GENDER INVOLVEMENT IN FADAMA FARMING FOR SUSTAINABLE FOOD SECURITY IN OGUN STATE, NIGERIA

Fakoya, E. O.[a] , Ajayi, M. T.[b], Oloruntoba, A. A. [b], Bolarinwa, K. K.[b]
[a] Department of Agricultural Extension and Rural Development,
University of Agriculture, Abeokuta, Nigeria.
[b] Department of Agricultural Administration,
University of Agriculture, Abeokuta, Nigeria.
[a] Corresponding author: facoya2003@yahoo.co.uk

 ISSN 1923-6654 (print)
ISSN 1923-6662 (online). Available at http://www.ssrn.com/link/OIDA-Intl-Journal-Sustainable-Dev.html

Abstract: The study focused on gender involvement in fadama farming for sustainable food security in Obafemi Owode Local Government Area of Ogun State, Nigeria. Eighty fadama farmers comprising of 34 males and 46 females were selected using purposive sampling technique. Questionnaire was used to obtain information from the respondents. Data were analysed using frequency distribution, percentages, mean, chi-square and correlation coefficient. Results revealed that 30percent of the female farmers were literate, 23.42percent and 32.00percent were always involved in secondary occupation such as livestock rearing, trading and tailoring. Also, men (100.00percent) and women (86.10percent) were involved in land clearing, while a higher proportion (72.70percent) of women were always involved in marketing of farm produce. More than 50percent of male and female farmers were involved in the cultivation of leafy and fruity vegetables. Maize and rice were the cereals commonly cultivated by male and female farmers. Chi-square result showed that there was a significant association between sex ($\chi^2 = 1.56$), marital status ($\chi^2 = 6.54$), educational level ($\chi^2 = 2.05$) and gender involvement in fadama farming ($P < 0.05$). While correlation results revealed that there was a significant relationship between age ($r = 0.75$), years of farming experience ($r = 0.67$) and gender involvement in fadama farming. The study concluded that both men and women involved in fadama farming have their major role to play in contributing to household food security.

Keywords: Fadama farming, food security, gender involvement and sustainability

I. INTRODUCTION

Fadama which is known as wetland or lowland farming is practiced in almost every part of Nigeria, especially in the semi arid region where the amount and time of rainfall or precipitation is not adequate to meet the need for food production. Fadama may be defined as flood plains or swamps which are terrestrially flat areas of land within a river/lake valley or ocean channel but which are elevated above the level of the main river or ocean channel (Adeniyi, 1993). It possesses rich alluvial soils as a result of rivers overflowing their banks during raining season. These types of land are fertile with fresh alluvial soils useful in farming (Ita *et al*. 2001). It is formed when natural or man made barriers impede the flow of water resulting in flood plains, wetlands, marshy swamps, mangroves, lakes, reservoirs, ponds and canals (Syder and Joachm, 2000). In order to enhance food production during the dry seasons, concerted efforts are being made by endowed farmers in the area of fadama crop production. Presently a program tagged Fadama III is going on in Ogun State Agricultural Development Program (OGADEP) and in some other seventeen (17) states in Nigeria. The program is to alleviate poverty among beneficiaries in the participating states and also to empower the community including women associations in order to play the role of primary decision makers. Also, the program is embarked upon to encourage gender involvement in fadama farming (Adesokan, 2000). Food security can be defined as the access to enough food for active healthy life by all people at all times (World Bank, 2004). Food security is known as a situation where there is access to food availability and enhancement of stability of food supplies (FAO, 2008).

Gender is a concept used in social science analysis to look at the role and activities of men and women. Nowadays women are found in every area of development but in agricultural and rural development, their roles are being overshadowed based on gender differences. Generally rural women population constitutes over 70 percent labor force to

agricultural production (Agboola, 2000). It is believed that women tend to concentrate on their agricultural activities around homestead because of their domestic and reproductive role in the household and society (Adesina, 2003). Fadama farming provides a better means of providing profits for both men and women as a result of high prices those crops command during dry season.

Based on the foregoing this study was designed to examine the involvement of men and women in fadama farming as a means of enhancing household food security. The objectives of the study are to:

- Identity major crops cultivated by men and women farmers involved in fadama farming
- Determine the level of involvement in fadama farming by the respondents
- Identify constraints associated with gender involvement in fadama farming
- It was hypothesized that there was no significant association between socio-economic characteristics of respondents and their involvement in fadama farming.

II. METHODOLOGY

The study was carried out in Obafemi-Owode Local Government Area of Ogun State. It has a population of 390,000 (National Population Commission 2006). It covers a land mass of about 36km square. Obafemi-Owode Local Government Area consists of many towns and villages that are predominantly rural in nature. It is divided into six zones, which are Oba, Mokoloki, Ogunmakin, Obafemi Owode and Adigbe. The population of this study comprises of men and women that are involved in fadama farming. Purposive sampling technique was used to select respondents of this study. Oba zone was purposively chosen from the six zones in the Local Government Area because the major occupation there is fadama farming. In Oba zone, there are 216 villages out of which twenty were selected randomly. In each village four farmers were selected at random making a total of eighty respondents comprising of 34 males and 46 females. An interview guide was used to

elicit information about the farmers' socio-economic characteristics and involvement in fadama farming activities.

III. MEASUREMENT OF VARIABLES

(a) The level of involvement of male and female in fadama farming was measured according to activities each individual engaged in. This was measured using a three point rating scale of "always involved" = 3 points, "occasionally involved" = 2 points, and "not involved" = 1 point. Involvement scores were thus calculated for respondents.

(b) The types of crops grown were identified by asking the farmers to indicate either yes or no for the crops planted by them on their farms.

(c) onstraints to gender involvement in fadama farming was measured by asking the respondents to indicate as many constraints as they experienced and these were rank as "not severe" = 1, "severe" = 2, "very severe" = 3.

IV. DATA ANALYSIS

Descriptive statistics involving the use of frequencies, percentage, mean, standard deviation were used for presenting data on socio-economic characteristics of the respondents. Chi-square analysis and correlation analysis were used to ascertain for any association and relationships between socio-economic characteristics of respondents and their involvement in fadama farming.

V. RESULTS AND DISCUSSION

Socio-economic characteristics of respondents

Table 1 focused on the demographic characteristics of the respondents. Results in Table 1 show that 42.5 percent of fadama farmers sampled were males and 57.5 percent were females. It can be inferred from this finding that fadama farming is not exclusively a privy of men, but that women are also actively involved in it. Findings in Table 1 also reveal that the mean age of the female respondents was 43 years, while that of male respondents was 40 years. Results also indicate that 82.4 percent and 71.73 percent of male and female respondents were married. This may be attributed to the fact that they are engaged in fadama farming as a means of meeting some of their family obligations.

Also, 46.25percent of the men and women farmers belong to a household size of 1-5. The larger the household size the more the food needed to maintain adequate food security. It can be asserted that households often engage in fadama farming as a strategy to ensure availability of needed food items. Table 1 further show that 50 percent of the male had primary education, while 30.4 percent of the female had primary education. This result indicates that fadama farming is mainly carried out by illiterates and semi illiterate farmers to sustain household food security.

Again, findings of the study indicate that majority of the farmers both males and females are Christians (53.75percent). Results of farm size show that majority (63.00 percent) of the female farmers cultivated farms less than 0.5 hectares, while majority (58.80 percent) of the male farmers cultivated between 0.6 – 1 hectare. This finding is in line with that of Ezhabo (2005) who opined that fadama

irrigation is typically smallholder in nature and mainly practiced in the dry season.

Results also reveal that 30 percent of both male and female farmers had between 4-6 years of farming experience and the dominant mode of farmland acquisition for both male and female farmers was through inheritance (60.00percent).

Variables	Categories	Male frequency	Female frequency	Total mean
Age	Below 30	4 (11.76)	5 (10.86)	9 (11.25)
	31-40	12 (35.29)	17 (36.96)	29 (36.25)
	41-50	10 (29.41)	16 (34.78)	26 (32.50)
	51-60	5 (14.71)	6 (13.04)	11 (13.75)
	Above 60	3 (8.82)	2 (4.34)	5 (6.25)
Gender		34 (42.50)	46 (57.50)	80 (10.0)
Marital Status	Single	5 (14.70)	1 (2.17)	6 (13.04)
	Married	27 (82.4)	33 (71.73)	60 (75.00)
	Widowed	1 (2.94)	10 (21.74)	11 (13.75)
	Divorced	1 (2.94)	2 (4.34)	3 (3.75)
Household size	1-5	19 (55.88)	18 (39.1)	37 (46.25)
	6-10	10 (29.41)	19 (41.3)	29 (6.25)
	11-15	5 (14.70)	2 (4.4)	7 (8.75)
	Above 15	0 (0.00)	7 (15.2)	7 (8.75)
Educational level	No formal education	10 (29.44)	28 (65.22)	38 (47.75)
	Adult literacy	1 (2.94)	2 (4.34)	3 (3.40)
	Primary education	17 (50.00)	14 (80.43)	31 (38.75)
	Secondary education	6 (17.70)	2 (4.34)	8 (10.00)
Religion	Christianity	20 (67.60)	23 (50.00)	43 (53.75)
	Islam	11 (32.40)	21 (45.70)	32 (40.00)
	Traditional	3 (8.82)	2 (4.30)	5 (6.25)
Farm size (Hectare)	Less than 0.5	2 (5.88)	29 (63.00)	31 (38.75)
	0.6-1	20 (58.82)	10 (21.70)	30 (37.5)
	Above 1	12 (35.29)	7 (15.30)	19 (23.75)
Farming experience	1-3	8 (23.52)	10 (21.74)	18 (22.50)
	4-6	12 (35.29)	12 (26.09)	24 (30.00)
	7-9	7 (20.58)	9 (19.57)	16 (20.00)
	10-12	4 (11.76)	4 (8.70)	8 (10.00)
	Above 12	3 (8.82)	11 (23.91)	14 (17.50)
Mode of farmland acquisition	Inheritance	19 (55.88)	29 (63.04)	48 (60.00)
	Rent/lease	10 (29.41)	15 (32.61)	25 (31.25)
	Purchase	5 (14.70)	2 (4.35)	7 (8.75)

Table 1: Distribution of the respondents by their socio economic characteristic

Types of crops grown by fadama farmers

The types of vegetables cultivated were classified into two groups based on the part of the plant consumed, which are leafy and fruity vegetables. Table 2 indicates that a large proportion of the respondents cultivate *Amaranthus spp* (93.75percent), *Corchorus olitorus* (92.50percent) and *Celosia argentia* (91.25percent). This can be attributed to the fact that these are the vegetable types commonly consumed by people in the area, thereby leading to high demands for them in the market. However, very few of the respondents cultivate lettuce (3.75percent) and spring onion (7.50percent)

because it is not often consumed by people in the study area.

Vegetable	Male	Female	Total
Corchorus olitorus (Ewedu)	30 (88.23)*	44 (95.65)	74 (92.50)
Celosia agenita (soko)	32 (94.11)	41 (89.13)	73 (91.25)
Amarathus spp (Tete)	30 (88.23)	45 (97.82)	75 (93.75)
Spring onion	4 (11.76)	2 (4.35)	6 (7.50)
Telferia occidentalis (ugwu)	19 (55.88)	32 (69.56)	51 (63.75)
Bitter leaf	24 (70.60)	37 (80.43)	61 (76.25)
Lettuce	1 (2.94)	2 (4.34)	3 (3.75)

*Multiple responses

Table 2: Distribution of respondents by types of leafy vegetable cultivated

Table 3 reveals that a large proportion (91.17 and 82.61 percents) of male and female respondents cultivated *Lycopenscium esculentum* (tomato), while 85.29 percent and 86.95 percent of male and female respondents cultivated *Abelmoschus esculentum* (okra) respectively. This finding can be attributed to the culture of the people which promotes the consumption of these vegetables.

Fruit Vegetable	Male	Female	Total
Lycopensium exculentum (Tomato)	31 (91.17)*	38 (82.61)	69 (86.25)
Capsicum spp (pepper)	33 (97.05)	44 (95.65)	77 (96.25)
Citrullus inuatus (melon)	30 (88.23)	38 (82.61)	68 (85.00)
Abelmoschus esculentum (okra)	29 (85.29)	40 (86.95)	69 (88.25)

*Multiple responses

Table 3: Distribution of Respondent by fruit vegetable cultivated

Types of cereals cultivated

Table 4 shows that a higher percentage of the respondents, both male and female cultivated maize (94.11percent and 89.13percent) and rice (70.8percent and 69.56percent), while very few (2.91 percent and 2.17 percent) of male and female respondents cultivated millet (8.82percent and 13.04percent) and wheat (2.91percent and 2.17percent). The reasons adducible for this finding is that both millet and wheat are not suitable for the climatic condition of the study area and they are also not popularly consumed by people in the study area.

Cereal	Male	Female	Total
Maize	32 (94.11)	41 (89.13)	73 (91.25)
Rice	24 (70.58)	32 (69.56)	56 (70.00)
Millet	3 (8.82)	6 (13.04)	9 (11.25)
Wheat	1 (2.91)	1 (2.17)	2 (2.50)

Table 4: Distribution of respondents by types of cereal cultivated

Table 5 shows that 100 percent of the male respondents and 76.1 percent of the female respondents are always involved in land clearing. This is based on the fact that land must be cleared before planting could be done. The higher percentage of the male respondents involved in land clearing can be attributed to the fact that men are more energetic than women. Poat (1989) and Okojie, (1990) had noted that men are often involved in clear the bush, preparing seedbed, women got rid of the cleared debris on the land. Also, 41.2 percent of the male respondents and 15.2 percent of the female respondents were always involved in the application of fertilizer. This can be attributed to the fact that little or no fertilizer is available to the generality of these farmers, thus causing reduction in the farm yield.

	Male			**Female**			**Total**
Activities	**Always involved**	**Occasionally involved**	**Not involved**	**Always involved**	**Occasionally involved**	**Not involved**	
Land clearing	34 (100)	0 (0.0)	0 (0.0)	35 (76.1)	11 (23.9)	0 (0.0)	70 (100.00)
Seed treatment	31 (91.2)	3 (8.8)	0 (0.0)	39 (84.8)	5 (10.9)	2 (4.3)	70 (100.00)
Bed making	20 (58.8)	2 (5.9)	12 (35.3)	20 (43.5)	9 (19.6)	17 (37.0)	70 (100.00)
Sowing	33 (97.1)	1 (2.9)	0 (0.0)	42 (91.3)	4 (8.9)	0 (0.0)	70 (100.00)
Transplanting	30 (88.2)	3 (8.8)	1 (2.9)	31 (67.4)	14 (30.4)	1 (2.2)	70 (100.00)
Fertilizer application	14 (41.20)	18 (52.9)	2 (5.9)	7 (15.2)	38 (82.6)	1 (2.2)	70 (100.00)
Weeding	20 (58.8)	14 (41.2)	0 (0.0)	25 (54.3)	19 (41.5)	2 (4.3)	70 (100.00)
Harvesting	26 (76.5)	8 (23.5)	0 (0.0)	23 (50.0)	23 (50.0)	0 (0.0)	70 (100.00)
Storages	5 (14.7)	23 (67.6)	6 (17.6)	16 (34.8)	18 (39.1)	12 (26.1)	70 (100.00)
Marketing	25 (73.5)	9 (26.5)	0 (0.0)	40 (87.0)	4 (8.7)	2 (4.3)	70 (100.00)

(The figures in parenthesis are percentages)

Table 5: Distribution of respondents by the activities they are involved in

Table 6 shows that poor road condition and the inability to afford irrigation facilities (82.50 percent respectively) were the major constraints faced by fadama farmers. This often lead to the high cost of transporting farm produce to the market by the farmers. At the same time, their inability to afford irrigation facilities prevents them from maximizing the production potentials as they are limited by weather conditions. Other constraints faced by the farmers were invasion of pests and diseases (78.8 percent) and lack of credit facilities for expansion (75.0 percent). These findings are in line with that of Ogunsumi (2001) with regards to the problems of fadama farming development in Nigeria.

Relationship between socio-economic characteristics and involvement in fadama farming

Chi-square results in Table 7 reveal that there were significant associations between sex (χ^2 = 1.56), marital status (χ^2 = 6.54), educational level (χ^2 = 2.05) and gender involvement in fadama farming.

Results of correlation analysis

Results of correlation analysis indicates that there were significant relationships between age (r = 0.75), years of farming experience (r = 0.67) and gender involvement in fadama farming.

Variables	Correlation coefficient (r)	P level	Decision
Age	0.75	0.01	Significant
Years of farming experience	0.67	0.01	Significant

Table 5a. Results of correlation analysis

constraints						
	Not severe		Severe		Very severe	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Lack of interest in fadama	63	78.80	4	5.00	13	16.20
Inability to pay hired labour	15	18.80	25	31.20	40	50.00
Poor road	5	6.30	9	11.20	66	82.50
Lack of credit facilities for expansion	9	11.30	11	13.70	60	75.00
Unfavourable weather condition	23	28.80	51	63.70	6	7.50
Lack of storage facilities	24	30.00	26	32.50	30	37.50
Inadequate land for cropping	60	75.00	11	13.80	9	11.30
Invasion of pests disease	7	8.70	10	12.50	63	78.80
Lack of planting material	45	56.20	29	36.30	6	7.50
High cost of inorganic fertilizer	12	15.0	7	8	61	76.20
Inability to afford irrigation facilities	7	8.80	7	8.80	66	82.50
Inadequate use of o.m.	23	28.80	22	27.50	35	43.80

Table 6: Distribution of respondents by constraints faced

Variables	χ^2	Df	P	Cc*	Decision
Sex	1.56	1	0.03	0.37	S
Marital status	6.54	2	0.01	0.45	S
Educational level	2.05	2	0.02	0.61	S
Farm size	0.79	2	0.03		S
Religion	10.54	1	0.02		NS
Household size	0.65	2	0.4		NS
Mode of farmland acquisition	3.45	2	0.2	0.34	NS

* Contingency coefficient

Table 7: Results of chi-square analysis between socio-economic characteristics of respondents and involvement in fadama farming

VI. Conclusion and Recommendations

The study revealed that majority of the respondents were females and their literacy level was low when compared with male respondents. The mean age of the female farmers was 43 years, while that of male farmers was 40 years. Farm size showed that majority of the female farmers cultivated small hectares, while majority of the male farmers cultivated larger hectares of land. Th majortypes ofcrop cultivated by both men and women were *Corchorus olitorus, Celosia agenita* and *Amaranthus spp*. It is recommended that both men and women should be encouraged to participate in fadama farming as it can enhance household food security among rural farmers.

References

[1] Adeniyi, A. A. (1993). Overview of the National Fadama Development Project, Paper presented at the launching workshop on NATSP/NFDP held on February 2nd-3rd, 1993, Pp 34-41.

[2] Adesina, H. A. (2003). The gender variable in agricultural research, Macmillan Publishers, Pp 51-61.

[3] Adesokan, J. A. (2000). Post harvesting handling and utilization of fadama crops, A paper presentation at the workshop on fadama agriculture held at IAR&T Ibadan, Pp 12-14.

[4] Agboola, T. A. (2000). Water management in fadama: a report on fadama implementation, Pp 4-10.

[5] Akpabio, B. F. (2000). Issues of Nigeria food security development policy, A workshop paper, Pp 20-23.

[6] Ezahbo, P. O. (2005). List cost analysis of small scale lift irrigation technology, Sadaff and pomp in savannah ecological zones of Nigeria, The Nigeria Journal of Agriculture, 2(1), pp 18-30.

[7] FAO (2003). Handbook on Nutrition, Food and Agriculture Organization of United Nation, Rome, Italy. Pp 13-15.

[8] FAO (2008). Strengthening household food security. Food and Agriculture Organisation of United Nation, Rome, Italy. Pp 44-50.

[9] Ita, P. S., Michael, B. O. and Nwa, E. U. (2001). Role of irrigation research in agricultural development in Nigeria, Water World, 5(3) pp 17-25.

[10] Lynne, B. and C. Sylvia (1993). Women in third world: gender issue in rural and urban area, Edward Elder England pp 114-161.

[11] Moser, C. and T. Levy (1996). A theory and methodology of gender planning meeting women practical and strategic needs, Barlett School of Agriculture and Planning, University of London. Pp 161-172.

[12] NPC (2006). National Population Census. Bulletin 2006 pp 151-176.

[13] Syder, H. W. and Joachm, V. B. (2000). Information for agricultural development in ACP countries No. 77 pp 13-19.

[14] World Bank (2004). Fighting poverty. World Development Report 2004. World Bank Washington DC pp 141-152.