

Original Research Article

Analysis of Women Participation in Cassava Production and Processing in Imo State, Southeast Nigeria

C.S. Onyemauwa

Department of Agricultural Economics, Federal University of Technology, Owerri, Nigeria

Abstract

The study examined the participation of women in cassava production and processing in Imo State, Nigeria. Stratified and simple random samplings were used to select 60 women that engage in the enterprise in the state. Descriptive statistics, participation index and an econometric tool were used to analyze data. The main enterprise objective of the women was household consumption. A grand mean participation index of 3.02 obtained is an indication that the women always participated in the enterprise in the state. The dominant activities of the women were cultivation, cutting of cassava sticks, frying and fire preparation. Level of education, number of visits by extension agents, access to farm credit, farm income, and cooperative membership were the statistically ($p < 0.05$) significant factors that affect the respondents in the state. The major constraints faced by the respondents were non-ownership of farm land, pre-occupation with household chores, inadequate farm size and high cost of processing. It is recommended that the respondents should belong to cooperative associations, and form effective linkage with agricultural extension agencies in the area. There is need to review the existing system of land acquisition and ownership in the area in order to give women greater access to and control of productive resources.

Keywords: Analysis; descriptive statistics; participation; women; cassava; production.

INTRODUCTION

An understanding of gender contributions to food output in rural households in Nigeria is important. This will ensure effective allocation of production resources within the rural households. The attendant increase in agricultural production arising from this will increase the farm output of the households and improve their standard of living. Numerous studies indicate that rural development policies directed at the household may not have their intended effects or produce unintended negative outcomes, unless the role and position of gender in rural households are explicitly taken into account (Odii, 1996). Women in Nigeria form an active and reserve labour force but they rarely own the means of productions (Rahman, 2004). However, the position of women in meeting challenges of agricultural development cannot be over emphasized. Women make a significant contribution to food production; they provide 60-80% of agricultural labour and are responsible for 80% of food production (Mgbada, 2002; Rahman, 2004). Socio-economic and political obstacles have for long been intensifying gender inequality and exacerbating poverty among women (Rahman and Haruna, 1999).

Under male-dominated social structures and political systems, women do not derive equal access to land, technology, education and resources (Tanko, 1994). The problem of food shortages in Nigeria has been attributed to an acute dearth of male labour and a shift of farm responsibilities to the women (Igben, 1988; Okigbo, 1989; Uwadie, 1993). There has also been a great disparity

between women and men in the size of land holdings as well as any overall trend of increasing landlessness pressure (Quisumbing, 1994).

Cassava and cassava-based products are the most important food for the people of southeastern Nigeria. Cassava is almost a daily menu in households especially in southeastern Nigeria. A study on the consumption pattern of cassava in southeastern Nigeria shows that 53.3% and 34% of people ate cassava in various forms daily and every other day, respectively (Okolo, 1986).

Intensifying efforts to improve the cultivation and processing of cassava will improve the lives of many households in Imo State. In view of the above, the need to analyse the involvement of women in cassava production and processing in Imo State becomes imperative. The objectives of this study are: (i) to describe the socio-economic characteristics of women that participate in cassava production and processing in the area, (ii) determine the level of women participation in cassava production and processing, (iii) identify the factors that affect women participation in cassava production and processing and, (iv) identify the constraints faced by women in cassava production and processing in the area.

MATERIALS AND METHODS

The study was conducted in three Local Government Areas (LGAs) of Imo State. The LGAs were purposively selected from each of the three agricultural zones of the state. They are Ohaji/Egbema LGA in Owerri zone,

Ihitte Uboma LGA in Okigwe zone, and Nwangele LGA in Orlu zone. Umuagwo, Onitcha Uboma and Umuozu were the communities purposively selected from each of the LGAs, respectively. Their selection was due to their significant involvement in cassava production and processing in the state. The state is located in southeastern part of Nigeria. It is bounded by Anambra state to the North, Abia state to the East, Rivers state to the South, and Delta state to the West. The state has an area of 5 430 square kilometers representing about 1.02 percent of Nigeria's land mass. The state has an estimated population of about 2.9 million people (FRN Gazette, 2007). Administratively, the state is divided into 27 Local Government Areas and has 3 agricultural zones of Agricultural Development Programme (ADP) namely: Owerri, Orlu and Okigwe.

Since the target population was not homogenous, stratified sampling was done to isolate the women involved in cassava farming and processing in the area from the rest of the population. Twenty respondents were randomly drawn from a sampling frame prepared there from by the investigator for each of the sampled communities. The total sample size used for the study was sixty.

The instruments for data collection were questionnaire and interview schedule for respondents who are not literate. Data were collected on the socioeconomic characteristics of the sampled farmers as well as the type and unit of their factor inputs. Data were also collected on the cassava production and processing activities undertaken by the respondents in the area.

Simple descriptive statistics such as mean, frequency counts and percentages were used to achieve objectives 1 and 4. A participation index was used to achieve objective 2. The index was constructed using a 3 point Likert scale after Ayoade et al. (2009). Participation was measured on scale 1-4 in order of importance from; never involved=1-1.99, rarely involved=2-2.99, always involved=3-3.99. The respondents were asked to indicate their level of participation in 14 practices involved in cassava production and processing. Since cassava roots can be processed into various forms (products), the product of interest in this study was garri, the most common processed cassava product in the state. The mean score for each of the practices/activities was calculated and the grand mean score of all the practices was divided by the number of activities to determine the level of participation of women in cassava production and processing in the area. Participation index was used as the endogenous variable in the regression model.

Ordinary least squares multiple regression analysis was used to achieve objective 3. The model was specified in its explicit form, thus;

$$Y = b_0 + b_1\chi_1 + b_2\chi_2 + b_3\chi_3 + b_4\chi_4 + b_5\chi_5 + b_6\chi_6 + b_7\chi_7 + u$$

Where,

Y = Participation index of the respondents

χ_1 = Age of the respondents (years)

χ_2 = Experience in cassava production and processing (years)

χ_3 = Level of education (number of years spent in formal schooling)

χ_4 = Extension contact (number of visits in a year)

χ_5 = Access to credit (Dummy: 1=yes; 0=otherwise)

χ_6 = Farm income (naira)

χ_7 = Cooperative participation (Dummy: 1=yes; 0= otherwise)

$b_1 - b_7$ = Regression coefficients

U = well behaved error term

Four functional forms, linear, exponential, double-log, and semi-log, were fitted into the model above and the form that best fits the regression line, according to economic, statistical, and econometric criteria, was chosen and used for analysis.

RESULTS AND DISCUSSIONS

Survey results presented in Table 1 show that the modal class of the respondents was between 35 and 44 years. This represents about 57% of the respondents and is an indication that majority of the respondents were in their middle and active age of life. This is closely followed by the respondents whose age range between 45 and 54 years. This is consistent with the findings of Onuebunwa and Adesope (2006) and Onyemauwa et al. (2007) that women in their early 30s and early 50s take active part in food crop production. Table 1 shows also that about 57% (or 34) of the respondents are in marriage while 15% (or 9) and 17% (or 10) of them were divorced and widowed, respectively. The findings show that about 72 % (or 43) of the respondents do not belong to, and take part in, cooperative activities. Incidentally, most agricultural technology is provided to farmers who belong and take part in cooperative activities. Their non-participation in cooperative activities will likely constrain their production and processing activities.

This is supported by the findings of Poly-Mbah and Udeogu (2007). Table 1 also shows that about 63% (or 38) of the respondents have no access to farm credit; this may be due to the fact that women are rarely considered credit worthy because they have no collateral (Yisehak, 2008). This might also be caused by their non-membership of cooperative associations. The modal class of the respondents' years of

Table 1: Socioeconomic characteristics of framers in cassava production and processing

Variables	Frequency	Percentage (%)
Age(years)		
25-34	9	15.00
35-44	34	56.67
45-54	14	23.33
55-64	3	5.00
Total	60	100.00
Marital Status		
Single	7	11.67
Married	34	56.67
Divorced	9	15.00
Widowed	10	16.66
Total	60	100.00
Cooperative Participation		
Yes	17	28.33
No	43	71.67
Total	60	100.00
Access to Credit		
Yes	22	36.67
No	38	63.33
Total	60	100.00
Years of Experience		
1-10	6	10.00
11-20	37	61.67
21-30	14	23.33
>30	3	5.00
Total	60	100.00
Level of Education (years)		
1-6	33	55.00
7-12	21	35.00
>12	6	10.00
Total	60	100.00
Enterprise Objective		
Consumption	24	40.00
Commercial	9	15.00
Both	27	45.00
Total	60	100.00

Source: Field Survey Data (2010)

experience in cassava production and processing enterprise in the state was 11-20 years. This is closely followed by 21-30 years. About 62% and 23% of the respondents are respectively found in these classes. Relating the level of experience with the age of the respondent as shown in Table 1, it can be deduced that they started engaging in the enterprises at a very young age. Considering the system of education in Nigeria, Table 1 gave an indication that 55% and 35% of the respondents merely graduated from basic primary and secondary schools, respectively. This finding agrees with those of Onyemauwa (2006) and Aqeela et al. (2005) that two thirds of the one billion of illiterate persons in the world are women and girls. With this ill-educated set of people, the goal of most institutional support to improve the productivity of farmers may not be attained. Their poor level of education may have also affected their non-

membership of cooperative societies and poor access to agricultural credit. Illiteracy and lack of adequate education have been identified as part of the major factors militating against institutional support towards agriculture (Poly-Mbah and Udeogu, 2007; Nwaru, 2007). Enterprise objective of producing mainly for household sustenance has continued to affect the commercialization of agriculture in developing countries. Osugiri (2007) attributes the dominance of subsistence agriculture to the effects of land tenure system in the state. Results shown in Table 1 indicate that only 15% of the respondents in the area produced and processed for commercial purpose whereas 40% had household consumption as their main enterprise objective.

Survey data presented in Table 2 indicate that women participate actively in most of the agricultural cultural and processing practices in the study location. The Table show that their most significant participation in the cultural practices was in cultivation and cutting of cassava sticks with mean of 3.86 and 3.85, respectively. Fire preparation (using fire wood) (mean=3.80) and frying the cassava flour into garri (mean=3.84) were the major cassava processing practices undertaken by the women in the area.

The Table shows that women never involved in activities such as land clearing (mean=1.12), grating/grinding (mean=1.82), and pressing/tying with stakes (mean=1.42). The findings show also that women rarely

Table 2: Participation index result of women in cassava production and processing

Cultivation/Processing practice	Mean score
Land Clearing	1.12
Cultivation	3.86
Cutting of cassava sticks	3.85
Planting	3.60
Fertilizer/Manure application	3.42
Weeding	3.62
Harvesting	3.22
Peeling/Washing	3.48
Grating/Grinding	1.82
Bagging	2.20
Tying with stakes/ Pressing	1.42
Sieving	2.96
Fire preparation	3.80
Frying	3.84
Grand mean	3.02

Note: never participated = 1.00-1.99; rarely participated = 2.00-2.99; always participated= 3.00-3.99

Source: Field Survey Data (2010)

participated in bagging the cassava flour after grinding (mean=2.20) and sieving after pressing (2.96). The grand mean for the participation index, which was found to be 3.02, is an indication that women in the state always participated in cassava production and processing

activities. This agrees with the findings of Okolo (1986) that cassava is women's crop.

The results of ordinary least squares multiple regression as presented in Table 3 show that the exponential functional form provided the lead equation of the factors that affect women participation in cassava production and processing in Imo State. Though its coefficient of multiple determination (R^2) is not as high as those of the linear and the semi-log forms, the exponential form was chosen because it has the least standard error as well as one of the highest number of statistically significant ($p < 0.05$) exogenous variables, it also satisfied the a priori expectations. The linear and the semi-log forms were not considered also due to their very high standard error. Accordingly, the analysis is based on the result of the exponential form. The results show that about 54.3% of the variation in the factors affecting women involvement in cassava production and processing in the state was explained by the exogenous variables included in the model. The study shows that there was a significant ($p < 0.05$) and positive relationship between women involvement in cassava production and processing in the state and level of education, number of extension visits, farm income, and cooperative participation. It can be adduced from the above results that as the women attain more education they are better prepared to involve in cassava production and processing. Similarly, as women

get more contact with extension agents they are likely to learn modern techniques of cassava production and processing and thus their involvement in them.

Production and processing activities require money. Accordingly, increased farm income will increase the tendency of the women to be involved in the activities. The benefits inherent in cooperative membership enable the farmers to have their inputs at reduced price due to bulk purchase and subsidy given by various institutional bodies from time to time. Expectedly, cooperative membership as shown in Table 3 increased the tendency of the farmers to be involved in cassava production and processing activities in the state. Access to credit had a significant ($p < 0.05$) but negative relationship with women participation in cassava production and processing in the state. This implies that with more credit available to the women there is a less tendency to involve in cassava production and processing in the state. This is contrary to a priori expectation. The reason for this might be that with available credit the women may venture into less risky non-farm activities with faster returns on investment.

The major factors constraining the involvement of women in cassava production and processing in the state as presented in Table 4 are ranked in order of their importance. They include non-ownership of farm land by women, pre-occupation of women with household chores, inadequate farm size, and high cost of processing.

Table 3: Socioeconomic factors affecting women participation in cassava production and processing

Explanatory Variables	Linear function	Exponential function	Double-Log function	Semi-Log function
Intercept	11361.12 (0.41)	10.39 (32.25)	4.62 (2.91)	-853996.00 (-3.99)
X_1	-0.09 (-0.17)	2.83 (0.49)	0.003 (0.03)	-10434.10 (-0.99)
X_2	3.91 (0.30)	1.03 (0.07)	0.11 (1.29)	30184.42 (2.56)*
X_3	2.43 (13.00)*	1.01 (4.71)*	0.01 (0.61)	4764.76 (1.59)
X_4	0.61 (3.50)*	5.05 (2.54)*	0.54 (5.18)*	87295.88 (6.15)*
X_5	-7.41 (-3.50)*	-4.4E (-1.81)*	-0.19 (-3.00)*	-40638.00 (-4.69)*
X_6	1203.50 (1.20)	0.02 (1.74)*	0.46 (3.97)*	70028.37 (4.49)*
X_7	5302.24 (2.94)*	0.06 (2.73)*	0.79 (3.65)*	114558.40 (3.90)*
R^2	0.8551	0.5427	0.5113	0.6265
F-value	43.84	8.82	7.77	12.46
N	60	60	60	60
Std E	46475.35	0.53	0.55	74621.53

* = Significant at 0.05 level of significance

Figures in parentheses are the t-ratios

Source: Field Survey Data (2010)

Table 4: Constraints faced by women in cassava production and processing

Constraints	Frequency	Percentage	Rank
Inadequate farm size	47	15.77	3 rd
Non-ownership of farm land	55	18.45	1 st
Difficulty in fertilizer procurement	14	4.70	7 th
Inadequate capital	43	14.43	5 th
Pre-occupation with household chores	52	17.45	2 nd
High cost of processing	46	15.44	4 th
High labour requirement in production and processing	41	13.76	6 th
Total	298*	100.00	

*Multiple responses was observed accordingly the total frequency exceeded the sample size

Source: Field Survey Data (2010)

This is unfortunate since scholars have remarked that women all over the world are taking over farm activities from men (Spurling and Saito, 1992; Uwadie, 1993). Small size of farm plots, as complained by the women, is to large extent a reflection of pressure on land. This agrees with the findings of Eboh (1990) and Osugiri (1996).

CONCLUSIONS AND RECOMMENDATIONS

The majority of women in the state have always participated in cassava production and processing and their involvement has been mainly for household consumption. The factors that significantly influence women participation in cassava production and processing in the state are their level of education, number of visits to them by agricultural extension agents, their farm income, their participation in cooperative activities, as well as their access to farm credit. The major factors that constrain women involvement in cassava production and processing in the state are non-ownership of farm land, their pre-occupation with household chores, inadequate farm size, as well as high cost of processing cassava roots into the granular-like form called garri.

It is highly recommended that the women should belong to cooperative associations, and link with agricultural extension agents in their area. Further, there is need to review the existing land tenure system in the area and give women greater access to and control of production resources.

REFERENCES

AQEELA S., TANVIR A., MUNIR A., MUHAMMAD Z. (2005): Gender participation in livestock production activities and their consumption trend of proteineous diet in TEHSIL

FATEH JUNG. Pakistan Journal of Agricultural Science 42: 3-4.

AYOADE J. A., IBRAHIM H. I., IBRAHIM H. Y. (2009): Analysis of women involvement in livestock production in Lafia area of Nasarawa State, Nigeria. Livestock Research for Rural Development 21 (12) 2009.

EBOH E. C. (1990): Agricultural Intensification and Factor Productivity in Anambra State of Nigeria. A case study. PhD Thesis, University of Nigeria, Nsukka, Nigeria.

FEDERAL REPUBLIC OF NIGERIA GAZETTE (2007): Legal Notice on Publication of the Details of the Breakdown of the National and State Provisional Totals 2006 Census. The Federal Republic of Nigeria, Lagos.

IGBEN M. S. (1988): The Nigerian Farmer and Agricultural Institutions: An Assessment of Nigerian Institute of Social and Economic Research, Ibadan, Nigeria.

MGBADA J. U. (2002): Production of Staple Crops by Rural Women in Enugu and Ebonyi States: Lessons for Enhancing Poverty Alleviation Programmes. In: Olowu T. A. (Ed.): Agricultural Extension and Poverty Alleviation in Nigeria. Proceeding of the Agricultural Extension Society of Nigeria, pp: 10-12

NWARU J. C. (2007): Gender and relative technical efficiency in smallholder arable crop production in Abia State of Nigeria. International Journal of Agriculture and Rural Development 10(2): 25-34.

ODII M. A. C. A. (1996): Gender Considerations in the "Resource Allocation and Food Production Behaviour of Farming Households in South Eastern Nigeria". PhD Thesis, University of Ibadan, Ibadan, Nigeria.

OKIGBO P. (1989): Concept of Equity in Agricultural Development: Dilemma for Policy. Presented at the Agricultural Society of Nigeria Conference, UNN, Nigeria.

OKOLO D. C. (1986): Profitability Potentials and Investment in Cassava. M.Sc. Thesis, Department of Agric Economics, University of Nigeria, Nsukka, Nigeria.

ONYEMAUWA C. S. (2006): Comparative Analysis of Fadama and Non-fadama Project Farmers in Imo State. M.Sc. Thesis submitted to the Department of Agric Economics, Federal University of Technology, Owerri, Nigeria.

ONYEMAUWA C. S., EZE C. C., OGUOMA N. N. O., EHIRIM N. C., OSUGIRI I. I. (2007): Allocative Efficiency and output elasticity of crop mixture farmers by gender in Nwangele, Imo State, Nigeria. International Journal of Agriculture and Rural Development 10(2): 50-55

ONUEBUNWA B. N., ADESOPE O. M. (2006): Contributions of women and children to backyard farm labour in Ikeduru area of Imo State, Nigeria. International Journal of Natural and Applied Sciences 2 (3): 189-192.

OSUGIRI I. I. (1996): Effect of Population on Agricultural Productivity in Imo State. M.Sc. Thesis, University of Nigeria, Nsukka, Nigeria.

- OSUGIRI I. I. (2007): Effect of land tenure system and sustainable farming on food production in Imo State, Nigeria. *International Journal of Agriculture and Food Systems*, 1(2): 125-129.
- POLY-MBAH C. P., UDEOGU B. C. (2007): Women participation in root crops production: A case of Njaba, Imo State. *International Journal of Agriculture and Rural Development* 10(2): 150-153.
- QUISUMBING A. (1994): Gender Differences in Agricultural Productivity: A Survey of Empirical Evidence. Discussion Paper Series No.36, Washington D.C: Education and Social Policy Department, World Bank.
- RAHMAN S. A., HARUNA I. M. (1999): Determinants of Women Economy Contribution to the Farm Sector in Nasarawa State, Nigeria. A Paper Presented at the National Workshop of Society for International Development held at: Institute of Administration, Ahmadu Bello University, Zaria, Nigeria.
- RAHMAN S. A. (2004): Gender Differential in Labour Contribution and Productivity in Farm Production Empirical Evidence from Kaduna State of Nigeria. Paper Presented at the National Conference on Family held at New Theatre Complex. Benue State University, Makurdi, Nigeria. 1st-5th March.
- SAITO K. A., SPURLING D. (1992): Developing Agricultural Extension for Women Farmers. World Bank; Washington, D.C. USA.
- TANKO N. M. (1994): Contribution of Rural Women to Agricultural Planning and Economics of Developments in Nigeria, In: Ikpi A E and Olayemi J K (Eds): Winrock International for Agricultural Development, pp. 5-6.
- UWADIE S. A. (1993): Mechanisms for Improving the Effectiveness of TIV Women's Participation in Agriculture through Farmer Education. UNN, Nigeria; PhD Thesis.
- YISEHAK K. (2008): Gender Responsibility in Small Holder Mixed-Crop Livestock Production System of Jimma Zone, South West Ethiopia. *Livestock Research for Rural Development*. Volume 20, Article #11.

Received for publication: October 3, 2011

Accepted for publication: April 4, 2012

Corresponding author:

C.S. Onyemauwa

Department of Agric Economics

Federal University of Technology

P.M.B. 1526 Owerri, Imo State, Nigeria

E-mail: csonyemauwa@yahoo.com