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Full Length Research Paper

The Role of Rural Women Farmers in Household Food Security in Cross River State, Nigeria

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This study was aimed at finding out the role of rural women farmers in household food security in Cross River State, Nigeria. Four research questions and four null hypotheses were formulated to guide the study. The target population for this study was 2,231 respondents comprising 2,021 rural women farmers and 210 agricultural extension agents. A total of 221 rural women farmers and 21 agricultural extension agents were selected using simple random sampling technique. Rural Women Farmers and Household Food Security Questionnaire (RWHFSQ) was structured instrument used to elicit the needed information from the respondents. The data collected were analyzed using mean and standard deviation statistics to answer the research questions and independent t-test statistical tool to test the null hypotheses at 0.05 level of significance and 240 degree of freedom. From the analyses, it was found out that rural women farmers play important roles in household food security as food producers, keepers of traditional knowledge and preservers of agro-biodiversity, food processors, preparers and food providers for their families, thus, serving as key players in household food security. Based on the findings, it was recommended that rural women farmers should be effectively empowered towards resolving the problem of food security and economic development in Cross River State, Nigeria.

Keywords: Rural women farmers, Household food security, Food availability, Food accessibility, Agro-biodiversity conservator

INTRODUCTION

Nigeria's birth of democracy in 1999 was expected to usher in an era of opulence via general security, based on equity, transparency, accountability, tolerance, justice, sense of belonging, involvement and participation in the affairs of the nation by all (Shuaibu, 2011). Indeed, hopes were high for the radical transformation of the economy in the area of food for all. Twelve years down the lane, overwhelming evidence has revealed the stark reality that we are still on a very long journey to our democratic destination. McNelly (2012) maintained that acute hunger as well as stark poverty of the masses in the midst of stupendous opulence of the few primitive acquirers has crippled the country.

Similarly, Srivastava, Smith and Ferno (2001) identified ethno-religious and political bigotry of the highest order, with terrorist attacks via bomb blasts everywhere being the order of the day, a feature hitherto alien to Nigeria.

It has generally been acknowledged that Nigerian rural women have suffered long term marginalization in the affairs of the nation, despite their fundamental role in the area of ensuring peaceful co-existence for sustainable economic development via maintenance of the family by ensuring food security at the household level and the general society (Okoli & Umeh, 2001). Thus, rural women as producers of food play key role in achieving household

food security. Rural women in Cross River State, Nigeria are not exempt from these challenges as the State has been recently affected by low food production, erosion of traditional and indigenous farming practices, and loss of agrobiodiversity. In the light of the foregoing, this study was conducted to ascertain the roles of rural women farmers in household food security in Cross River State, Nigeria

Purpose of the Study

The main purpose of this study was to investigate the roles of rural women farmers in household food security in Cross River State, Nigeria. Specifically, the study sought:

1. To determine the roles rural women farmers play as household food producers in Cross River State, Nigeria.
2. To find out the roles rural women farmers play as conservators of agrobiodiversity in Cross River State, Nigeria
3. To identify the roles rural women farmers play as household food processors in Cross River State, Nigeria

Research Questions

The following research questions guided the study:

1. What roles do rural women farmers play as household food producers in Cross River State, Nigeria?
2. What roles do rural women farmers play as conservators of agrobiodiversity in Cross River State, Nigeria?
3. What roles do rural women farmers play as household food processors in Cross River State, Nigeria?

Research Hypotheses

The following research hypotheses were tested at 0.05 level of significance:

1. There is no significant difference in the mean ratings of respondents on the roles rural women farmers play as household food producers in Cross River State, Nigeria.
2. There is no significant difference in the mean ratings of respondents on the roles rural women farmers play as conservators of agrobiodiversity in Cross River State, Nigeria.
3. There is no significant difference in the mean ratings of respondents on the roles rural women farmers play as household food processors in Cross River State, Nigeria.

Literature Review

Women are farmers and food producers. They produce a large part of the world's food. Karl (2009) submitted that exact data is very hard to come by but FAO (2009) estimated that women are the main producers of the world's staple foods: maize, wheat and rice. According to

the estimate, women are generally responsible for about 50 percent of the world's food production and, in some countries of sub-Saharan Africa like Nigeria, women provide between 60 and 80 percent of the food for household consumption, mainly as unpaid labourers on family plots.

Idrisa, Gwary and Shehu (2008) found out in their study that women's contribution to agricultural production in Nigeria varies from agro-ecological zone to the other, crop to crop and task to task. Dauda (2009) submitted that women provide up to 90 per cent of the labour for rice cultivation in south-western Nigeria. Similarly, Keller (2010) maintained that women perform 25 to 45 percent of agricultural field tasks. Meludu, Ifie, Akinbile and Adekoya (1999) found out that, women contribute 53 percent of the agricultural labour. Men are found more often in agricultural wage labour and cash crop production, while women are mostly found producing food for their families and local markets. Women are also found in agricultural wage labour.

Titus and Adetokunbo's (2007) findings revealed that women make up 65 percent of the field workers in farms, comprise 60 percent of the contractual workers in the fruit sector and women constitute 40 per cent of the field workers for vegetables and 90 percent of the packers. They further found out that women provide 70 to 80 per cent of the labour in packing and labeling of horticulture. Women perform many tasks in household crop production, including sowing seeds, weeding, applying fertilizers and pesticides, and harvesting and threshing of the crops. They are also responsible for post-harvest food processing, storage, transport and marketing. In addition to producing staple crops, women in many countries also grow legumes and vegetables to feed their families (Gellen, 2004).

International Institute of Sustainable Development (IISD) (2015) maintained that women play an important role in raising poultry and small livestock such as goats, rabbits and pigs. They also feed and milk larger livestock. Their tasks vary from country to country: Latin American women are less involved in crop production than women in sub-Saharan Africa, but are largely responsible for small livestock. In Nepal, women have almost the sole responsibility for fodder collection for buffalo while in Pakistan; women provide the majority of the labour for cleaning, feeding and milking cattle. For Olaley (2008), women likewise assume significant roles in forestry, planting and caring for seedlings and gathering forest products for fuel, fodder and food. Where most rural areas dependent on fuel wood, women are almost always the ones responsible for gathering fuel wood that is used not only for cooking but also for food processing and other basic needs such as warmth, light and boiling water for drinking. Small-scale fisheries, which provide more than 25 per cent of the world's fish food catch, depend on women's contributions (Olowu & Igodan, 2009). Women in fishing communities catch fish with nets and traps and by baiting

and diving. Yayaha (2001) posited that women raise fish and crustaceans; make and repair nets and traps; assist men with launching and beaching operations, sorting and gutting the haul; and process and market their catch.

Women are also preservers of agrobiodiversity. The concept of agricultural biodiversity or agro-biodiversity as it is sometimes referred could be identified within a macro concept of biodiversity (Ben, 2010). Agricultural biodiversity is restricted to plants and animals used in commerce or having potential use (Srivastava, Smith and Ferno, 2001). It is the diversity of genetic resources (varieties, breeds, species, cultivated, reared or wild) used directly for food and agriculture; the diversity of species that support production (soil biota, pollinators, predators, etcetera) and those in the wider environment that support agro-ecosystems (agricultural, pastoral, forest and aquatic), as well as the diversity of agro-ecosystems themselves (FAO, 2008).

Rural women are often the preservers of traditional knowledge of indigenous plants and seeds. As the ones responsible for supplying their families with food and care, Ben (2010) found out that they have a special knowledge of the value and diverse uses of plants for nutrition, health and income. According to his findings, women grow traditional varieties of vegetables, herbs and spices in their home gardens; also often experiment with and adapt indigenous species, and are involved in the exchange and preservation of seeds. This has important implications for the conservation of plant genetic resources. Unfortunately, the importance of women's knowledge and expertise on agrobiodiversity conservation is often overlooked or ignored by development planners.

As providers of basic foods, fuel and water for their families, women have an important stake in the preservation of the environment and combating environmental degradation. Olaleye (2008) posited that women recognize the importance of forests as a source of food, fodder, medicine and many other products. Mainly responsible for providing water for the household, women according to him are acutely aware of the importance of water sources. Consequently, women have a particular interest in natural resource management, sustainable development and preservation of the environment. As managers of these natural resources for their families and communities, the women have taken an active role in conserving them.

Alarmed by the deforestation of the area which had led to floods and landslides, the women of Dasholi Village began a non-violent protest in 1976, acting as human shields to prevent trees from being cut down. This has grown into an ongoing natural resource conservation movement and spread throughout the whole area. The women first mobilized women's groups in neighbouring villages and other districts in the region, involving all women and men of the communities which were coordinated by an organization called the Dasholi Gram Samaj Mandal.

These women and their communities have succeeded in regenerating the forests; reducing the damage from floods and landslides and making their own work and lives easier (International Strategy for Disaster Reduction (ISDR), 2008).

Women are food processors and preparers. They are universally responsible for food preparation for their families and engaged in various stages and steps of processing this food. In many cultures and countries, women have the main responsibility for the provision of food—if not by producing it, then by earning income from purchasing it. This applies to urban and non-farming women as well as women farmers, and is not limited to the large percentage of female-headed households in the world.

This gender division of responsibilities is often unrecognized by development planners. False assumptions about households as a unit can have detrimental effects on food security. Development planners often assume that the increase of household income through the employment of men in cash crop production will benefit everyone and enable the household to purchase food. But in many cases, incomes are not pooled although women remain responsible for supplying the food. A classic example is south-southern Nigeria, where root and tuber crops were introduced as a cash crop employing men. The result was increased money in the community, but increased malnutrition as well. As men were no longer available for clearing land, women cultivated smaller plots of food crops for their families. The cash earned by men did not go to the purchase of food and everyone in the community suffered greater food insecurity.

METHODOLOGY

The study employed a survey research design. The target population for this study was 2,231 respondents comprising 2,021 rural women farmers and 210 agricultural extension agents. A total of 221 rural women and 21 agricultural extension agents were selected using simple random sampling technique. This resulted to a total sample size of 242 respondents.

Rural Women Farmers and Household Food Security Questionnaire (RWHFSQ) was structured instrument used to elicit the needed information from the respondents. The instrument was divided into two parts. Part I solicited information on personal data of the respondents while Part II was structured into three sections; A to C. Section A was structured to elicit responses on rural women as farmers and food producers, section B structured to elicit information on rural women as preservers of agrobiodiversity, and section C focused on rural women as food processors and preparers in the study area. The questionnaire items were drawn and coded on a 4-point scale as follows: Strongly Agree (SA)- 4 points, Agree (A)- 3

points, Disagree (D)- 2 points, and Strongly Disagree (SD)- 1 point.

For determining the reliability of the instrument, copies of the instrument for data collection were administered to 30 rural women farmers and ten agricultural extension agents in Akwa Ibom State, South-southern Nigeria. The data obtained from the administration of the instruments were analyzed using Pearson's Product Moment Correlation Coefficient (r) and a coefficient of 0.78 was obtained. This indicated that the instrument was reliable and capable of yielding the desired result for this study.

The data collected for the study were analyzed using mean and standard deviation to answer the research questions. Independent t-test statistical tool was used to analyze the data aimed at testing the null hypothesis at 0.05 level of significance and 240 degree of freedom. For the research questions, an item with mean rating of 2.50 and above was regarded as agreed while mean response of less than 2.50 was regarded as disagreed. With respect to research hypotheses, a null hypothesis was upheld when the calculated t-value was less than the critical t-value and vice versa.

RESULTS

Research Question 1

What roles do rural women farmers play as household food producers in Cross River State?

To provide answer to this question, a structured questionnaire on rural women farmers' role as household food producers in the study area was presented to the respondents to indicate their opinions. The result is presented in Table 1.

Table 1 presents data on the opinion of respondents on the roles rural women farmers play as food producers in Cross River State. Respondents agreed on all the items with mean scores ranged from 3.28 - 3.50. The aggregate mean score of 3.42 was obtained which was higher than the cutoff point of 2.50. Therefore, the role of rural women farmers' roles as food producers in the study area is incontestable. Data on standard deviation revealed that all the seven items recorded values ranged from 0.46 – 0.61, indicating that there was less variability in the opinions of the respondents.

Research Question 2

What roles do rural women farmers play as conservators of agrobiodiversity in Cross River State?

To provide answer to this question, a structured questionnaire on the roles rural women farmers play as conservators of agrobiodiversity in Cross River State was presented to the respondents to indicate their opinions. The result is presented in Table 2.

Table 2 presents data on the opinion of respondents on the role rural women farmers play as conservators of agrobiodiversity in Cross River State. Respondents agreed on all the items with mean scores ranged from 3.27 - 3.43. The aggregate mean score of 3.35 was obtained which was higher than the cutoff point of 2.50. Therefore, respondents agreed upon the roles rural women farmers play as conservators of agrobiodiversity in the study area. Data on standard deviation revealed that all the five items have values ranged from 0.56 – 0.70, indicating that there was less variability in the opinions of the respondents.

Research Question 3

What roles do rural women farmers play as household food processors in Cross River State?

To provide answer to this question, a structured questionnaire on the roles rural women farmers play as household food processors was presented to the respondents to indicate their opinions. The result is presented in Table 3.

Table 3 presents data on the opinion of respondents on the role rural women farmers play as household food processors in Cross River State Nigeria. Respondents agreed on all the items with mean scores ranged from 3.26—3.42. The aggregate mean score of 3.31 was obtained which was greater than the cutoff point of 2.50. Therefore, respondents upheld the view that the role rural women farmers play as household food processors in the study area in strong agreement. Data on standard deviation revealed that all the five items have values ranged from 0.62 – 0.69, indicating that there was less variability in the opinions of the respondents.

Research Hypothesis 1

There is no significant difference in the mean ratings of respondents on the roles rural women farmers play as household food producers in Cross River State, Nigeria.

Table 4 shows t-test analysis of respondents on the roles rural women farmers as household food producers in Cross River State. The result shows that there was no significant difference in the opinion of respondents about rural women farmers play as food producers. This is evidenced from the fact that the item 1-2 and item 4-7 recorded t-calculated value ranged from -1.14 to 1.18, which was less than the t-tab value of 1.960 at 0.05 level of significance and 240 degree of freedom. Hence, the null hypothesis was accepted. Therefore, there was no significant difference between rural women farmers and extension agents in their opinion about rural women farmers as food producers. However, item 3 recorded t-cal value of 2.04 which was greater than the critical t-tab value, implying that the null hypothesis for the item was rejected.

Table 1. Mean ratings of respondents on the role of rural women farmers as food producers in Cross River State

S/N	Rural women farmers' roles	\bar{X}	SD	RMK
1	Women prepare food for farm workers' consumption	3.50	0.53	Agree
2	Women provide the labour for rice production	3.46	0.52	Agree
3	Women perform larger percentage thinning and supplying operations	3.28	0.46	Agree
4	Women are mostly involved in marketing agricultural produce	3.43	0.59	Agree
5	Women mostly perform task of sowing seeds	3.43	0.59	Agree
6	Women are mostly responsible for weeding farmland	3.47	0.61	Agree
7	Application of fertilizers and pesticides are mostly done by women	3.37	0.56	Agree
	Aggregate mean	3.42		

Note: \bar{X} = Mean, SD = Standard Deviation, RMK = Remark

Table 2. Mean ratings of respondents on the roles of rural women farmers as conservators of agrobiodiversity

S/N	Rural women farmers' roles	X	SD	RMK
8	Women are preservers of indigenous knowledge of planting at stake	3.36	0.61	Agree
9	Women are often preservers of indigenous seeds	3.43	0.58	Agree
10	Women grow traditional varieties of vegetables	3.35	0.70	Agree
11	Women grow indigenous herbs and species in their home gardens	3.39	0.59	Agree
12	Women breed indigenous animal species	3.27	0.64	Agree
13	Women introduce new varieties of crops into their local communities	3.30	0.60	Agree
14	Women often domesticate wild birds and forest trees	3.36	0.56	Agree
	Aggregate mean	3.35		

Table 3. Mean ratings of respondents on the roles of rural women farmers as household food processors

S/N	Rural women farmers' roles	X	SD	RMK
15	Women are responsible for local processing of milk extracted from dairy animals	3.42	0.62	Agree
16	Women engage in farm-level processing of grain legumes	3.33	0.69	Agree
17	Women are involved in cooking food at home	3.28	0.69	Agree
18	Women mostly perform the task of local milling of cereals	3.30	0.67	Agree
19	Women engage in processing of cassava into various products	3.26	0.67	Agree
	Aggregate mean	3.31		

Table 4. t-test analysis of respondents' opinion on the roles rural women farmers play as household food producers in Cross River State, Nigeria

S/N	Rural women farmers' roles	X ₁	SD ₁	X ₂	SD ₂	t-cal	RMK
1	Women prepare food for farm workers' consumption	3.49	0.52	3.67	0.50	-1.14	NS
2	Women provide the labour for cereal crop production	3.47	0.53	3.38	0.49	0.79	NS
3	Women perform larger percentage thinning and supplying operations	3.31	0.50	3.14	0.35	2.04	S
4	Women are mostly involved in marketing agricultural produce	3.37	0.57	3.23	0.53	1.16	NS
5	Women mostly perform task of sowing seeds	3.45	0.59	3.28	0.71	1.13	NS
6	Women are mostly responsible for weeding farmland	2.38	0.61	3.38	0.49	0.00	NS
7	Application of fertilizers and pesticides are mostly done by women	3.38	0.55	3.19	0.74	1.18	NS

Note: X₁ = Mean opinion score of Women farmers; SD₁ = Standard deviation value of Women farmers; N₁ = 221, X₂ = Mean opinion score of Extension Agents; SD₂ = Standard deviation value of Extension Agents; N₂ = 21; NS = Not Significant; S = Significant; df = 240, t-tab. = 1.960.

Table 5. t-test analysis of respondents' opinion on the roles rural women farmers play as conservators of agrobiodiversity

S/N	Rural women farmers' roles	X ₁	SD ₁	X ₂	SD ₂	t-cal	RMK
8	Women are preservers of indigenous knowledge of planting at stake	3.38	0.58	3.42	0.58	-0.30	NS
9	Women are often preservers of indigenous seeds	3.39	0.62	3.04	0.58	2.19	S
10	Women grow traditional varieties of vegetables	3.38	0.60	3.14	0.65	1.71	NS
11	Women grow indigenous herbs and species in their home gardens	3.41	0.59	3.23	0.53	1.80	NS
12	Women improve indigenous animal species through breeding	3.27	0.66	3.23	0.43	0.44	NS
13	Women introduce new varieties of crops into their local communities	3.22	0.59	3.09	0.65	1.76	NS
14	Women often domesticate wild birds and forest trees	3.39	0.57	3.33	0.65	0.42	NS

Hypothesis 2

There is no significant difference in the mean ratings of respondents on the roles rural women farmers play as conservators of agrobiodiversity in Cross River State, Nigeria.

Table 5 presents data on t-test analysis of respondents on the roles rural women farmers play as conservators of agrobiodiversity in Cross River State. The data show that item 8 and item 10-14 recorded calculated t-values ranged from -0.30 to 1.80, which were less than critical t-value of 1.960 at 0.05 level of significance and 240 degree of freedom. The implication of this result is that the null

hypothesis was upheld for the six items. This implied that there was no significant difference in the mean ratings of respondents on the roles rural women farmers play as conservators of agrobiodiversity in the study area. However, item 2 recorded t-cal value of 2.19, which is greater than the critical t-value, implying that the null hypothesis for the item was rejected.

Hypothesis 3

There is no significant difference in the mean ratings of respondents on the roles rural women farmers play as household food processors in Cross River State, Nigeria.

Table 6. t-test analysis of respondents' opinion on the roles rural women farmers play as food processors

S/N	Rural women farmers' roles	X ₁	SD ₁	X ₂	SD ₂	t-cal	RMK
15	Women are responsible for local processing of milk extracted from dairy animals	3.38	0.62	3.42	0.50	-0.40	NS
16	Women engage in farm-level processing of grain legumes	3.38	0.69	3.57	0.59	-2.90	NS
17	Women are involved in cooking food at home	3.27	0.68	3.47	0.51	-2.00	NS
18	Women mostly perform the task of local milling of rice	3.33	0.65	3.00	0.70	-2.20	NS
19	Women engage in processing of cassava into various products	3.38	0.60	3.14	0.65	1.71	NS

Table 6 presents data on t-test analysis of respondents' opinion on the roles rural women farmers play as food processors in Cross River State, Nigeria. The data show that all the 5 items recorded calculated t-values ranged from -2.90 to 1.71 which were less than t-tab value of 1.960 at 0.05 level of significance and 240 degree of freedom. The implication of this result is that the null hypothesis was upheld for the five items. This implied that there was no significant differences in the opinions of respondents on the role rural women farmers play as household food processors in the study area in the perspective of local processing of milk, farm-level processing of grain legumes, cooking of food at home, local rice milling, and processing of cassava into various products.

DISCUSSION OF FINDINGS

The overall findings of this study showed that rural women play a significant role in household food security in Cross River State, Nigeria. On the basis of research hypothesis one, it was found out that significant difference did not exist in the opinions of respondents on the roles rural women farmers play as household food producers in Cross River State. While findings inferred from research hypothesis two revealed that respondents did not significantly differ in their opinions on the roles rural women farmers play as conservators of agro-biodiversity in Cross River State. Based on research hypothesis three, it was found out that there is no significant difference in the opinions of respondents on the roles rural women farmers play as household food processors in Cross River State.

FAO (2009) agrees with findings of this study, which confirmed that women are the main producers of the world's staple foods: maize, wheat and rice. According to the estimate, women are generally responsible for about

50 percent of the world's food production and, in some countries of sub-Saharan Africa like Nigeria, women provide between 60 and 80 percent of the food for household consumption, mainly as unpaid labourers on family plots. Similarly, Dauda (2009) submitted that women provide up to 90 per cent of the labour for rice cultivation in south-western Nigeria; while Keller (2010) maintained that women perform 25 to 45 percent of agricultural field tasks. In the same vein, Meludu, Ifie, Akinbile and Adekoya (2009) found out that, women contribute 53 percent of the agricultural labour while men are found more often in agricultural wage labour and cash crop production; women are mostly found producing food for their families and local markets. Women are also found in agricultural wage labour. Titus and Adetokunbo's (2007) findings revealed in support of the findings of this study that women make up 65 percent of the field workers in farms, comprise 60 percent of the contractual workers in the fruit sector and women are 40 per cent of the field workers for vegetables and 90 percent of the packers; while women provide 70 to 80 per cent of the labour in packing, labeling and bar-coding of horticulture, women perform many tasks in household crop production, including sowing seeds, weeding, applying fertilizers and pesticides, and harvesting and threshing of the crops. As the ones responsible for supplying their families with food and care, Ben (2010) found out that they have a special knowledge of the value and diverse uses of plants for nutrition, health and income. They grow traditional varieties of vegetables, herbs and spices in their home gardens; also often experiment with and adapt indigenous species, and are involved in the exchange and saving of seeds; this has important implications for the conservation of plant genetic resources, and as such, women should be involved in biodiversity conservation. The researcher's findings are in line with findings of this study. In support to findings of this study, Olaleye (2008) posited that indigenous women of

Nigeria know the value of biodiversity and ancestral knowledge; and as providers of basic foods, fuel and water for their families, women have an important stake in the preservation of the environment and combating environmental degradation.

CONCLUSION

Based on the findings made, it was concluded that rural women farmers play a significant role in household food security in Cross River State, Nigeria. Women are specifically seen as farmers and food producers, conservators of agro-biodiversity, food processors and preparers, and have a stake in ensuring household food availability and accessibility. They contribute to food security in the area of preparation of food for farm workers' consumption, provision of labour for rice production, thinning and supplying farm operations, marketing agricultural produce, sowing of seeds, weeding farmland, and application of fertilizers and pesticides.

RECOMMENDATIONS

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

1. Rural women should be effectively empowered towards resolving the problem of food security so as to enhance enduring and sustainable food security in Cross River State, Nigeria.
2. Women should be empowered with modern technologies in agriculture to generate enough revenue to sustain their families and save the society from menace of food insecurity.
3. Empowerment of rural women farmers should be prioritized through provision of special agricultural credits and subsidization of farm inputs to optimize their invaluable role in food security.

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