2. Distribution of respondents according to activities carried out in cassava production.

Activities	Male						Female						Dominant gender
	Married		Single		Total		Married		Single		Total		
	F	X	F	X	F	X	F	X	F	X	F	X	
Land clearing	70	2.1	13	0.39	83	2.49	12	0.36	5	0.15	17	0.5	Male
Ridging	46	1.38	10	0.30	56	1.68	40	1.2	4	0.12	44	1.32	Male
Cutting of planting materials	10	0.3	5	0.15	15	0.45	77	2.3	8	0.24	85	2.55	Female
Planting	20	0.6	5	0.15	25	0.75	68	2.04	7	0.21	75	2.25	Female
Weeding	10	0.3	8	0.24	18	0.54	64	1.93	8	0.24	82	2.46	Female
Fertilizer application	20	0.6	10	0.30	30	0.90	62	1.86	8	0.24	70	2.1	Female
Harvesting	18	0.54	3	0.09	22	0.66	80	2.4	8	0.24	88	2.64	Female
Haulage and transportation	40	1.2	10	0.30	50	1.5	43	1.29	7	0.21	50	1.5	Both gender
Overall		0.88		0.24		1.12		1.67		0.21		1.9	

Source: Field survey 2012, Multiple responses were recorded, The number of farmers is 100 which means the frequencies are the same with percentage.

males were involved in processing of cassava into various food forms. The male gender level of involvement is $\frac{1}{8} \times \frac{100}{1} = 12.5\%$ while female

gender level of involvement is $\frac{5}{8} \times \frac{100}{1} = 62.5\%$.

The results agree with Unamma (2003) who recorded that cassava production and processing is dominated by women and cassava being regarded as women's crop.

The t-test on Table 5 showed that there was a significant difference between the male and female farmers involvement in cassava processing. The t-calculation of 2.56 exceeded the t-critical of 1.96 thereby the hypothesis that there is no significance difference in the involvement of the male and female in cassava processing is rejected.

Table 6A and B shows the constraints militating against cassava production and processing in the study area. Table 6 shows the constraints militating against male farmers in cassava

production and processing in the study area.

Majority (\bar{x} 2.40), (\bar{x} 2.28), (\bar{x} 2.16), (\bar{x} 2.10),

(\bar{x} 2.10), (\bar{x} 2.04) saw lack of fund, lack of improved planting materials, use of crude implements, lack of inputs (that is fertilizer and herbicides), climate change and lack of processing machines respectively as major constraints militating against male cassava farmers.

Table 6B shows the constraints militating against female cassava farmers in the study area.

Majority (\bar{x} 3.0), (\bar{x} 2.7), (\bar{x} 2.53), (\bar{x} 2.4),

(\bar{x} 2.3), (\bar{x} 2.1), (\bar{x} 2.1), (\bar{x} 2.0) saw land tenure system, lack of fund, lack of improved planting materials, high cost of labour, crude implements, low storability, lack of processing machine and labour intensive respectively as major constraints militating against women farmers in the area.

Land tenure problem was one of the most

constraints facing the women in cassava production. The way land is owned often discourages land utilization. Land is owned by inheritance hence land is fragmented over generations. Women, according to tradition do not own land. So, their farm land is the one given by their husbands or fathers which they also use for their yam cultivation. Most of the times, it is when the men permits that the women can plant on the land. Another major constraint faced by the women is labour intensiveness. The women experience labour shortages because of unending migration of able bodied youth from the rural to the urban areas creating labour shortage, especially at the peak period when labour is required for land preparation, planting, weeding, harvesting etc. Also, hired labour shortage has driven up the cost of labour making such labour unprofitable to the farmer. The women are faced with the challenges of doing most of the labour themselves.

Lack of fund affected both genders because they are poor, they cannot secure the necessary

Table 3. The t-test statistical analysis of the significance difference between mean ratings of male and female farmers' involvement in cassava production.

Respondents	N	X	SD	df	Cal-t	Crit-t	SL	Decision
Male	50	1.12	0.62	98	2.44	1.96	0.05	Rejected
Female	50	1.92	0.89					

Source: Calculated from survey data 2912.

Table 4. Distribution according to major processed products.

Processed products	Male			Female			Total		Dominant gender
	F	%	X	F	%	X	F	%	
Garri	40	80	2.40	50	100	3.00	90	90	Female
Fufu	24	48	1.44	44	88	2.64	68	68	Female
Tapioca	25	50	1.25	45	90	2.70	70	70	Female
Alibor	15	30	0.90	15	30	0.90	30	30	Both gender
Abacha	20	40	1.20	42	84	2.52	62	62	Female
Chips	42	84	2.52	22	44	1.32	64	64	Male
Cassava flour	34	68	2.04	45	90	2.70	79	79	Female
Starch	8	16	0.48	8	16	0.48	16	16	Both gender
Overall			1.53			2.03			

Source: Field survey 2012, Multiple responses were recorded.

Table 5. The t-test statistical analysis of the significance difference between mean ratings of male and female farmers' involvement in cassava processing.

Respondents	N	X	SD	df	Cal-t	Crit-t	SL	Decision
Male	50	1.53		98	2.56	1.96	0.05	Rejected
Female	50	2.03						

Source: Calculated from survey data 2012.

collateral for loans, cannot have access to credit facilities and cannot procure the sophisticated machines for processing. Climate change was another constraint for both genders, they experience drought or long period without rain leading to poor harvest, excessive sunshine leading to increase in temperature and unfavourable climate that reduces farm activities. Lack of improved planting materials, lack of processing machines and crude implements also affected both genders. Farmers still rely on the use of tools like hoes, cutlass, rake, shovel etc for their activities instead of ploughs, cultivators, etc. and this leads to drudgery of farmers, time wasting, low yield and low farm income. Improved planting materials were not readily available and the processing machines are limited. Tables 6A and B revealed that both male and female cassava farmers are faced with many constraints. The results are in agreement with Ironkwe et al. (2007) that farmers are faced with constraints that hinder the productivities. It can also be ascertained that the female farmers has more

constraints example land tenure system, labour intensiveness etc than their male counterparts. Therefore the hypothesis which states that there is no significant difference in the constraints between male and female cassava farmers in the area is thereby rejected. Table 7 reveals the suggested remedies to improve cassava production in Abia State, Nigeria. Table 7 shows the suggested remedies by the male and female farmers to improve cassava production in Abia State, Nigeria. Majority 80% suggested provision of loan 78% provision of inputs, 68% suggested reduced cost of herbicides and fertilizer and 60% suggested provision of land while 40% suggested development of variety that resist goat attack.

CONCLUSION AND RECOMMENDATIONS

The study revealed that both male and female farmers were actively involved in cassava production and processing, but female farmers dominated in most

Table 6A. Distribution of male farmers according to constraints in cassava production and processing.

S/N	Constraints	Serious	Less serious	Not serious	Mean
1	Lack of fund	40	5	5	2.40
2	Lack of improved planting material	38	10	2	2.28
3	Crude implements	34	10	6	2.16
4	Lack of inputs	35	10	5	2.10
5	Climate change	35	15	0	2.10
6	Lack of processing Machines	34	8	8	2.04
7	High cost of labour	30	13	7	1.80
8	Land tenure system	18	22	10	1.08
9	Low storability	10	30	10	0.60
10	Labour intensive	10	28	12	0.60
11	Lack of extension contact	5	18	27	0.30
12	Poor marketing	5	15	30	0.30
13	Poor yield	5	10	35	0.30
14	Low adaptability	5	10	35	0.30
15	High mortality	2	9	39	0.12
16	Pest/ disease attack	2	10	38	0.12
17	Poor branding	0	10	40	0
18	Poor products Quality	0	5	45	0

Source: Field survey 2012, Multiple responses are recorded.

Table 6B. Distribution of female farmers according to constraints in cassava production and processing.

S/N	Constraints	Serious	Less serious	Not serious	Mean
1	Land tenure system	50	0	0	3.0
2	Lack of fund	45	5	0	2.70
3	Lack of planting material	42	7	1	2.53
4	High cost of labour	40	7	3	2.40
5	Crude implements	38	12	0	2.30
6	Climate change	35	15	0	2.10
7	Lack of processing Machines	35	10	5	2.10
8	Labour intensive	34	10	6	2.0
9	Lack of inputs	30	15	5	1.80
10	Low storability	25	15	10	1.50
11	Poor marketing	25	15	10	1.50
12	Poor yield	10	15	25	0.60
13	Lack of extension contact	7	8	35	0.40
14	Poor products Quality	5	7	38	0.30
15	Low adaptability	5	10	35	0.30
16	Pest/ disease attack	5	10	35	0.30
17	High mortality	3	7	40	0.18
18	Poor branding	0	10	40	0

Source: Field survey 2012, Multiple responses are recorded.

activities in terms of labour in production and processing. They had some similar constraints though the women had more constraints like labour intensiveness, land tenure problem and marketing problems. Therefore policies geared towards achievement of cassava

production in the state should be gender based. Such policies should critically examine the farmers' production environment, constant priorities needs and goals on gender basis. This is necessary if cassava production and processing must be increased and sustained to

prevent hunger in the face of the global food crisis, increase farmers' income and improve standard of living of the rural households. It was recommended that state government should address the problem of farmers by assisting them with improved inputs. Adopting of modern farming and husbandry procedures such as planting of improved seedlings, application of agricultural chemical for pest and disease control, and enhanced yield should be facilitated by assisting farmers in sourcing improved technologies. Small scale irrigation should be promoted and strengthened. Government should increase funding of the agricultural sector so as to improve efficiency of institutional agencies for agricultural development. Loan should be given to farmers. Land ownership in the rural areas should be addressed by government so that everybody will have equal right to land ownership.

Conflict of Interest

The authors have not declared any conflict of interest.

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