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GENDER DIFFERENCES IN AGRICULTURAL PRODUCTION IN A NIGERIAN RURAL ENVIRONMENT

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Abstract

This paper examines variations in agricultural production activities undertaken by gender in a rural area of Kwara State, Nigeria. It also identifies the most important factors that determine gender participation in agricultural production. A multistage simple random sampling method was employed to select a total of 632 farmers. They were interviewed through structured questionnaire administration. Results of the study showed that though most female farmers do not own land but they have access to it. However, female farmers participated in almost all production activities, particularly planting, fertilizer application, watering, transplanting, harvesting, transporting, storing, processing and marketing. On the other hand, male farmers were fully engaged in only land clearing and planting. Consequently, the paper concludes with the suggestions that both male and female farmers should have equal access to land since landownership determines their participation in agricultural production in Nigeria. Women farmers should also be integrated into policy formulation and implementation in the various agricultural and rural development programmes.

Introduction

Agriculture is the key to sustained growth of modern economy in most developing countries, including Nigeria. About 70 percent of Nigerian population engage in agricultural production at a subsistence level (Encyclopaedia of the Nations, 2008). However, the significant contributions of women to agricultural production and subsistence economy are underestimated. According to World Bank (1996), women constitute two-thirds of the agricultural labour force and produce 80% of the total food grown and consumed in Nigeria. Rural women play significant roles in form of storage, processing, transporting, threshing and marketing of food products in most developing countries (Obinne, 1995). Similarly, the works of Boserup (1970) and Nweke et al (1999) revealed that female gender are responsible for almost everything that has to do with food crops production in Africa.

Olawoye (1989), Ogungbile, et.al. (1988) and Ayleko (1986) opined that although, it is generally acknowledged that women make major contributions to farming activities, agricultural production in Nigeria is associated with men. Even, where the women perform crucial and laborious tasks in agricultural production, their contribution is grossly underestimated (Olawoye, 1994). For example the contributions of women are often assigned zero valuation in most national

agricultural statistics with their labour considered as "unpaid family help". Consequently, women especially those in the rural areas are ignored or not adequately reflected in agricultural programmes.

In order to understand the effects of agricultural policy on male and female farmers and also reduce disparities between male and female farmers in agricultural programmes, both male and female should be examined together. There is therefore every need to have correct information on which gender (male or female) actually perform which activities in Nigerian agriculture. This is to enable the governments and policy makers fashion appropriate planning guidelines.

For this study, agricultural activities is interpreted to mean the whole cultivation process; land clearing, planting, hoeing and weeding, transplanting, mulching and fertilizer application, watering, harvesting, transporting, storing, processing and marketing. Similarly agricultural production means purposive raising of livestock and crops for man's use.

This paper therefore examines differential participation in agricultural tasks by gender in a typical rural area of Kwara state, Nigeria. Furthermore, it explains the most important factors determining participating rate by gender. Finally, It identifies and proffers solutions to human resource problems in agricultural production and planning.

The Study Area

This study was conducted in the rural districts of Oke-Ero Local Government Area of Kwara State, Nigeria. The local government is comprised of three districts namely: Iloffa/Odo-owa, Ekan and Idofin districts. It lies between latitude $8^{\circ}00'$ and $8^{\circ}15'$ North and longitude $5^{\circ}00'$ and $5^{\circ}31'$ East of the equator (Fig.1). The Study area covers about 466.27 square kilometres, with a population of 38,398 people as put forward by the 1991 provisional census. It is characterised by two climatic seasons. These are dry season, which occurs between November and March, and the rainy season, which starts in April and ends in October. Oke-Ero L.G.A. shares boundaries with Irepodun and Ifelodun L.G.As of Kwara State to the North, Ekiti State to the South, Kogi State to the East and Osun State to the West (Fig. 1).

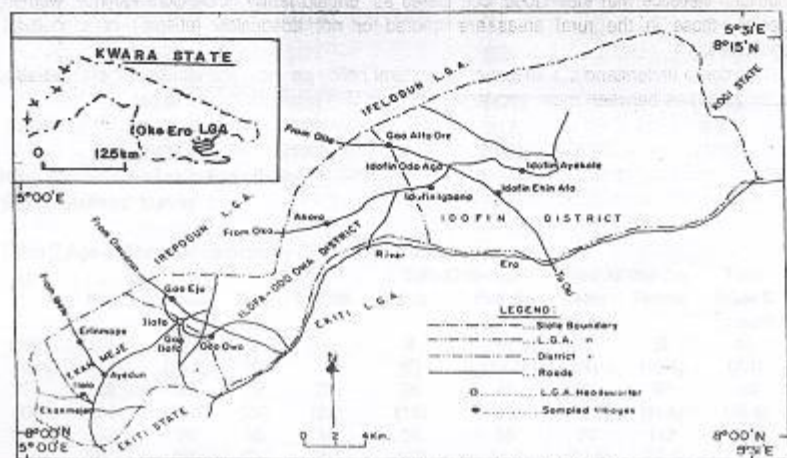


Fig. 1: Map of Oke Ero Local Government Area showing the Districts and Sampled Villages.
Source: Kwara State Ministry of Lands and Surveys, Borno.

As a result of its location within the Guinea Savannah belt of Nigeria, it is an agriculturally productive area (Bankole, 2003). The common food crops grown include yam, cassava, sweet potatoes, guinea corn and maize. The tree crops grown also include kola-nuts, palm-trees, cashew, oranges and mangoes among others. Ogunwale (2004) pointed out that the presence of an exposed massive igneous rock supplies soil nutrients to the area during the long weathering process. The soil constituents are potassium, calcium, magnesium and phosphorus that are diagnostic of high fertility for agricultural development.

Methodology

In order to examine gender factor in agricultural production, structured questionnaires were administered to the farm families in the three districts of the study area in the last quarter of year 2005. 10% of a total of 6,316 registered farm families in Oke-Ero Local Government Area, compiled by Kwara State Agricultural Development Project (KWADP), was chosen using stratified sampling technique. 10% of the farm families in Illofa/Odo-Owa District was 317, Idofin District had 166 farm families and Ekan District had 149 farm families. Thus, a total of 632 respondents, comprising 325 males and 307 females were interviewed. Descriptive statistical analytical tools including tabulations and simple percentages were used to show the distribution of some socio-economic characteristics of sampled farmers and also to analyse differential participation in agricultural tasks by gender. The inferential statistical analysis involved the use of stepwise

multiple regression analysis which was used to identify the most significant factors determining gender participation in agricultural production. For this study, the regression equation is of the form:

$$Y = a + b_1x_1 + b_2x_2 + \dots + b_7x_7 + e$$

a = Intercept
 e = error terms

Where Y is the dependent variable and factors x_1 to x_7 are the independent variables.

- x_1 = Age
 x_2 = Annual income
 x_3 = Type of agricultural tasks performed
 x_4 = Membership of cooperative society
 x_5 = Landownership
 x_6 = Farm Size
 x_7 = Formal educational status

These variables were chosen after due consideration of past studies on gender issues. For example, Ajayi (1992) selected personal characteristics and variations in environmental factors. Similarly, Fatulu (2007) suggested a list of such variables involving dispersed characteristics with emphasis on accessibility to public goods and services. The personal knowledge of the study area also helped in our selection. At the end, seven of such variables were chosen as listed above.

Results and Discussions

Characteristics of Respondents

This section presents the characteristics of the respondents as they relate to agricultural production. Out of 632 respondents interviewed, 325 (51.4%) were male farmers while 307 (48.6%) were female farmers. 80 (53.7%) male and 69 (46.3%) female farmers were from Ekan district; 78 (47%) male and 88 (53%) female farmers from Idofin district; and 167 (53%) male and 150 (47%) female farmers were from Iloffa/Odo-Owa district (Table 1). 89.6% of the total male and 93.3% of the total female farmers were 21 years and above while only 10.4% male and 6.7% female farmers were below 20 years of age (Table 2). This indicates that majority of the farmers fell within the economically active age (20-50 years). 79.4% male and 65.8% female farmers were married, indicating their chances of getting family labour for use on the farm especially among the children. 16.6% male and 21.8% female farmers were single, 0.6% male and 0.7% female farmers were divorced, 0.6% male and 1.3% female farmers were separated while 2.8% male and 1.3% female farmers were widows (Table 3). In the three districts, the full-time farmers comprised of 64.9% male and 52.1% female while 35.1% male and 47.9% female were part-time farmers (Table 4), suggesting that they have other sources of income such as trading, vocational jobs or employment in various offices. The farmers have varying educational backgrounds, 63.1% of the male and 74.3% of the female farmers interviewed had formal education while 36.9% male and 25.7% female farmers had no formal education (Table 5).

Table 1: Sex of Sampled Farmers in each District and Gender

Sex	Ekan District	Idolin District	Iloffa/Odo-Owa District	Total All Districts
Male	80 (53.7)	78 (47)	167 (53)	325 (51.4)
Female	69 (46.3)	88 (53)	150 (47)	307 (48.6)
Total	149 (100)	166 (100)	317 (100)	632 (100)

Note: Percentages are in Parentheses

Source: Authors' Survey

Table 2: Age of Sampled Farmers by District and Gender

Age	Ekan		Idolin		Iloffa/Odo-owa		Total All Districts		Total (Male & Female)
	Male	Female	Male	Female	Male	Female	Male	Female	
Below	2	16	3	-	8	16	13	32	45
20yrs.	(2.5)	(23.2)	(4)		(5)	(10.7)	(4)	(10.4)	(7.1)
21-	28	27	19	25	25	45	72	97	169
30yrs.	(35)	(39.1)	(24)	(28)	(15)	(30)	(22.1)	(31.6)	(26.8)
31-	19	20	16	34	39	58	74	112	186
40yrs.	(23.7)	(29)	(21)	(39)	(23)	(38.7)	(22.8)	(36.5)	(29.4)
41-	26	5	10	8	41	22	77	35	112
50yrs.	(32.5)	(7.2)	(13)	(9)	(25)	(14.6)	(23.7)	(11.4)	(17.7)
Above	5	1	30	21	54	9	89	31	120
50yrs	(6.3)	(1.5)	(38)	(24)	(32)	(6)	(27.4)	(10.1)	(19)
Total	80 (100)	69 (100)	78 (100)	88 (100)	167 (100)	150 (100)	325 (100)	307 (100)	632 (100)

Note: Percentages are in Parentheses

Source: Authors' Survey

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Table 3: Marital Status of Respondents by District and Gender

Marital Status	Ekan		Idofin		Ilofa/Odo-owa		Total All Districts		Total (Male & Female)
	Male	Female	Male	Female	Male	Female	Male	Female	
Married	63 (78.8)	37 (53.6)	59 (75.6)	65 (74)	136 (82)	100 (66.7)	258 (79.4)	202 (65.8)	460 (72.8)
Single	16 (20)	31 (44.9)	14 (17.9)	8 (9)	24 (14)	28 (18.6)	54 (16.6)	67 (21.8)	121 (19.2)
Divorced	-	-	2 (2.6)	2 (2)	-	-	2 (0.6)	2 (0.7)	4 (0.6)
Separated	-	-	2 (2.6)	-	-	4 (2.6)	2 (0.6)	4 (1.3)	6 (0.9)
Widowed	1 (1.2)	1 (1.5)	1 (1.3)	3 (15)	7 (4)	18 (12)	9 (2.8)	32 (10.4)	41 (6.5)
Total	80 (100)	69 (100)	78 (100)	88 (100)	167 (100)	150 (100)	325 (100)	307 (100)	632 (100)

Note: Percentages are in Parentheses

Source: Authors' Survey

Table 4: Farming Status of Farmers by District and Gender

Farming Status	Ekan		Idofin		Ilofa/Odo-owa		Total All Districts		Total (Male & Female)
	Male	Female	Male	Female	Male	Female	Male	Female	
Full Time	54 (67.5)	41 (59.4)	60 (77)	44 (50)	108 (65)	75 (50)	222 (64.9)	160 (52.1)	382 (60.4)
Part Time	26 (32.5)	28 (40.6)	18 (23)	44 (50)	59 (35)	75 (50)	103 (35.1)	147 (47.9)	250 (39.6)
Total	80 (100)	69 (100)	78 (100)	88 (100)	167 (100)	150 (100)	325 (100)	307 (100)	632 (100)

Note: Percentages are in Parentheses

Source: Authors' Survey

Table 5: Educational Status of Respondents by District and Gender

Education Level	Ekan		Idofin		Ifelaf/Odo-owa		Total All Districts		Total (Male & Female)
	Male	Female	Male	Female	Male	Female	Male	Female	
Non-formal Education	32 (40)	10 (14.5)	35 (44.9)	30 (34.1)	53 (31.7)	39 (26)	120 (36.9)	79 (25.7)	199 (31.5)
Adult Education	8 (10)	15 (21.7)	8 (10.3)	2 (2.3)	24 (14.4)	27 (18)	40 (12.3)	44 (14.3)	84 (13.3)
Primary Education	12 (15)	17 (24.7)	11 (14.1)	20 (22.7)	12 (7.2)	14 (9)	35 (10.8)	51 (16.6)	86 (13.6)
Secondary Education	9 (11.2)	10 (14.5)	14 (17.9)	28 (31.8)	49 (29.3)	45 (31)	72 (22.2)	84 (27.4)	156 (24.7)
Post-Secondary Education	17 (21.3)	15 (21.7)	10 (12.8)	8 (9.1)	27 (16.2)	24 (16)	54 (16.6)	47 (15.3)	101 (16.0)
Others	2 (2.5)	2 (2.9)	-	-	2 (1.2)	-	4 (1.2)	2 (0.7)	6 (0.9)
Total	60 (100)	69 (100)	78 (100)	68 (100)	167 (100)	150 (100)	325 (100)	307 (100)	632 (100)

Note: Percentages are in Parentheses

Source: Authors' Survey

Table 6: Farm Activities of Respondents by District and Gender

Farm Activities	Ekan		Idofin		Ifelaf/Odo-owa		Total All Districts		Total (Male & Female)
	Male	Female	Male	Female	Male	Female	Male	Female	
Land Preparation	54 (57.5)	10 (14.5)	68 (87.2)	24 (27.3)	161 (91)	42 (26)	283 (87.1)	76 (24.8)	359 (56.8)
Planting	31 (38.8)	28 (40.6)	25 (32.1)	75 (85.2)	77 (46.1)	117 (78)	133 (40.9)	220 (71.7)	353 (55.8)
Hoeing and weeding	21 (26.3)	10 (14.5)	18 (23.1)	75 (85.2)	54 (32.3)	107 (71.3)	93 (28.6)	192 (62.5)	285 (45.1)
Transplanting	2 (2.5)	4 (5.8)	12 (15.4)	75 (85.2)	55 (32.9)	83 (55.3)	69 (21.2)	162 (52.8)	231 (36.6)
Mulching and fertilizer	16 (20)	4 (5.8)	16 (20.5)	75 (85.2)	62 (37.1)	84 (56)	94 (28.9)	163 (53.1)	257 (40.7)
Watering	7 (8.8)	16 (23.2)	-	75 (85.2)	56 (33.5)	16 (5.7)	63 (19.4)	177 (57.7)	240 (38)
Harvesting	12 (15)	25 (36.2)	6 (7.7)	83 (94.3)	55 (32.9)	34 (22.7)	73 (22.5)	142 (46.3)	215 (34)
Transporting	6 (7.5)	4 (5.8)	-	73 (83)	52 (31.1)	23 (15.3)	58 (17.8)	100 (32.6)	158 (25)
Storing and Processing	7 (8.8)	5 (7.2)	-	77 (87.5)	53 (31.7)	26 (17.3)	60 (18.5)	108 (35.2)	168 (26.6)
Marketing	1 (1.3)	47 (68.1)	-	68 (96.5)	32 (19.2)	140 (93.3)	33 (10.2)	275 (88.6)	308 (48.7)

Note: Total not 632 because of multiple responses; Percentages are in Parentheses

Source: Authors' Survey

Table 7: Types of Crop Grown by District and Gender

Types of Crop Grown	Ekiti		Idofin		Ilofa/Odo-owa		Total All Districts		Total (Male & Female)
	Male	Female	Male	Female	Male	Female	Male	Female	
Tree Crops	1 (1.1)	1 (1.4)	4 (5.0)	1 (1.1)	18 (9.8)	1 (0.6)	23 (7.1)	3 (1.0)	26 (4.1)
Food Crops	65 (73.9)	40 (55.6)	31 (38.7)	40 (45.5)	71 (38.8)	78 (42.2)	167 (51.4)	156 (50.8)	323 (51.1)
Tree and Food Crops	8 (9.1)	4 (5.6)	40 (50)	22 (25)	68 (37.2)	11 (6.1)	116 (35.7)	37 (12.1)	153 (24.2)
Vegetables	14 (15.5)	27 (37.5)	5 (6.3)	25 (28.4)	26 (14.8)	92 (51.1)	45 (13.8)	144 (46.5)	189 (29.9)

Note: Total not 632 because of multiple responses

Percentages are in Parentheses

Source: Authors' Survey

Table 8: Livestock Production by District and Gender

Livestock Production	Ekiti		Idofin		Ilofa/Odo-owa		Total All Districts		Total (Male & Female)
	Male	Female	Male	Female	Male	Female	Male	Female	
Yes	59 (73.8)	63 (91.3)	35 (44.5)	67 (76.1)	102 (61.1)	122 (61.3)	196 (60.3)	252 (82.1)	448 (70.9)
No	21 (26.2)	6 (8.7)	43 (55.1)	21 (23.9)	65 (38.9)	28 (18.7)	129 (39.7)	55 (17.9)	184 (29.1)
Total	80 (100)	69 (100)	78 (100)	88 (100)	167 (100)	150 (100)	325 (100)	307 (100)	632 (100)

Note: Percentages are in Parentheses

Source: Authors' Survey

Farm Activities Performed

In terms of agricultural tasks, table 6 reveals that female farmers performed the majority of food crop production activities such as planting, weeding, fertilizer application, transplanting, watering, harvesting, transporting, storing, processing and marketing. Their male counterparts were mainly involved in land preparation and planting. In the three districts, 87.1% male as against 24.8% female farmers were engaged in land preparations. This is in support of Palmer (1991) and Ajayi's (1992) observation that after land preparation, in which women are also involved, the bulk of farm tasks are carried out by women. Also, 40.9% male and 71.7% female farmers plant the crops. 28.6% male and 62.5% female farmers hoe and weed the farm. 21.2% male and 52.8% female farmers transplant the crops. 28.9% male and 53.1% female farmers were engaged in mulching and fertilizer application, 19.4% male and 57.7% female farmers water the crops. Harvesting was done by 22.5% male and 46.3% female farmers. 18.5% male and 35.2% female farmers were involved in storage and processing of the farm produce. Lastly, 89.6% female as against 10.2% male farmers market the farm produce. This is also in line with the observation made by F.A.O. (1998) that women are mostly responsible for sowing, weeding, application of fertilizer and

pesticides, harvesting, threshing and marketing of agricultural produce in Nigeria. This may be because these tasks seem to be less tedious.

Types of Crops Grown

Observations from the three districts studied showed that while female farmers were more engaged in vegetable production, they were equally involved in other food crop production like their male counterparts. Only a few of them were involved in tree crop production (Table 7). 7.1% male as against 1% female farmers grew tree crops such as mangoes, oranges, kola-nuts and cashew. The reason for this could be because of the long gestation period of tree crops and that most of the female farmers occupy rented or borrowed lands. 51.4% male and 50.8% female farmers grew food crops such as yam, cassava, maize, guinea corns and sweet potatoes. This may be because these are the major staple foods consumed by the people of the study area. Only 13.8% male as against 46.9% female farmers grew vegetables in the study area. This may be attributed to the fact that vegetables take less time to germinate and require less tedious agricultural tasks such as harvesting and marketing. This is corroborated by Food and Agriculture Organisation's (1998) studies in Africa where it was observed that women contribute highly to legumes and vegetable production.

Livestock Production

Livestock is very essential in agricultural production because most farmers (male and female) keep livestock both for subsistence and commercial purposes. This study revealed that 82.1% female and 60.3% male farmers contribute differentially to livestock production (Table 8). In all the three districts that make up the study area, a larger percentage of female than male farmers were involved in keeping of livestock such as chickens, ducks, goats, pigs, rabbits, ram, sheep e.t.c. The migrant Fulanis in Idofin and Ilofa/Odo-Owa districts were more involved in cattle and sheep rearing than other livestock. This is to be expected since the Fulanis are known for cattle rearing. This is in line with Banwo's (1989) report in Nigeria that livestock is still in the hands of nomadic herdsmen.

Factors Determining Participation by Gender

To explain the most significant factors accounting for gender participation level in agricultural production, seven variables were subjected to stepwise multiple regression analysis. The dependent variable (Y) represents level of participation in agricultural production by gender, which was further broken down to Y_1 and Y_2 where:

Y_1 = Number of male as a percentage of the total (male and female) in agricultural production

Y_2 = Number of female as a percentage of the total (male and female) in agricultural production.

Factors x_1 to x_7 are the independent variables. For this study, the model is:

$$Y = a + b_1x_1 + b_2x_2 + \dots + b_7x_7 + e$$

a = Intercept

e = error terms

X_1 = Age

- X_2 = Annual income
 X_3 = Type of agricultural tasks performed
 X_4 = Membership of cooperative society
 X_5 = Landownership
 X_6 = Farm Size
 X_7 = Formal educational status

Of the seven variables that were subjected to analysis, landownership (x_5) emerged as an important predictor of male's involvement in agricultural production with a correlation coefficient of 0.94 and R^2 of about 0.84 (Table 9). This indicates that about 83.5% of its variance is associated with intensity of male participation in agricultural production. This suggests that land is the most significant aspect of the resources necessitating involvement in farming in the rural areas under investigation. The other six variables (x_1 , x_2 , x_3 , x_4 , x_6 and x_7) have coefficient too low to offer meaningful explanation by their patterns.

The regression equation thus takes the form :

$$Y_1 = 20.733 + 0.713 x_5$$

$$(R^2 = 83.5\%, SE = 4.83)$$

This implies that an increase in the proportion of land ownership will increase the level of participation in agricultural production among male gender.

Table 9: Stepwise Multiple Regressions: Factors Determining Male Participation Rate in Agricultural Production.

Variables intercept	Parameter estimates	Standard Error	R	R^2	% Contribution	T-Test	P- Value
Intercept	20.733	4.880					
X_5	0.713	0.091	0.94	0.835	83.5	7.800	0.000

Source: Authors' survey.

Table 10: Stepwise Multiple Regression: Factors Determining Female Participation Rate in Agricultural Production.

Variables intercept	Parameter estimates	Standard Error	R	R^2	% Contribution	T- Test	P-Value
Intercept	9.224	5.831					
X_3	0.678	0.117	0.665	0.442	44.2	5.775	0.000
X_5	0.612	0.149	0.883	0.780	33.8	4.110	0.002

Source: Authors' survey.

As table 10 reveals, the type of agricultural tasks performed (x_3) and landownership (x_5) were found to be significant at the specified tolerance level of 5% for entry into the model. Type of agricultural tasks performed (x_3) is probably the best predictor among the factors determining female involvement in agricultural production in the study area with a correlation coefficient of

0.665 and coefficient of determination of 0.442. This implies that 44.2% of its variance is associated with female participation in agricultural production. This also suggests that female farmers were more involved mainly in food crop production tasks than their male counterparts. It also implies that female farmers were involved in planting, fertilizer application, watering, harvesting and marketing that are less tedious aspects of agricultural production.

Landownership (x_5) is another factor that determines rate at which female participate in agricultural production. It has a correlation coefficient of 0.883 and a coefficient of determination of about 0.780. This indicates that 33.8% additional explanation of its variance is associated with variation in female gender participation in agricultural production.

Land is a major productive asset and lack of access to or control over it has been a hindrance to women's participation in agricultural activity. The remaining five variables (x_1 , x_2 , x_4 , x_6 and x_7) make less contribution in explanation of gender variation in agricultural production because their correlation coefficients are too low. 78.0% of the joint variance in female gender participation in agricultural production is explained by variables x_3 and x_5 . The explanatory regression equation could thus be written as:

$$Y_2 = 9.224 + 0.678x_3 + 0.612x_5$$
$$(R^2 = 78.0\%; SE = 5.831)$$

This implies that an increase in food crop production and landownership will increase female participation in agricultural production. This is buttressed by Ajayi (1992)'s findings in Kwara State, Nigeria that if women have title to land, it will be used as collateral to obtain credit for inputs. This in turn will increase agricultural production in Nigeria.

Conclusions

Findings from this study have established that female farmers participated more than their male counterparts in less tedious aspects of agricultural activities. In the study area, landownership appeared to be the most important factor influencing male gender participation rate in agricultural production. Type of agricultural tasks (i.e. tilling, weeding, planting, fertilizer application, watering, hoeing, harvesting, transporting, storing, processing and marketing) and land ownership determine female's involvement in agricultural production.

Apparently, land ownership appeared to be an important factor determining male and female gender participation in agricultural production. Hence, a policy framework is required to enhance equal access to land for farming by both male and female farmers. The Women in Agricultural (WIA) programme should incorporate the formation of a strong, action-oriented female farmers' association and cooperatives. Non Governmental Organisations should come to the aid of farmers through awareness campaigns so as to complement government efforts towards improving men and women participation in agricultural production. Government should integrate women farmers into policy formulation and implementation in the area of agricultural and rural development programmes.

References

- Ajayi, S. A. (1992), Participation of Women in Agriculture: A Spatial Analysis, *Unpublished Ph.D Thesis*, University of Ilorin, Ilorin. Kwara State, Nigeria.
- Ayieko, M.A. (1986), Integration of Women into Farming System, Research Extension for Faster Technological Change, *Egerton University College Research Paper*, 11, 1-15.
- Bankole, S. B. (2003), Refuse Disposal and Collection: A Case Study of Oke-Ero L.G.A. Iloffa, *Unpublished Postgraduate Diploma Thesis*, Federal University of Technology, Minna, Niger State, Nigeria.
- Banwo, O. (1986), Food Prices and Inflation in the Tropics, *Tropical Farming and Food Processing Magazine for Tropical Countries*, 3 (3): 11-15.
- Boserup, E. (1970), *Women's Role in Economic Development*, St Martins Press, New York.
- Encyclopaedia of the Nations (2008), *Nigeria Agriculture: Information about Agriculture in Nigeria*, Advameg Inc. Lagos, Nigeria.
- F.A.O. (1998), Improving Information on Women's Contribution to Agricultural Production for Gender Sensitive Planning Project: Findings and Recommendations, *Report Prepared for the Government of United Republic of Tanzania by Food and Agriculture Organization of the United Nations*.
- Fatulu, B. (2007), Rural Women Participation in Food Production: A Spatial Analysis from Ekiti L.G.A., Kwara State, *Unpublished M.Sc. Thesis*, University of Ilorin Ilorin Kwara State, Nigeria.
- Nweke, F.I. and Enete, A.A. (1999), Gender Surprises in Food Production, Processing and Marketing with Emphasis on Cassava in Africa, *COSCA Working Paper No. 19*, COSCA, IITA, Ibadan.
- Obinne, C. (1995), Rural Women in Food Chain Activities: A Case of Ibo Speaking Ethnic Community of Delta State, Nigeria, *AgroSearch: A Journal of Agriculture, Food and Development*, 1 (1): 35-40.
- Ogungbile, A.O., Olukosi, J.O. and Ahmed, B. (1998), Women Participation in Agricultural Production in Northern Nigeria, *Agriculture in Rural Development in Nigeria*, NAAE Publication, Enugu, Nigeria.
- Ogunwale, J. A. (2004) Soils of Oke-Ero L.G.A, Kwara State, *Unpublished Seminar Paper*, Department of Agronomy, Faculty of Agriculture, University of Ilorin. Ilorin. Kwara State, Nigeria.
- Olawoye, J. E. (1989), Women in Extension, in: W.M. Rivera and T.O Ogunfidi (eds.), *Extension for Development: Concepts and Issues*, Lidato Press, Ibadan, Oyo State, Nigeria.
- Olawoye, J.E. (1994), Gender Priorities and Issues in Agricultural Extension Delivery, *In Issues and Priorities for Nigeria's Agricultural Extension in the Twenty-first Century, Proceedings of the Inaugural Conference of the Agric. Ext. Society of Nigeria*, February 28- March 4.
- Palmer, I. (1991), Gender and Population in the Adjustment of African Economies: Planning for Change, *Women, Work and Development*, No 19, International Labour Office, Geneva.
- World Bank (1996), Taiwan Action for Poverty Reduction in Sub-Saharan Africa, *Report of an African Region Task Force*. Washington D.C Pp 4-9.