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SOCIO-ECONOMIC VARIABLES AND RURAL WOMEN PARTICIPATION IN YAM PRODUCTION IN GWAGWALADA AREA COUNCIL, FEDERAL CAPITAL TERRITORY (FCT), ABUJA, NIGERIA

Abdulhameed A. GIREI[1], Nafisat H. SULEIMAN[1], Susana B. OHEN[2]

[1]Nasarawa State University, Faculty of Agriculture, Department of Agricultural Economics and Extension, Keffi, Nigeria, Emails: agirejo@gmail.com, nafeesuleiman@gmail.com
[2] University of Calabar, Faculty of Agriculture, Department of Agricultural Economics, Calabar, Nigeria, Email: drsbohen@gmail.com

Corresponding author: agirejo@gmail.com

Abstract

The study was carried out to investigate the relationship between socio-economic variables and rural women participation in yam production in Gwagwalada Area Council, FCT Abuja, Nigeria. Stratified random sampling technique was used to select a sample of one hundred and fifty (150). Data was collected through the use of interview schedule and analyzed using descriptive statistics and logistic regression. Result showed that 43.3% of respondents were between the ages of 21 and 30 years. Most of the respondents were married (74.5%) with 70% of respondents having farm size of two (2) hectares. About 45% of respondents have no formal education. The result of logit analysis showed that farm size positively affected the participation of women in yam production. The Negalkerke R square was found to be 0.081. This indicates that 8.11% of the variation in the women participation in yam production in the study area is accounted for by the explanatory variables included in the model. Also, the chi-square analysis gave a value of 6.464 which is significant at 10% level of probability. The study recommended that Stakeholders should help in the provision of simple labour saving technologies that could reduce manual labour and energy sapping of the farmers. Government and relevant stakeholders should establish schemes that will enable women have easy access to land and other essential inputs. Credit facilities should also be made available and at affordable rates. Also, processing equipment and storage facilities should be developed and provided to the farmers to minimize waste and losses.

Key words**:** *participation, rural women, socio-economic, variables, yam production*

INTRODUCTION

Yam (Discorea Spp) is an annual root tuber bearing plant with over 600 species out of which six (6) are socially and economically staple in terms of food, cash and medicinal values in the tropics [19]. Some of the species include; Discorea rotundata (white guinea yam), Discorea alata (yellow yam), Discorea rotundata (white yam), Discorea alata (water yam), Discorea esculanta (Chinese yam) and Discorea dumetorun (trifoliate yam) [30]. Out of these, Discorea rotundata - white yam) and Discorea alata (water yam) are the most common species in Nigeria which are grown in the coastal region in rain forests, wood savanna and southern savanna habitats [18].

They are grown in tropical regions and mostly produced in the savannah region of West Africa,with two distinct seasons; wet and dry seasons[9]. The crop is also grown in Latin America and Caribbean countries like Colombia, Brazil, Haiti, Cuba and Jamaica [10].

Nigeria is the largest producer of yams in the world, followed by Ghana, Cote D' Ivoire, Benin, Togo, and Cameroon [10]. Yams are mostly marketed as fresh tubers and prepared for consumption. Transportation and marketing are carried out both by farmers and traders [18]. In the study area (Gwagwalada Area Council,FCT, Abuja) yams are sold by both male and females (youths, , adults and aged males and females).

Yams are the fifth most harvested crops in Nigeria, after cassava, maize, guinea corn, and beans/cowpeas [24]. Yams can withstand stress and hard climatic conditions and is less affected by micro-organism in the soil. Yams do not only serve as the main source of

incomes but also as a major employer of labour in Nigeria and all the yam growing countries worldwide. Despite the significance of yams to people both in the rural and urban areas, the attention given to its production is still far less than it importance [29].

Yam is widely consumed in West Africa as a food crop, the place of yam in the diet of the people in West Africa and Nigeria cannot be over-emphasized. [2] observes that yam contributes more than 200 dietary calories per capita per day for more than 150 million people in West Africa while serving as an important source of income to the people. The guinea white yams (*Dioscorea rotundata*) with its numerous varieties [17] are consumed by majority of Nigerians as a staple prestigious carbohydrate food. This showed that the yam crop is a very important food and income earner for about 60 million Nigerians [8]. Nigeria has a global record as the largest producer and consumer of yam. On a global scale, Nigeria alone contributes 36 million metric tons of food yams being cultivated in about 3 million hectares [27]. The tuber yam is the most economic part of the yam plant and as such, it is the source of income for farmers, processors and marketers. The yam tuber is an important source of protein, iron, and zinc to consumers. The crop also plays significant role in the socio cultural life of the people of Nigerian especially in South-eastern part of the country where it is regarded as the King of roots and tuber crops.

Despite the importance of the crop in the economy and socio-cultural life of many Nigerians, the crop faces a lot of challenges that reduce its potential to meet farmers, industrialists and consumer's needs. Some of the challenges include; unavailability of seed yam at affordable price, pests and diseases infestation and lack of interest in its research as a result of its long lifespan of 7 to 9 months.

Nigeria is by far the world's largest producer of yam. Accounting for about 79% of the world production, where Nigeria produced 18.3 million tonnes of yam from 1.5 million hectares, representing 73.8 percent of total yam in Africa [11]. Yam production in Nigeria has nearly doubled the volume produced in 1985 with a production of 35.017 million metric tonnes with a value equivalent to USD 5.654 million [12]. In perspective, the world's second and third largest producers are- Corte D' Ivoire and Ghana who produced 6.9 and 4.5 metric tonnes of yam in 2008 respectively.

[2] reported that in many yam producing areas in Nigeria, one can store yam tubers for periods of up to 6 months at ambient temperature thus contributing to sustainable food supply, especially at the difficult periods at the beginning of the wet season. [13] emphasized that root and tuber crops especially yam, have some inherent characteristics which makes it attractive, especially to smallholder farmers in Nigeria. Firstly, they are rich in carbohydrate, especially starch and consequently have a multiplicity of end users. Secondly, they are available all year round making them preferable to other more seasonal crops such as grains (peas, beans) for food security.

Women play an important role in the agricultural production in many countries including Nigeria. Their roles are in multiples and diverse which spans from soil tilling, cultivation, harvesting, processing, marketing of produce among others. In fact, it is increasingly known in recent times that a major share of the income of rural households are obtained through women activity, and sometimes even share of women income in the household economy is more than the share of men [6].

Rural women are active participants in retail trade and marketing, particularly where trade is traditional and not highly commercialized [3]. In many parts of Asia, women participate in many agricultural activities and marketing of foods such as vegetables, tubers, cereals among others. In West Africa, they help in distributing most major commodities; and in the Caribbean, women account for nearly all local marketing and through their marketing efforts, women provide valuable links among farmers, intermediaries and consumers. Petty trading often thought of in the past as non-productive, serves to stimulate the production and consumption linkages in the local economy [3].

Participation has been defined by [22] as the ability of the people to choose voluntarily to be an integral part of a development process. There has been ample research evidence to buttress the argument of women's high level of participation and contribution to agricultural production and other related agri-business and marketing of food crops in Nigeria.

However, the degree of women participation varies from one location to the other. Their specific task, vary from place to place, depending on cultures. It is generally believe that, women participation on self-employment including agricultural production and other related activities may varies from community to community, state to state, country to country and may as well differ across different regions of the world.

[1], women provide the backbone of the rural economy in most of sub-Saharan African, about 80 percent of the economic active female labor force. Food production is the major task of rural women and their responsibilities and labor inputs often exceed those of men in most area in Nigeria. Women also provide much of the labor for men's cultivation of export crops from which women derive little direct benefits [14]. Although women's activities vary according to differences in rural setting and cultural background, they generally participate actively in agricultural work and income generating activities which include food production and tending of livestock, making of pottery, handicraft, weaving of clothes and material as well as in trading are also responsible for hoeing from the farms to their home, preservation and marketing of crops. In a nut shell, women take primary responsibility for the production of sustaining food essential for family survival [26].

Nigeria like some other African countries has made efforts to promote gender equity, according to several policy commitments at global, continental, sub-regional and national levels. For instance the Federal Government of Nigeria formed a national policy on women in the year 2000 and this was revised in 2006 to resolve the problems of imbalance of the role of men and women in sustainable development [5].

Women generally face more serious constraints than men regarding the establishment of their economic activities, the obstacles include: lack of access to financial services, lack of entrepreneurship and market knowledge, low management and technical skills, lack of time due to household responsibilities and their generally low levels of livelihood which affect their ability to accumulate capital for investment [4; 20] and participation in yam production.

Although there have been accepted evidences of the contribution of rural women in food production, the contributions of women in yam production distribution and marketing of yam produce is yet to be fully appreciated. All channels of information, inputs and access to market have often been aimed at men on implicit assumption that men are heads of households and produce the food crops [26; 28] noted that there are bulks of women in developing economies, yet they are usually the poorest in the society less educated, disease ridden and occupy low social, economic and political status.

More, so a search through the literature reviewed shows that there have not been any empirical studies on the participation of women in yam production in the study area, this study is aimed at bridging this gap. The pertinent research questions in this study are:

(i)What are the socioeconomic characteristics of women farmers in the study area?

(ii)What activities are women involved in terms of yam production?

(iii)Do women socio-economic variables affect their participation in yam production?

Objective of the Study

The objectives of the study are to:

-describe the socio-economic characteristics of women farmers;

-examine the activities of women in yam production;

-determine the relationship between selected socio-economic variables of women and their participation in Yam production in the study area.

Hypothesis

There is no relationship between selected socio-economic variables and women

participation in yam production.

MATERIALS AND METHODS

The Study Area

The study area is Gwagwalada Area Council of the Federal Capital Territory (FCT), Abuja. It is geographically located at Latitude 8 56' 59" North of the equator and Longitudes 7 5' 59 East of the prime meridian. It shares boundaries with Kwali (which is 16.9km from it), and the FCT, Abuja which is (19.4 km away).

The high humidity in the area gives a heat trap effect which makes Gwagwalada uncomfortably hot, it has an area of 1,043km and population of 157,177 people [25]. The area is characterized by two main seasons; rainy (April to November) and dry (December to march). The mean daily temperature ranges between 30^0 and 37^0 C, with an annual rainfall of 1,100 to 1,600 mm, which encourages agricultural activities such as the cultivation of crops (yam, cassava, groundnut, cowpea, maize, sorghum, rice, and melon), grazing of animals and fishing. Gwagwalada Area Council is predominantly inhabited by Gbagi, Bassa, Gede and a handful of other tribes such as Fulanis, Pangus, Nupe, Hausa, Igbo and Yoruba.

Sampling Techniques

A multistage sampling procedure was used. In the first stage, five (5) out of the ten (10) communities Gwagwalada area council were purposively selected based on the concentration of women farmers in these areas. Hence, Paiko-kore, Dobi, Tunga-maje, Gwako and Zuba were selected. In the second stage, using a list of farmers obtained from ADP, farmers were stratified into male and female. Simple random sampling was then used to select thirty female respondents from each of these communities giving a total sample size of 150 respondents

Data Collection/ Analysis

The instrument used for this study was interview schedule. Both descriptive statistics and Logit regression analysis were employed to analyze the data. The descriptive statistics used included; frequency distribution, percentage, mean and standard deviation to achieve objectives one and two. While, Logit regression analysis was used to analyze objective three, the logit analysis is suited to models where the dependent variable is a dummy. The logit model is mathematically represented as follows:

$$Yi = a + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + U_1$$

where Yi = participation of women in yam production (1 = if a farmer participate, and 0 = if a farmer did not participate given a critical value of above 75%).

a= constant

β_1- β_7 = Regression coefficients

$$P = a + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7$$

X_1 = Age (years)

X_2 = marital status (married = 1, single = 0)

X_3 = years of experience in farming

X_4 = income (estimate annual income)

X_5 = household size (number of persons)

X_6 = hectares (farm size)

X_7 = years of formal education (primary school = 6, secondary school = 12, tertiary = 16 and no formal education = 0.)

Ui = Error terms

Definition of Measurement of variables

(i) Participation of women in yam production – is measured by the use of a dummy 1 (participated) dummy 0 (did not participate)

(ii) Age –the last birthday of respondent at the time of the study (years).

(iii)Farming experience –Numbers of years spent in farming.

(iv)Income –Amount of money realized from the sales of agric produce per annum

(v)Household size –Number of person resident under a single roof.

(vi)Farm size –The area of land cultivated (hectare).

RESULTS AND DISCUSSIONS

Socio-economic characteristics of women farmers

Socio-economic characteristics of farmers have a significant influence on the

respondent's decision making process, availability and the level of conventional inputs and other related technology. According to [16] some .of the socio-economic characteristics of the farmers which may contribute to or affect the farmers productivity level include; age, marital status, experience in farming, level of education, household size, farm size, income distribution, access to credit, among others.

The result on Table 1 shows the distribution of respondents based on their age groups. Majority of the respondent (43.3%) were between the ages of 21-30 years, this was followed by farmers with ages of 50 and above and this constituted 36%, and 20.7% of the respondents were of ages ranging between 10 – 20 years. This implies that majority of the farmers belong to the active age group and energetic enough to take up responsibilities in their farms. It is at active age when farmers can carry out the physical requirements of farm activities. The marital status of the respondents refers to the disposition of the farmers as to either married or unmarried (single). Widowed and divorced respondents were also grouped under the single category. The distribution of the respondents as also reflected in Table 1 revealed that most of the women farmers (77.3%) were married while un-married represented 22.7%. It is generally observed that married persons have more responsibility than the un-married and hence more efforts are given in terms of participation in farm activities so as to enable them generate more food and income to meet their domestic requirements.

Farming experience of the farmers refers to the number of years put into farming by individual or household. From same Table 1, the study reveals that majority (70.7%) of the female farmers had years of experience in farming of less than 10 years while about 20% of farmers had 21 and above years of experience, followed by the least experienced farmers which constituted 9.3% of the farmers with experience of between 11 – 20 years. This implies that majority of the women farmers had low experience in farming. This is not in agreement with [15] which noted that in West Africa, 60 – 70% of domestic farms and marine product are handled by women and had long period of farming experience.

Table 1 further shows that most (70%) of the female farmers had an annual income of between ₦10,000-₦100,000 naira, while about 15.3% of the women farmers had annual income of ₦160,000 and above and the least percentage (14.7%) with an annual income ranging between ₦110,000 - ₦150,000. This result shows that majority of the female farmers had lower income level and this could affect participation in yam production because the more the income of the farmers the more the production and purchase of lands and other essential inputs such as fertilizer, improve varieties of seed and other technology for improve productivity.

The analysis regarding the household size is also captured in Table 1. This indicated that majority (44.7%) of women farmers had Household size of less than10 members 41.3% of the female farmers had 11-20 members while the remaining 14% having household size of 20 and above people. In consideration of this result, it was observed that majority of the women farmers had lower household size and this could affect agricultural production activities which are labor intensive. This is in agreement with [23] who observed those female headed households are smaller in size and this could lead to shortage of labor especially in peak seasons to facilitate farm operations requirements.

As regards to the farmers land holdings, the analysis also indicated that mostly (58%) had farm size of less than 2 hectares while 32% had farm size of between 2-5 hectares with a lower percentage of 10% of the farmers who had farm size of over 5 hectares. This result demonstrated that women that participate in yam production are more in the hands of small scale women farmers. It was pointed out by researchers such as [7] that women are perceived to be less capable of farming their allocations despite the smallness.

Education in whatever form is often considered as a backbone and a strong weapon to technology adoption and development that will lead to improve

productivity. It enable farmers to acquire more rapidly new innovations available in all aspect of the agricultural related activities as well as technology testing between existing and new ones being tried to develop and promote.

Table 1. Distribution of the respondents according to socio-economic characteristics

Variables	Frequency	Percentage
Age (years)		
Less than 20	31	20.7
21-30	62	43.3
31 and above	54	36.0
Marital Status		
Married	116	77.3
Single	34	22.7
Experience in farming (years)		
Less than 10	106	70.7
11-20	14	9.3
21 and above	30	20.0
Household size		
1-10	67	44.7
11-20	62	41.3
21 and above	21	14.0
Farm size (ha)		
Less than 2	87	58.0
2-5	48	32.0
Above 5	15	10.0
Educational level (Years)		
No formal education	52	34.7
Primary School	31	20.7
Secondary	39	26.0
Tertiary	28	18.6
Income distribution (₦)		
10,000-100,000	105	70.0
101,000 - 200,000	22	14.7
201,000 and above	23	15.3
Women Participation in Yam Production		
Participated	132	88.0
Not participate	18	12.0

Source: Field survey, 2015

In consideration of the results of this study, it reveals that majority (34.7%) of the women with had no formal education, followed by 26% with 12 years indicating the achievement of secondary education, followed by 20.7% with 6 years of formal schooling and this indicates the attainment of primary education. Only (minority) 18.6% had a formal education of 16 years of formal education which indicates tertiary education. This result shows that women farmers have low level of education, and hence low adoption of new technology with less accessibility of new innovation and low tendency of innovativeness, access to improve inputs, farm credit support, and effective record keeping among other related incentives. In the case of women participation in yam production activities in the study area, the findings of the study indicated that majority representing 88% of the respondents participates in yam production, while the remaining 12% did not participate in yam production. This has shown that despite the general acceptability and income generation being received from yam production in the entire yam producing area of Nigeria, yet some of the women are not participating, possibly due to the low level of education or preference for other crops or inadequate land and access to production inputs.

The activities of women in yam production.

The results on Table 2 show the activities of women in yam production. The result revealed that 62% of the women farmers were involved in land preparation, 81.3% in planting, 80% in fertilizer application. Also, 74.7% participated in weeding, 80.7% in staking while 84.7% involved in harvesting. Those involved in processing and marketing constituted 82% and 79.3% respectively. This results further shows that women farmers in Gwagwalada Area Council have a higher percentage of participation in of yam production activities.

Table 2. The activities of women in yam production

Women participation	Frequency	Percentage
Land preparation		
I participated	94	62
I did not participate	56	88
Planting		
I participated	122	81.3
I did not participate	28	18.7
Fertilizer application		
I participated	120	80.0
I did not participate	30	20.0
Weeding		
I participated	112	74.7
I did not participate	38	25.3
Staking		
I participated	121	80.7
I did not participate	29	19.3
Harvesting		
I participated	127	84.7
I did not participate	23	15.3
Processing		
I participated	123	82.0
I did not participate	27	18.0
Marketing		
I participated	119	79.3
I did not participate	31	20.7

Source: Field survey, 2015

Determinants of women participation in yam production in the study area

The estimates of the determinants of women participation in yam production in the study area is shown in Table 3.

The results of the regression analysis showing the participation of rural women in yam production indicated that farm size (W = 0.004) had a significant influence on women participation in yam production at 5% level of probability.

Table 3. Logit result showing the appraisal of women participation in yam production in relation with their social-economic variables

Variables	B	Exp(B)	Standard error	Wald
Constant	2.174	8.793	1.306	2.771
Age (years)	0.038	1.039	0.068	0.324
Farm size (ha)	-0.005	0.995	0.075	0.004*
Farming experience (years)	0.040	1.041	0.066	0.373
Marital status	0.318	1.375	0.664	0.230
Farmers income (Naira)	0.000	1.000	0.000	0.100
Household size	-0.098	0.907	0.050	3.822
R^2-value 0.081				

Source: Field Survey, 2015. *Wald is significant at 5% level of probability.

This agrees with Larson and [21] who pointed out that the land tenure systems in Africa vary across the continent. Both women's access to land and security of women's land affects overall productivity when there is maximum allocation of land. Also the result shows that age, household, farmers experience, farmer's income and marital status have no significant effect on the women participation in the production of yam in the study area.

Furthermore, the Negalkerke R square was found to be 0.081 (8.11%). This indicates that 8.11% of the variation in the women participation in yam production in the study area is accounted for by the explanatory variables included in the model. Also, the chi-square analysis gave a value of 6.464 which is significant at 10% of probability. The result further shows that livelihood value of 103.613.

Farm size had significant effect on participation of women in yam production. This implies that women with large farm size participated increasingly in yam production in the study area.

CONCLUSIONS

Women participation in agricultural production and the marketing of agricultural produce in particular is an age long activity. However, this study has revealed the factors which could influence women participation in yam production in Gwagwalada Area Council, Federal Capital Territory, Nigeria. The result further revealed that rural women are highly involved in yam production and majority of the women were married, had low educational level, farm size of less than 2 hactares, low income, and household size of 1-10 members, It has also shown that the participation of women in yam production in the study area was highly determined by farm size. The results further revealed that 63% of the women farmers were involved in land preparation, 81.3% in planting, 80% in fertilizer application. Also, 74.7% participated in weeding, 80.7% in staking while 84.7% involved in harvesting. Those involved in processing and marketing constituted 82% and 79.3% respectively. The logit regression result showed that farm size had a significant effect on women participation in yam production at 5% level of probability while age, household size, farming experience, farmer's income and marital status of women have no significant influence. The Negalkerke R square was found to be 0.081 (8.11%). This indicates that 8.11% of the variation in the women participation in yam production in the study area is accounted for by the explanatory variables included in the model. Also, the chi-square analysis gave a value of 6.464 which is significant at 10% of probability. The result further showed a livelihood value of 103.613. It is therefore recommended that; adequate extension agents should be made available to the women farmers to help in providing more improved technologies and other related capacity building services. Stakeholders should help in the provision of simple labour saving technologies that could reduce manual labour and energy sapping of the farmers. Government and relevant stakeholders should establish schemes that will enable women have easy access to land and other essential inputs. That sources of credit, whether formal or informal should also be made more accessible and affordable to the women. This will enable them source for the required funds needed to support their businesses. Processing equipment and storage facilities should also be developed and provided to the farmers to minimize the level of destructions of produce.

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