GENDER INVOLVEMENT IN CROP PRODUCTION ACTIVITIES IN ABUJA, NIGERIA

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ABSTRACT

The study examined gender involvement in crop production activities in Abuja, Nigeria. The main objective is to determine if significant difference exists in gender involvement in farm operations and to identify factors influencing their involvements. A multi-stage sampling procedure was used to select respondents while questionnaires were used for data collection. A total of 386 small-scale farmers (197 males and 189 females) were randomly interviewed. Data were analysed using a two-way mixed analysis of variance. Results indicated that there was significant difference ($p < .05$) in gender involvement in farm operations implying that the gender of a farmer affected his/her involvement in some farm operations. Mean separation showed that the male farmers were significantly more involved in bush clearing, fertilizer application, site selection and chemical applications compared to their female counterparts who were significantly ($p < .05$) more involved in harvesting. On the contrary, there was no significant ($p > .05$) difference in gender involvement in raking/burning, land tillage, planting, thinning/supplying and manual weeding. The major socio-cultural factor influencing gender involvement in crop production activities was tradition while the least factor was their part-time occupations. Based on findings, the study concluded that there was a significant difference in gender involvement in some farm operations.

Keywords: Gender, farm operations, crop production, socio-cultural factors, male and female

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INTRODUCTION

The challenge of development expecially in the agricultural sector has pushed researchers into all frontiers of knowledge for which gender is an important but a controvasial one. Gender is controvasial because it does not only deal with social/cultural roles, rights, duties and interests of men and women in any given society but emphasizes the relationships between them in the production of goods and services (Ironkwe, Unamma and Nwosu, 2011). On the other hand, it is a very important concept because it has, among other issues, given room to the understanding and recorgnition of the contributions of men and women in agricultural development. According to Strobel (1984), gender is a cultural constraint in which a society attributes certain values, behaviours, ideas, and beliefs to men and women. It is not biologically determined but a system of socially defined roles, privileges and relationships between men and womem. It plays significant roles especially in rural economies, in determining who does what within a given society with regard to production of goods and services (Nnimmo, 2007). FAO (2011) stated that gender issues vary widely from one culture to another and can change dramatically over time. Gender roles and responsibilities are in most cases shaped by household structure, access to production resources, and other relevant factors such as ecological conditions (FAO, 2011; Ekong, 2003; FAO, 1995; Goetz, 1992).

Like any other developing country in the world, Nigerian men and women are actively involved in farm operations but while developed countries struggle to overcome ecological, soil, pest/diseases, poor yield and other related problems in order to increase poduction, the pivotal role of gender continues to provoke debate among scholars that have different perceptions about gender roles in agriculture. In fact, the role of gender in agriculture has been one of the most controversial issues that attract a lot of attention. Some scholars and international organizations (Mehra and Rojas, 2008; Blackden and Wodon, 2006; Sani and Koppen, 2001; FAO, 1997) have argued that women are more involved in agricultural production activities more than their male counterparts. Sokenu (1993) stated that the roles of women in rural economy span the spectrum of food production to vital activities in rural cottage industries development. The author added that they constitute more than 70 per cent of the farm labour force and are primarily responsible for processing, marketing and storage while men are mainly involved in the production of cash crops. Similarly, World Bank (2003) revealed that women, depending, on the region, make up 60

- 80 percent of agricultural labour force in Nigeria and produce two-thirds of the food crops. Saito and Weidemann (1990) stated that women in the sub-Saharan Africa, including Nigeria, provide most of the labour and make certain key decisions for many agricultural activities. In some states, according to Afolabi (2008), rural women have virtually taken over the production and processing of arable crops and are responsible for, as much as, 80 percent of the staple food items. Other reports from Nigeria and other countries of the world (NAERLS, 2000; Ramprasad, 1999; FAO, 1998; FAO, 1995) also suggest that women are more involved in agriculture than their male counterparts

Based on some evidence available, scholars (FAO, 2011; Ramprasad, 1999) were of the view that women farmers are more involved in agricultural production activities and therefore should have adequate access to productive opportunities and resources like their male counterparts. They argue that women are marginalized in agriculture compared to their male counterparts. Since crop production involves site selection, bush clearing, raking/burning, land tillage, planting, thinning/supplying, weeding, chemical application, fertilizer application and harvesting, the questions are: 1) Are there significant differences in gender involvement in crop production activities in Abuja, Nigeria? 2) Which crop production activity are the male and female farmers more involved? 3) What are the factors influencing gender involvement in crop production activities? 4) Which is the most or least influencial factor affecting gender in crop production?

The study is very important because among the eight key issues in the Millennium Development Goals (MDG), gender issues were outstanding (UN Millennium Project, 2003). It has formed an important agenda in national and international treaties, covenants and declarations (Nigerian National Gender Policy, 2006). World Bank (1995) further stated that, if disparities between gender persist, sustainable and equitable development would be undermined. In addition, it is equally important because it will add to the available knowledge in gender roles in agriculture and as a reference point to national and international agencies that are working to improve gender relations in agriculture.

OBJECTIVES

The main objective of the study is to determine if significant difference exists in gender levels of involvement in crop production activities in Abuja, Nigeria and the factors influencing involvement. Specific objectives are to:

1. Determine gender involvement in crop production activities
2. Determine crop production activity the male and female farmers are more involved in.
3. Identify the factors influencing gender involvement in crop production activities
4. Identify the most influential factor affecting both gender in crop production.

HYPOTHESES

1. Ho: There is no significant difference in gender involvement in all the crop production activities.
2. Ho: There is no significant interaction of gender and crop production.
3. Ho: The factors influencing farmers involvement in crop production activities donot significantly depend on gender.

METHODOLOGY

This study was conducted in Abuja, Nigeria that is located between latitudes 8^0 25` and $9^0$ 25` North of the equator and longitudes 6^0 45`and $7^0$ 45` East of Greenwich. The population for the study comprised all small-scale farmers in Abuja. A multi-stage samplying technique was used to select the respondents while semi-structured questionnaires were used for data collection. In the first stage, four Area Councils (Kwali, Kuje, Gwagwalada and Abaji) were purposively chosen out of six area councils because of the predominance of agricultural activities. In the second stage, ten (10) communities were randomly chosen from each of the four area councils. Finally, in each selected community, 10 farmers (5 males and 5 females) were randomly interviewed given a total of 400 respondents. Out of the 400 farmers, only 386 (197 males and 189 females) were properly filled and used to assess gender levels of involvement in crop production activities while 381 (194 males and 187 females) were used to analyse the factors influencing gender involvement in crop production activities. The farm operations considered are site selection, bush clearing, raking/burning, land tillage, planting, thinning/supplying, weeding,

chemical application (other than fertilizer), fertilizer application and harvesting. The combination gave 2x10 two-way mixed analysis of variance expressed mathematically as:

$$Y_{ijk} = \mu + G_i + F_j + GF_{ij} + e_{ijk} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1$$

Where:

Y_{ijk} = Individual farmer's response regarding his/her levels of involvement in each crop production activity (farm operation)

μ = General mean

G_i = Refers to the gender of the farmer (the main effect of gender)

F_j = Refers to farm operations (the main effect of farm operations)

GF_{ij} = interaction effects of gender and farm operations (Gender*farm operations)

e_{ij} = error term

Model 1 tests the hypotheses that farmers' levels of involvement in crop production activities (Y_{ijk}) depends on gender (G_i), type of farm operation (F_j) and the interaction effect of gender and farm operation (GF_{ij}). The error term is represented by e_{ijk} while μ is the population mean. Gender levels of involvement in each of the ten (10) crop production activities (farm operations) were verified using a rating scale of solely involved (4), highly involved (3), moderately involved (2) fairly involved (1), and not involved at all (0). The scores obtained from the responses were used for analysis

Similarly, model 2 was adopted to analyse the factors influencing gender involvement in crop production activities and it is expressed mathemathically as:

$$Y_{ijk} = \mu + G_i + S_j + GS_{ij} + e_{ijk} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2$$

Where:

Y_{ijk} = Individual farmer's response regarding the influence of each socio-cultural factor on his/her involvement in each of the crop production activities (farm operations)

μ = General mean (population mean)

G_i = Refers to the gender of the farmer (the main effect of gender)

F_j = Refers to the factors (the main effect of factors)

GF_{ij} = interaction effects of gender and factors (Gender* factors)

e_{ij} = error term

Here, model 2 states that the factors influencing gender involvement in crop production activities (Y_{ijk}) depends on gender (G_i), type of factor (S_j), and the interation of gender and factors (GS_{ij}). The influence of the factors on gender involvement in crop roduction activities was measured using very influential (3), fairly influential (2), very low influence and no influence at all (0). The above scores were used for data analysis in line with the method applied by Ajah, Chibinga and Kuntashula (2015), Colin and Paul (2011), Robert (2011). Field (2005) and Shah and Madden (2004). SPSS 21.0 was used to run the analysis and mean separation was done using Bonferroni model at 5 percent probability level.

RESULTS AND DISCUSSION

Table 1 shows the results of the two-way mixed analysis of variance (ANOVA) carried out to assess gender levels of involvement in crop production activities (farm operations). The column having "sources of variation" contains the variables (factors) under consideration while the mean separations are shown in charts. The use of the ANOVA model helps us to look at the main and interaction effects of the variables hence they are discussed separately.

Table 1 ANOVA result of gender levels of involvement in farm operations

Sources of variation	Df	SS	MS	F-cal	P-value
Farm operations	9	465.00	51.67	101.31	0.00
Gender*Farm operations	9	76.82	8.54	16.75	0.00
Error (within factors)	3456	1749.48	0.51		
Gender	1	0.70	0.70	2.59	0.11
Error (between factors)	384	104.68	0.27		

Source: Field data analysis, 2014

Comparing gender involvement in all crop production activities

Table 1 contains the result of the main effect of gender and it shows how the male and female farmers rated their levels of involvement in all the crop production activities. In this case, emphasis is on gender involvement in all the crop production activities and not on any particular crop production activity. Hence, the question is: Do male and female farmers differ in their levels of involvement in all the crop production activities? It tests the hypothesis which states

that there is no significant difference in gender involvement in all the crop production activities ($\mu_{\text{Male involvement in all crop-activities}} = \mu_{\text{Female involvement in all crop-activities}}$). The result, $F(1, 384) = 0.00$, $p = 0.11$, showed that there was no significant difference ($p > .05$) in gender involvement in all the ten crop production activities hence the acceptance of the null hypothesis. This imples that on average and without emphasis on any production activity, the male and female farmers were equally invoved in all crop production activities. Although, there was no significant difference between the male and female farmers' involvement in all the crop production activities, the mean responses (Fig. 1) showed that there was a marginal difference with the male farmers involving in all the crop production activities more than their female counterparts. This result is contrary to a similar study in Ethiopia by Ogat (2011) which indicated that females' participation in some crop production and management activities out-weighed those of their male counterpants. The author further stated that female farmers tended to know more than males about indigenous cultural practices.

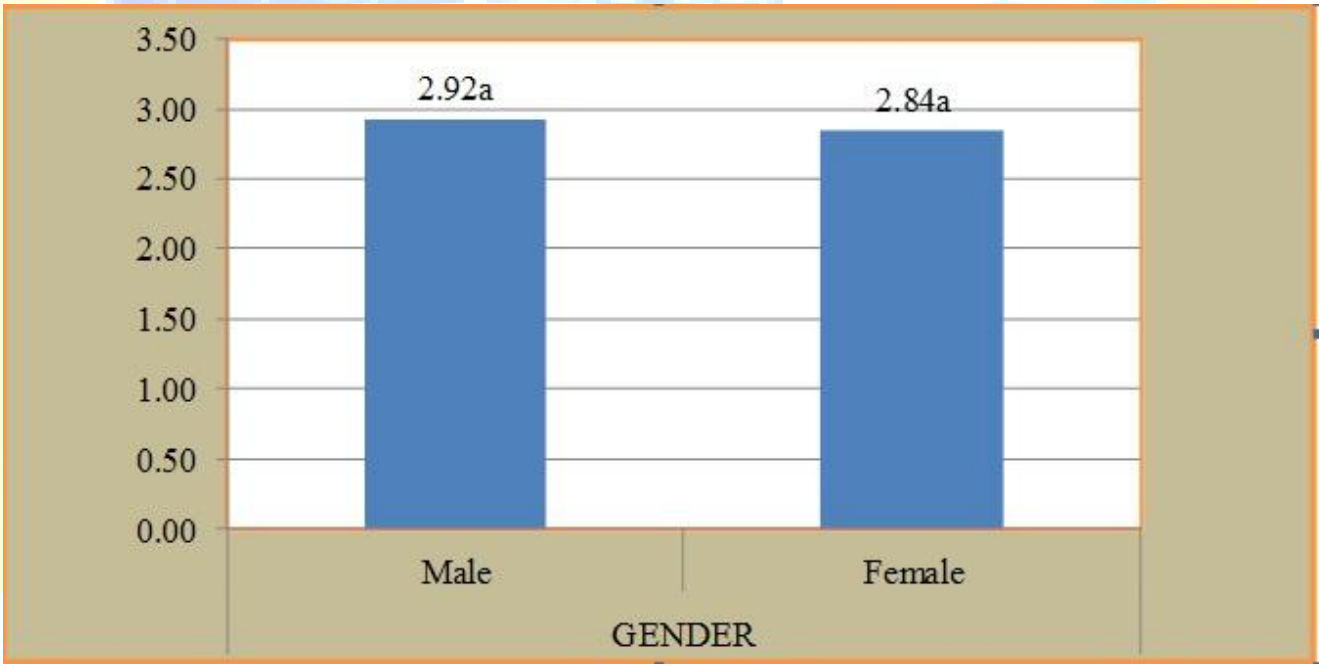

Fig 1: Gender involvement in all the crop production activities compared
Note: Means with the same alphabet didnot significantly differ from each other.
Source: Field data Analysis, 2014

Comparing gender involvement in each crop production activity

The result of the interaction between gender and crop production activities (Gender*farm operations) is presented in Table 1. In this interaction, emphasis is on the involvement of the male and female farmers in each crop production activity and not in all crop production activities as shown in Fig 1. The question, therefore, is: Do male and female farmers differ in their levels of involvement in each of the crop production activities? It tests the hypothesis which states that there is no significant interaction of gender and farm operations ($\mu_{\text{Male site selection}} = \mu_{\text{Female site selection}} \ldots \mu_{\text{Male harvesting}} = \mu_{\text{Female harvesting}}$) The result, $F(9, 3456) = 16.75$, $P = 0.00$, showed that there was significant interaction effects of gender and farm operations hence the rejection of the null hypothesis. This implies that the gender of a farmer affected his/her levels of involvement in some of the farm operations. In other words, the fact of being a male or female farmer influenced levels of involvement in some of the farm operations. Mean separation was done and the result (Fig 2) indicated that the male farmers were significantly ($p < .05$) more involved in site selection, bush clearing, chemical application (other than fertilizer) and fertilizer application than the female farmers. On the other hand, the female farmers were significantly ($p < .05$) more involved in harvesting than the male farmers. There were no significant differences ($p > .05$) in gender levels of involvement in raking/burning, land tillage, weeding, planting and thinning/supplying. This is contrary to the result obtained by Ogat (2011), Afolabi (2008), Ramprasad (1999) which indicated that female farmers' participation in crop production activities, by far, out-weighed that of males in some crop production activities. The result agrees with Ajah et al, 2011) which showed that there were significant differences in gender involvement in some crop production activities. This is in line with the observation of Gurai (1996) which indicated that gender involvement in agriculture varies greatly due to difference in ecological sub-zones, social status and stages in the family life cycle.

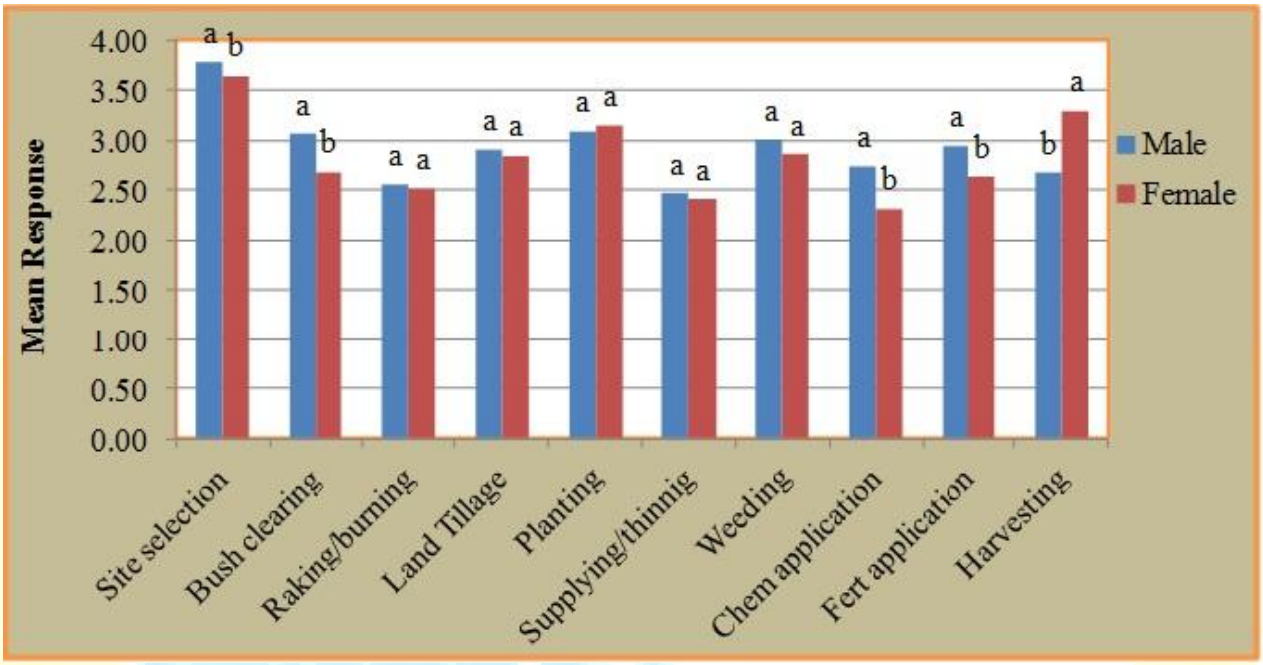

Fig 2: Gender involvement in each of the crop production activities compared
Note: Means with the same alphabet didnot significantly differ from each other.
Source: Field data analysis, 2014

Factors affecting gender involvement in crop production activities

The results of the influence of some factors on gender involvement in crop production activities are shown in Table 2. The factors considered in the study were the tradition of the people, type of crop planted, age of the farmers, production seasons (dry or rainy season), religion of the farmers, farm size cultivated, health condition of the farmer, technology used during production (e.g. tractor, e.t.c) and part-time occupation(s) of the farmer. For easy comprehension, the result of the main effect of gender and the interaction of gender and factors influencing involvement in crop production activities are discussed separately.

Table 2: ANOVA results of factors affecting gender involvement in farm operations

Sources of variation	Df	SS	MS	F-cal	P-value
Factors	8	87.16	10.90	23.56	0.00
Gender* factors	8	12.45	1.56	3.37	0.00
Error (within factors)	3032	1402.02	0.46		
Gender	1	0.02	0.02	0.019	.90
Error (between factors)	379	381.90	1.01		

Source: Field data analysis, 2014

Comparing the influence of all the factors on each gender

The result showing how the male and female farmers generally perceived the influence of all the factors on their involvement in crop production activities (the main effect of gender) is shown in Table 2. Here, emphasis is on the influence of all the factors on each gender hence the question is: How did the male and female farmers in the study area generally perceived the influence of all the factors on their involvement in crop production activities? It tests the hypothesis which states that there is no significant difference in the influence of all the factors on gender involvement in crop production activities ($(\mu_{\text{Male all factors}} = \mu_{\text{Female all factors}})$. The result, $F(1, 379) = 0.02$, $p = .90$, shows that there was no significant difference ($p > .05$) in the influence of all the factors on gender involvement in crop production activities. Hence, the acceptance of the null hypothesis. The mean separation (Fig 3) shows that the mean responses were almost the same for both gender. This implies that, on average, both the male and female farmers faced similar challenges in the process of crop production in the study area.

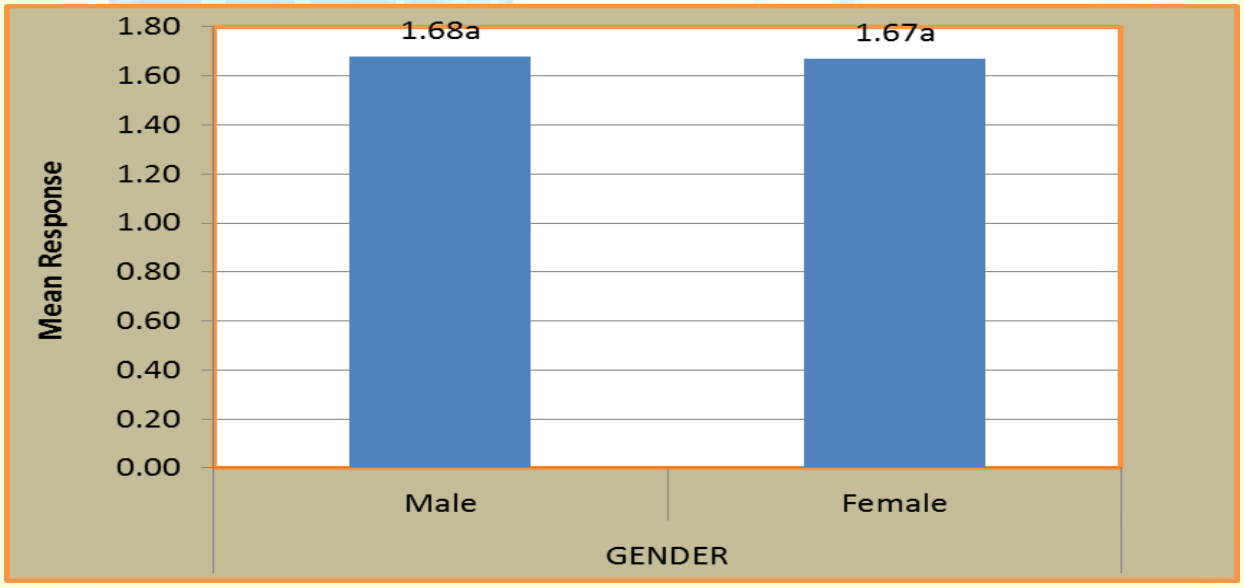

Fig 3: The main effect of socio-cultural factors on gender involvement in all crop production activities

Note: Means with the same alphabet didnot significantly differ from each other

Source: Field data analysis, 2014

Comparing the influence of the factors irrespective of gender

Table 2 contains the result of the main effects of the factors on farmers involvement in crop production activities. It shows how the farmers perceived the influence of the factors (irrespective of gender). The question is: Irrespective of gender, are there significant differences in the influence of the factors on crop production activities? In order words, which factor is the most influencial. The result, $F(8, 3032) = 23.56$, $p = .00$, showed that there was a significant difference ($p < .05$) in the influence of some of the factors on farmers' involvement in crop production activities. Mean separation (Fig 4) indicated that, except the "type of crop planted", tradition of the people significantly influenced gender involvement in crop production activities more than other factors. In order wods, the most influencial factor affecting both male and female farmers was the tradition of the people. The least influential factor was part-time occupation of the farmers. The fact that tradition of the people was the most influential factor agrees with the observation of Hilda (2007).

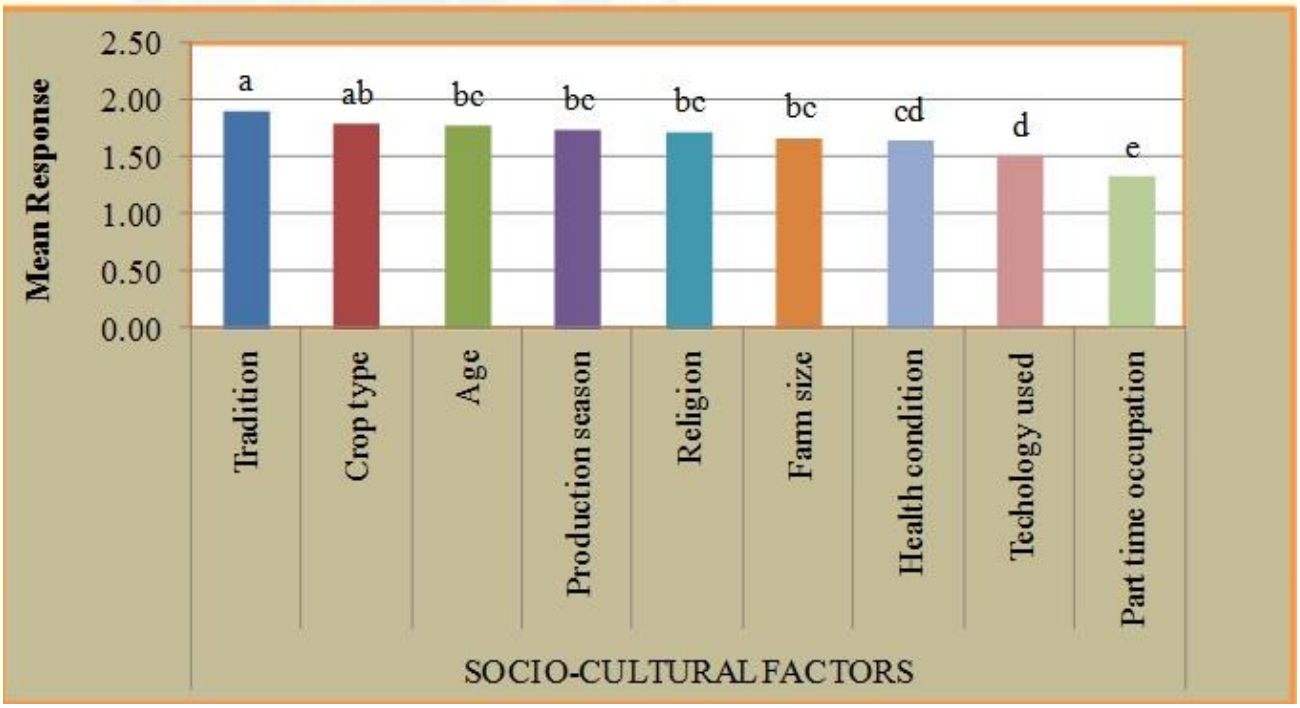

Fig 4: The effect of factors on farmers' involvement in crop production activities
Note: Means with the same alphabet didnot significantly differ from each other
Source: Field data analysis, 2014

Comparing the influence of each of the factors on gender (gender*factors)

The result of the interaction effects of gender and factors (gender*factors) on crop production activities is shown in Table 2. It shows how each of the factors influenced gender involvement

in crop production activities. The question is: Are there significant differences in the influence of each of the factors on gender involvement in crop production activities? It tests the hypothesis which states that there is no significant interaction of gender and factors influencing farmers' involvement in crop production activities. The result, $F(8, 3032) = 3.37$, $p = .00$, showed that there was significant difference ($p < .05$) in the influence of the factors on gender involvement in crop production activities. Mean separation (Fig 5) showed that the influence of production season (dry or wet season) on gender involvement in crop production activities was not the same. The mean responses indicated that male farmers' involvement in crop production activities was more influenced by the production season compared to their female counterparts. Apart from production season, the influence of tradition, crop type planted, age of farmers, religion, farm size, health condition of farmers, technology used for production and part-time occupation(s) of the farmers on the male famers' involvement in crop production activities was not significantly different ($p > .05$) from the their female counterpants. Although the mean responses indicated that there were no significant difference in the influence of some of the factors, the mean responses indicated that there were marginal differences in the influence of the factors on both gender. This is a clear indication that the society is changing and both gender are exposed to similar challenges in the production process.

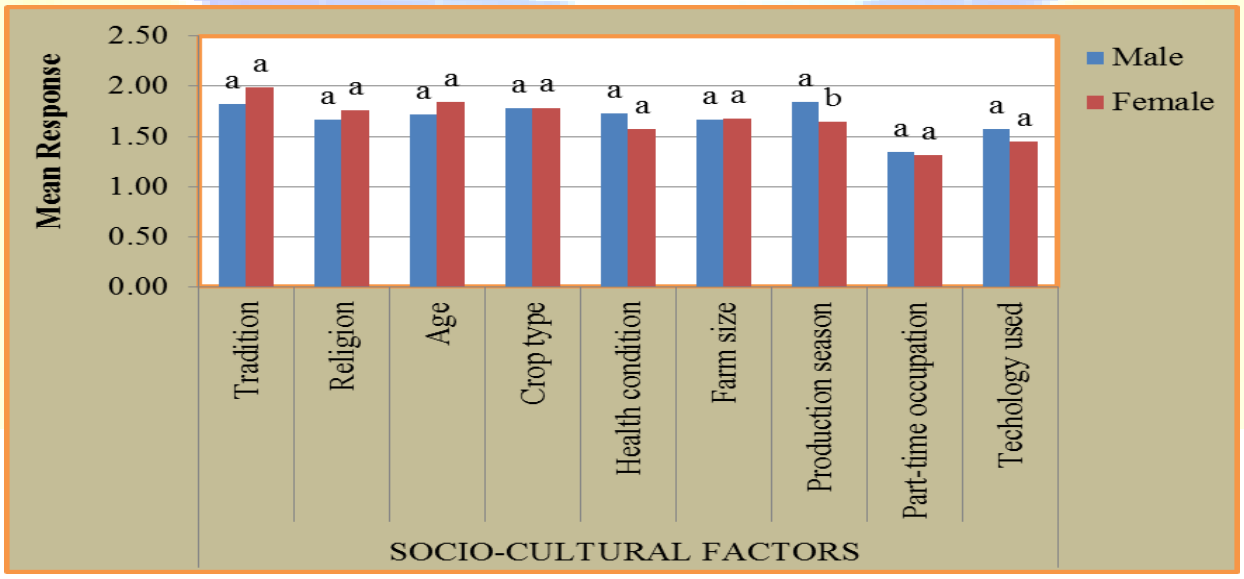

Fig 5: Comparing the influence of each factor on each gender
Note: Means with the same alphabet didnot significantly differ from each other
Source: Field data analysis, 2014

CONCLUSION

In Nigeria, there is an apparent consensus that women are more involved in farm operations compared to their male counterparts. The perception has provoked a lot of debate and arguments among gender scholars to the extent that gender roles in agriculture have become a major policy issue that have been presented in national and international conferences. Against this background, a study was conducted to determine gender levels of involvement in farm operations in Abuja, Nigeria. Results showed that there was significant interaction effects of gender and farm operations ($P < .05$) indicating that the gender of a farmer affects his/her levels of involvement in some farm operations. Although the results also indicated that the main effects of gender was not significant ($P > .05$) but the main effects of farm operations was significant ($P < .05$). The paper concluded that there was significant difference in gender involvement in some farm operations in the study area and tradition of the people was a mojor factor that influenced their level of involvement. The paper, therefore, recommended that more research should be conducted in other states to find out if similar conditions exist.

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