Analysis of Women Farmers’ Participation in Agricultural Activities in Konduga Local Government Area of Borno State, Nigeria

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Abstract: This study analyzed the participation of women farmers in agricultural activities in Konduga Local Government Area of Borno State, Nigeria. A total of 148 respondents were used for the study. The analytical techniques used included descriptive and inferential statistics. Descriptive statistics include means, percentages and tables, while inferential statistics included multiple regression analysis and Z-score for measure of relationships between variables. The study found that 41.9% of the women farmers were above the age of 30 years, 51.4% had the family size of 1-5, 59.5% were married, 30.4% had secondary education, 37.2% were petty traders and majority of the respondents (57.4%) had average farm size of 0.6-1.0 hectares. The study, also, revealed that most of the respondents (41.9%) were engaged in crop processing as their agricultural activities in the study area. The results of the multiple regression showed that R^2 (73.3%) of the variations in participation by the respondents in agricultural activities were explained by their socio-economic characteristics, X = age, X = educational level, X = farm size, X = extension contact, X = availability of inputs and X = access to credit as indicated by the adjusted R^2 of 73.3%. Lack of funds (with the highest Z-value of 5 was the major constraint limiting the participation of the respondents in agricultural activities. Based on these findings, the study recommended that appropriate policies and strategies should be developed to ensure access by women farmers to extension services, credit, inputs and training necessary for improved agricultural production.

Key words: Agricultural Activities · Participation · Women Farmers · Konduga · Nigeria

INTRODUCTION

In many countries, the diminishing capacity of agriculture to provide for household subsistence increased the workload of women as men withdrew their labour from agriculture [1]. Women had to increasingly make up for the family’s food deficit by working as casual hired labor on larger farms, or by starting up income generating activities in addition to continuing their farming activities as well as other household task [2]. Government interventions did little to address the plight of rural women as, in most countries, the agricultural sector continued to be neglected. Women’s low participation in national and regional policy-making, their invisibility in national statistics and their low participation in extension services has meant that those issues of most concern had been neglected in the design and implementation of many development policies and programmes [10].

In a report by FAO [11], it was shown that women play critical roles in agriculture throughout the world, producing, processing and providing the food. Furthermore, the report indicated that women make up half the rural population, constitute more than half of the world’s food producers and produce between 60% and 80% of the food in most developing countries. The report indicated that, despite their contribution to global food security, women farmers are frequently underestimated and overlooked in development strategies. Conversely, sustainable agriculture, rural development and food security cannot be achieved if half of the women farmers’ population is ignored.

The agricultural production and indeed, the living standard of a nation cannot be improved unless women are actively involved. Rural women are not simply keepers of the home; they fetch the water, gather the fuel wood, cook the meals for their households and also shoulder the responsibility of overseeing their family’s nutrition and...
health. These are in addition to their greater contribution of growing more than half of the food and raising much of the livestock produced in many developing nations including Nigeria. Women are farmers, wage workers, small traders, artisans, industrial workers, micro-producers and domestic workers. Thus, women form the backbone of agricultural labor force and it is estimated that women produce 35-40% of the Gross Domestic Product (GDP) and over 50% of the food requirement of developing countries [1, 8, 11].

The rural women farmers participate in almost all aspects of cultivation, including planting, thinning, weeding, fertilizer application and harvesting. In Biu, Borno State for example, about 50% of the women cultivate and harvest maize and in Bama, 60% of the women help in weeding the crop farms [5, 12]. In Konduga, women in the area spent more time (7-10 hours) doing farm work, as large as 58% of them engage in food crop production and 62% of the women have access to farm lands [9].

The women farmers are mainly looked at as supportive in production phases except in marketing of farm produce, where they are considered active. There is a need to document empirically the participation of women farmers in farming activities. Women farmers’ immense contribution to agriculture has not been fully acknowledged in Konduga Local Government Area (LGA) of Borno State, Nigeria. Therefore, this study was conducted to provide information on participation of women farmers in agricultural activities in the study area.

Objectives of the Study: The main objective of the study was to analyze the participation of women farmers in agricultural activities in Konduga Local Government Area of Borno state. The specific objectives were to:

- Describe the socio-economic characteristics of women farmers in the study area;
- Determine the level of participation of women farmers in agricultural activities in the study area;
- Assess the relationship between the socio-economic characteristics of women and their participation in agricultural activities in the study area and
- Identify the constraints to performance of women in agricultural activities in the study area.

MATERIALS AND METHODOLOGY

The Study Area: The study was conducted in Konduga LGA of Borno state, Nigeria. It has an area of 7850sq km and occupied 6.95% of the total area of Borno Stat. It is located within latitudes 11° 15-12° 08' north and longitudes 12° 13'-12° 23' east of the Greenwich meridian. It shares boundaries with Monguno LGA to the north, Damboa to the south, kaga to the west and Bama and Dikwa LGAs to the east.

Konduga LGA is made up of four (4) districts; Konduga, Kellumri, Kayamla and Dalwa. Konduga town is the Local Government headquarters and is located 30 Kilometers away from Maiduguri Metropolitan Council. The projected population of Konduga LGA in 2010 is 177,585 consisting of 89,843 males and 87,743 females (Projected from 2006 Census value of 156,564 with an annual increase of 3.2%). Most of the people in Konduga are farmers, petty traders and indulge in handicraft during the off season. There are different ethnic groups among which Kanuri is the predominant tribe. Others include Shuwa, Gamargu, Margi, Wula, Hausa and Fulani [5].

The climate is hot and dry for greater part of the year with temperature of 40°C in March and April. The coldest period is between December and January (Lake Chad Research Institute, 1993). Rainy season in the area lasts for 3 to 4 months with a record of 300mm to 666mm per annum. The most important crops grown by the women farmers in Konduga are millet, sorghum, groundnuts and vegetables like onions, peppers, tomatoes to supplement the rain-fed farming throughout the year.

Sampling Procedure and Sample Size: The study population entails women farmers participating in agricultural activities in Konduga LGA. The list of women farmers obtained from ministry of agriculture, Borno state was used as a sampling frame. The LGA comprises of four (4) extension blocks, which were purposively selected for the study. From each block, forty (40) respondents were randomly selected, thus, 160 respondents were sampled for interview schedule as a result of the assumed low literacy level of the respondents, but 148 questionnaires were used for the study because of their completeness.

Analytical Techniques: The analytical techniques used for the study include descriptive and inferential statistics. Descriptive statistics include frequencies, percentages and bar-charts, while inferential statistics used were regression analysis (Ordinary Least Square) and Z-score
to measure relationships between variables. The descriptive statistics were employed to summarize and organize the data obtained on socio-economic characteristics of women and the level of their participation in agricultural activities (Objectives i and ii). The Z-score analysis was used to analyze constraints associated with participation of women in agricultural activities (objective iii).

Multiple regression technique was employed to determine relationship between socio-economic characteristics of the respondents and their participation in agricultural activities (objective 4). The model for the multiple regression is implicitly expressed as:

\[ Y = f (\beta X, \mu) \]  

where,

- \( Y \) = women farmers’ participation in agricultural activities (proxy by the number of agricultural activities).
- \( X \) = set of explanatory variables (socio-economic variables)
- \( \mu \) = random error term
- \( \beta \) = parameters estimated

Explicitly, the regression model is expressed as:

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + e \]  

where,

- \( Y \) = Women farmers participation in agricultural activities (proxy by the number of agricultural activities).
- \( X_1 \) = Age of a respondent (years)
- \( X_2 \) = Educational level (years)

The linear, semi-log, double-log and exponential functional forms were tried and the lead equation was selected based on the coefficient of determination, \( R^2 \) and statistical significance of selected variables.

**RESULTS AND DISCUSSION**

**Socio-Economic Characteristics of the Respondents:**

Table 1 showed the socio-economic characteristics of the respondents which include age, marital status, educational level, occupation, family size and farm size. The results revealed that 41.9% of the women farmers were above the age of 30 years and only 7.4% of the respondents were between 16-20 years. This implies that a greater proportion of the respondents were middle aged and able bodied, which means that they can be regarded as active, agile and physically disposed to pursue economic activities and more actively participate in agricultural activities. These findings are in agreement with those obtained by Anyanwu et al. [4] and Mbada [13] which revealed that young adult farmers are more likely to participate in agricultural activities than older farmers.

Among the respondents, majority (59.5%) were married, while 8% were single. The role of mothers as homemakers make them participate more in agricultural activities, as a strategy to earn more income to complement their husbands’ income to support the family. The findings are in agreement with those reported by World Bank [16], that women’s income is crucial for household’s maintenance and contribute significantly in family support and basic family upkeep. Hence, improve in women’s income translates directly into better household health and nutrition.

The educational level of the respondents showed that 30.4% had secondary education, while only 8.8% had diploma certificates (Table 1). This indicates that most of the respondents had attained some form of education. This is an advantage, since education is generally considered as an important variable that influence farmer’s participation in agricultural activities [15].
Table 1 further showed the secondary occupation of the respondents. The results indicated that most of the respondents (37.2%) were petty traders while 26.4% engaged in knitting. This implies that apart from engaging in agriculture they also have other sources of income.

The family size of the respondents revealed that majority of the respondents (51.4%) had family size of 1-5 and 3.4% had family size of above 15. This revealed that most of the respondents have small family size. This implied that the respondents could source for additional labour for the farm activities. The results also revealed that majority (57.4%) of the respondents had 0.6-1.0 hectares of land and only 2.7% had above 1.5 hectares of land for cultivation. This showed that majority of the respondents had average farm size of 0.6-1.0 hectares. This finding is in line with that of Mbada [13], that women farmers with smaller farm sizes utilize less improved production information and participate less in agricultural activities. This could be because, women have unequal access to and control over land. In some communities, they have only annual rights of use on individual fields given to them by the head of the households. They cannot therefore make any long-term improvements to the land, such as planting perennial fruits, crops, setting-up irrigation facilities etc [2].

Level of Participation of the Respondents in Agricultural Activities: Figure 1 showed the information on agricultural activities of respondents. The results revealed that most of the respondents (32.46%) were engaged in crop processing, 22.51% participate in vegetable production and 19.9% engaged in land preparation.
Table 2: Relationship between Women Farmers’ Participation in Agricultural Activities and their Socio-Economic Characteristics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>P- Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.780</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.584</td>
<td>0.000 *</td>
</tr>
<tr>
<td>Educational level</td>
<td>7.517</td>
<td>0.000*</td>
</tr>
<tr>
<td>Farm size</td>
<td>0.009</td>
<td>0.694 Ns</td>
</tr>
<tr>
<td>Extension contact</td>
<td>0.052</td>
<td>0.000*</td>
</tr>
<tr>
<td>Availability of inputs</td>
<td>11.747</td>
<td>0.000*</td>
</tr>
<tr>
<td>Access to credit</td>
<td>0.412</td>
<td>0.001*</td>
</tr>
<tr>
<td>R²</td>
<td>0.733</td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.740</td>
<td></td>
</tr>
</tbody>
</table>

Source: Regression Extracts 2010

* = Significant at 10%
Ns = not significant

The least agricultural activities engaged by the respondents include fish farming (1.05%) and fertilizer application (0.52%). These findings are in agreement with those obtained by Ani [3], that rural women in Nigeria are actively involved in livestock rearing, crop production and marketing.

Relationship Between Participation in Agricultural Activities and Socio-economic Characteristics of Respondents: The multiple regressions were employed in testing women participation in agricultural activities in the study area. Four (4) different functional forms were tested; linear, semi-log, double-log and exponential. Double-log was selected based on the coefficient of determination, R²(0.733) and the number of variables with statistical significance (Table 2).

The results presented in Table 2 showed that 73.3% of the variations in participation by women farmers in agricultural activities were explained by their socio-economic characteristics; age, Educational level, farm size, extension contact, availability of inputs and Access to credit as indicated by the R²(73.3%) with adjusted R² of 74.0%. Five (5) of the variables were found to be significant at 10%, that is age, educational level, extension contact, availability of inputs and access to credit with coefficients of 0.584, 7.517, 0.052, 11.747 and 0.412, respectively.

The study implies that an additional availability of farm inputs will increase the participation of women by 11.7%. A unit increase in the age of women farmers will increase their participation in agricultural activities by 5.8%. The higher the educational level of women farmers, the higher their participation in agricultural activities. An increase in their educational level will increase their participation by 7.5%, because of increased awareness as a result of education, which could aid their participation in agricultural activities. This finding confirms the results of Ogunbameru et al.[14], that highly educated farmers can get information on a wide range of sources such as electronic and print media and the internet and could easily comprehend instructions.

The coefficient of access to credit was found to be significant and relates positively with women participation. These finding are in agreement with those obtained by Youssef [17] that without credit, women are less likely to be able to afford the inputs recommended by extension agents.

Coefficient of extension contact was found to be significant at 10% and relates positively with women’s participation in agricultural activities. This results is in consonance with the findings of Onu [15] that the number of extension contacts positively influence participation of women farmers in agricultural activities, also added that farmers who had access to extension contacts adopt farming technology 72% greater than farmers who had no access to extension contact.

The coefficient of farm size was not significant at 1% in the study area probably because most of the women farmers are engaged in crop processing; vegetable production and land preparation. These agricultural activities do not require large farm sizes.

Constraints to Improved Performance of Women in Agricultural Activities: Table 3 showed the Z-score distribution of constraints women farmer’s face in participating in agricultural activities. The constraint that was ranked 1st with the Z-value of 5 is “lack of funds”. Also “lack of government support which was ranked 2nd has the Z-value of 4, the constraint that was ranked 3rd that is poor extensionservicesmhas the Z-value of
3, “lack of improve seeds” which was ranked 4th has the Z-value of 2. The constraints of storage facilities which was ranked 5th has the Z-value of 1 and “lack of land availability” which was ranked 6th has the Z-value of 0.

From the calculated Z-values, it can be deduced that most of the respondents complained about lack of funds, lack of government support and poor of extension services. The implication is that lack of funds, government support through subsidies of input and machineries hinder the participation of women farmers in agricultural activities. These findings are in agreement with those obtained by Buckland and Haleegoah [6], who pointed out that steps taken to make credit available to the poor mostly benefited males, leaving poor women farmers with little access to financial markets. This is especially for women-small-farmers particularly in Africa, especially those heading independent households, desperately need access to credit. They are, however, subject to more obstacles in obtaining loans than male farmers because, sex-specific constraints include high level of illiteracy, lack of information about the availability of loans, lack of collateral and unwillingness of many credit institutions to deal with new and small-scale borrowers who, in most cases are women.

Poor extension services as one of the major constraints militating against women farmer’s participation in agricultural activities indicated that women farmers need new and improved technology, ideas and information to improve in their farming activities to increase their productivity and enhance their standard of living. Few extension services are targeted at women farmers, few of the world’s extension agents are women and most of the extension services focus on commercial rather than subsistence crop-the primary concern of women [7].

CONCLUSION

The study revealed that women participation in agricultural activities is less than that of men, as most rural women were characterized by household overwork, low productivity and little access to credit, training and technology. The study, also, revealed that most of the respondents (41.9%) were engaged in crop processing as their activities in the study area. Age, educational level, extension contact, access to credit and availability of farm input were the major socio-economic variables that were significant in women farmers’ participation in agricultural activities in this study. The study reports that lack of funds is the major constraint limiting the participation of the respondents in agricultural activities.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations were made:

- The study revealed that funding is a critical ingredient required to boost participation of women farmers in agricultural activities. It is therefore recommended that the World Bank, the federal and the state government should support the women farmers financially to enable them participate in their agricultural activities effectively. The local government should also contribute to the funding of agricultural development programs.
- Borno State Agricultural Development Programme should strive to establish an effective network between the women farmer’s and extension agents so that information on improved technologies can reach women farmers even in remote villages.
- Appropriate policies and strategies should be developed to ensure access by women farmers to extension services, credit, inputs and training necessary for improved production and productivities.
- The women farmers should develop mechanism for income generation to help finance their agricultural activities. Women farmers should form women cooperatives to help them get what they need from the government and nongovernmental organizations.
- The cost of inputs should be subsidized for women farmers by the government. This is to enhance the ability of the women farmers successfully adopt the technologies made available to them by the extension services to further enhance their economic empowerment.

REFERENCES