

Women smallholding farming initiatives and household food availability in rural Communities of Southern Cross River State, Nigeria.

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ABSTRACT

The paper examines the relationship between women smallholder farmers' initiatives and food security in sub-Saharan African rural communities of southern Cross River State, Nigeria. **Specific objectives:** The paper argues specifically that a relationship exists between women household agricultural production activities and food security in rural communities; an association exists between women household food processing activities and food security in rural communities; also, women agro-biodiversity initiatives relate with food security in rural communities. These objectives are tested in the study as research hypotheses at 0.05 level of significance with 598 degrees of freedom. It adopts the feminisation theoretical framework, which is rooted in the feminist economics which explains the geometrical involvement of women small holders in agricultural production. **Methodology.** The research methodology combines both the qualitative and quantitative approaches of survey research design. Women Small Holders Farmers Initiatives and Food Security Questionnaire, Focus Group Discussion (FGD) Guide and Key Informant Information (KII) Guide constitute the instruments of data collection. The study elicits data from 654 rural women using a multi-stage sampling procedure (simple random, stratified, cluster, purposive and systematic sampling). **Data analysis:** The analytical techniques include simple percentages and Chi-square(X²) to test the null hypotheses at 0.05 level of significance. **Findings:** The findings indicate that rural women have consistently been involved in the area of agricultural productivity for food security which helps to strengthen and promote domestic food production. Their endeavours have promoted self-sufficiency in staple food commodities and have led to an increase in production. **Conclusion/recommendation.** Women smallholder farmers' initiatives positively impact food security in terms of food availability, accessibility and utilisation. The paper submits that if rural communities in Nigeria must achieve food sovereignty, rural women involved in the Nigerian food production process must become the target group of agricultural policies. Agricultural policies targeted at creating a favourable environment for rural women are vital to sustainable food sovereignty. It recommends that the feminisation of agriculture as a development strategy should also harmonise with other anti-poverty and anti-hunger plans and mainstream food security as the overarching goal.

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Background

Academic interest in food security in guaranteeing human wellbeing, especially in rural communities, has attracted enormous attention in recent times. This is because, being a basic human need, as postulated by Abraham Maslow (1984), food security improves the most basic of human conditions: the need that families, individuals and communities have for a reliable source of the means to sustain survival on earth. In Sub-Saharan Africa, a greater proportion of the rural population, about 3.4 billion lives in rural areas (Saghir and Santoro 2018). This makes the issue of food security very important as a means of population and societal maintenance according to functionalism (Adebayo, 2010).

Food security, as observed by Webb and Rogers (2013) must guarantee the satisfaction of the three core components of availability, accessibility and integrative utilisation. This is also closely linked to a secure and sustainable livelihood (Nkpoyen, Bassey and Abul, 2015). Though this possibility seems remote, however, to be food secure, households must have access to adequate food at all seasons (ESA, 2003). There is bound to be food security when there is available and accessible food and agricultural products to provide nutrition for all inhabitants, while ensuring forage for animals and water in case of disaster, war, and crises (Usoroh & Abia, 2018). However, Inter Action (2018) observes that about 800 million people are hungry worldwide, and half of all deaths of children under the age of 5 (nearly 3 million) are caused by malnutrition. This is the situation, especially with the increasing human

population. Due to hunger and malnutrition, women, men, and children are robbed of healthy, productive lives, and mental and physical development are negatively affected. This means that higher levels of psychological distress, psychiatric disorders and poor child development; can be linked to food insecurity as well as low levels of socio-economic wellbeing and life expectancy (Adebayo, 2010; FAO, 2010).

In Sub-Saharan Africa, “the number of undernourished people is even increasing” (Bravo-Ortega and Lederman, 2005). These people are mostly rural dwellers who rely solely on agriculture as a source of livelihood. They make a living from farming and equally strive to feed their families from the proceeds which are often scanty. The 2014 UN report further reveals that about 90 per cent of the world rural population are inhabitants of the less developed parts of Asia and Africa. We still have about 3.4 billion people living in rural areas (CSIS, 2018). The Sub-Saharan African region is said to have a total population estimated at roughly 690 million people, of whom over 62 per cent are categorised as rural, which is higher than the world average of 51 per cent (UNDP, 2006).

According to estimates, about 80 per cent of the poor in Sub-Saharan Africa are still heavily dependent on agriculture for sustenance. The remote areas with low agricultural resources are more flawed than their accessible counterparts. This same poor population is subjected to food insecurity rooted in poverty (FAO, 2016; World Bank, 2001). The issue of food insecurity has long term adverse consequences on the ability of individuals within families, communities and countries to develop physically, mentally, socially, economically and psychologically. Elongated undernourishment can hinder growth, slow down cognitive development, and increase susceptibility to illness (USAID, 2018; World Bank, 2001) and reduce the capability for social functioning.

As submitted by (IFAD, 2001; World Bank, 2001), the appalling undernourishment in Sub-Saharan Africa has significantly increased from an estimated 200 million people in the mid-1990s to about 400-450 million people today. In 1995-97, the average daily Sub-Saharan Africa diet contained 2188 kcal/person/day compared with 2626 kcal/person/day in underdeveloped countries as a whole. The fact remains that undernourishment has a higher rate of occurrence among rural people than urban areas. Although the total population of food ensuring people in Asia outweighs Africa, 18 out of 23 nations where undernourishment is prevalent are from Africa. Dercon and Gollin (2014), in their contributions to the debate, estimate that nearly one in a group of three persons is undernourished in Sub-Saharan Africa (Omorogiuwa, Zivkovic and Ademoh, 2014).

Nigeria, a Sub-Saharan nation, is an agrarian society with over 70 per cent of her working-age population employed in the agricultural sector (Adebo and Falowo, 2015). With the United Nations projected population of over 195, 880 million (World Population Review, 2018), Nigeria stands out as the most populated country in Africa. However, despite the abundant resources the nation possesses and its economic progress, 70 per cent of the population unfortunately still live below the poverty line and go to bed hungry. According to the 2011 UNDP Human Development Index, Nigeria ranked 156th out of 187 countries with the highest population. Also, Nigeria was ranked 40th out of 79 nations with the highest population by the 2012 Global Hunger Index. The predominance of poverty and hunger is more evident in the rural regions of Nigeria, where up to 80 per cent of Nigerians subsists on less than one US dollar per day (Food Security Portal, 2014).

The overriding objective for Nigeria’s agricultural sector, as documented by Okojie (1991), has been the attainment of self-sufficiency/security in the production of food. This self-sufficiency/security means the constant availability of food and access to it by every Nigerian and the possible exportation of surplus. In the past, agricultural policies focused solely on male farmers who grow most of the cash crops, mainly for exportation or industrial raw materials. However, increasing data shows that rural women dominate food crop production and processing in Nigeria, like many other African countries (Nkpoyen, Mbat and Bassey, 2013).

Rural women have consistently been involved in agricultural productivity for food security which has helped strengthen and promote domestic food production. Their endeavours have promoted self-sufficiency in staple food commodities and have increased agricultural raw materials production as well. The collective efforts of these women have translated into an improvement in the quality of life of rural communities and food sovereignty (Ebube, 2016). Agricultural initiatives of our women have become sources of livelihoods to 75 per cent of people in agrarian communities, which has reduced a substantial number of people at risk of poverty and social exclusion. Women engage in agricultural activities such as food production, food processing, forestry, fishing and hunting in some rural communities (Anam, 2011).

A large number of the people participating in agricultural production in Cross River State are women. They do this with dignity despite socio-cultural challenges. Their involvement has also facilitated domestic food self-sufficiency and food supply to neighbouring states of Akwa Ibom, Ebonyi, Abia and some parts of Cameroun Republic. Women in the rural communities of the state are the ones engaging daily in crop planting (Agbor and Eteng, 2018). Most small-holders rural farmers see their activities as their only occupation. They engage in agriculture to be self-reliance and serve as employers of farm labour. Also, women tend to have a strong desire for private financial resources or income as their male counterparts. The women feel harnessing their independent source of income enables them to bridge the gender gap to a certain extent while guaranteeing family food sovereignty. In most localities in the southern Cross River, the men are comfortable leaving their women to shoulder their entire family responsibilities, including feeding the children. This traditional African demand compels women to take to household food production, household food processing and conservators of agro-biodiversity as their sole occupation.

Statement of problem

The Nigerian food production, as stated by Aku (2012) is increasing at less than 2.0 percent while the population growth rate is estimated at 2.5 percent. The change in population and available food production indicate the existent of demand-supply gap, which has given rise to food insecurity. Over 13 trillion Naira annually is spent on the importation of common food items such as wheat, rice, sugar and fish in Nigeria (Ugwu and Kanu, 2012). In Nigeria, the level of malnutrition is very high, with rural areas being extremely "vulnerable to chronic food shortages, unbalanced nutrition, erratic food supply, poor quality food, high food costs and even total lack of food" (Isaac, 2009). The figures of malnutrition among children differ with geographical zones: we have about 56 percent in the south west rural area and 84.3 percent in three northern rural communities in Nigeria (Isaac, 2008). Based on UNICEF (2012), Nigeria is challenged with several malnourished children with stunting affecting 41 percent of under-five children; 14 percent are wasted, 23 percent are under weight, 13.7 percent of newborn are born with weight below 2500 grams. This is a common report in rural Nigeria where the women over the years have tried to change the situation but with relatively less significant results.

However, rural women in Nigeria, have suffered marginalisation for a very long time, despite their central role in ensuring sustainable economic development via family maintenance by ensuring food security at the household level and the general society (Okoli & Umeh, 2001). Rural women as producers of food play a key role in achieving household food security. Here in Cross River State, Nigeria. These women are not exempted from these challenges as the state has been recently affected by low food production, erosion of traditional and indigenous farming practices, and loss of agro-biodiversity. Thus, this study answered: what is the extent of the relationship existing between smallholder farmers and food security in sub-Saharan rural communities of southern Cross River State, Nigeria. The study's main objective was to investigate smallholder farmers' initiatives and food security in sub-Saharan African rural communities of southern Cross River State in Nigeria.

Research hypotheses.

1. Women agricultural household agricultural production activities have no significant relationship with food security in rural communities of southern Cross River State.
2. Women household food processing activities do not significantly relate to food security in rural communities of southern Cross River State.
3. Women agro-biodiversity initiatives have no significant association with food security in rural communities of southern Cross River State.

Theoretical framework

The work is sustained on the feminisation theory of agriculture rooted in the feminist economics. The theory explains the geometrical participation of women in the agricultural sector, especially in sub Saharan African communities (Agbor and Eteng,2018). The decades of the 1960s witnessed massive involvement of women in smallholding agricultural production and has grown over time. Studies by World Bank, IFAD and FAO (2009) found out that over 80percent of rural people engaged in agricultural activities are women. Their agricultural initiatives have significantly boosted household food security. Women are farmers, food producers and food processor; also, engage in agro-biodiversity activities. The agricultural sector in Nigeria is women-centred and women dominated.

Materials and methods

The research design used for the study was the quantitative and qualitative approaches of survey design. Specifically, the qualitative approach included the Focus Group Discussion (FGD) and the Key Informant Interview (KII). The quantitative aspect was the administration of the questionnaire. Southern Cross River is one of the three Senatorial Districts in Cross River State. It lies between longitude 9⁰5' and 10⁰20' East of the Greenwich meridian and latitudes 5⁰16' and 4⁰5' south of the equator. It is commonly referred to as greater Calabar district. It is made up of seven (7) local government areas: Akamkpa, Akpabuyo, Bakassi, Biase, Calabar South, Calabar Municipality and Odukpani. It has a population of 1,590,200 (NPC, 2016 Population Projection). The population of the study comprised all the women inhabitants of the seven (7) local government areas that constitute the southern senatorial district of Cross River State. Thus, the population according to NPC (2006) of women are: Akamkpa 200,100; Akpabuyo 363,900; Bakassi 42,300; Biase 224,700; Calabar South 255,999; Calabar Municipality 245,500; Odukpani 275,800 this gives a total population of 1,590,200 (NPC, 2016 Population Projection).

The sample for the study was made up of 654 respondents selected from six (6) local government areas (Calabar Municipality was excluded due to its urban status) and eighteen (18) villages. Additionally, 48 women were involved in Focus Group Discussion (FGD) while 6 participated in the Key Informant Interview. So altogether, the sample size of six hundred and fifty-four (654) respondents participated in the study. The study adopted a multi-stage sampling procedure. Instruments of data collection were a-48 item questionnaire, a -22-item focus group discussion guide and a-16 item Key informant interview guide. For determining the reliability of the instruments, copies were administered to 45 rural women farmers in Akwa Ibom State, a neighbouring state. The data obtained were analysed using descriptive and inferential statistics. This indicated that the instruments were reliable and capable of yielding expected results.

Socio-demographic data presentation.

Table 1: Socio-demographic data of respondents (N = 600)

Variables	No of Respondents	Percentages (%)
Age		
35 – 40 years	238	39.67
41 – 45 years	184	30.67
46 – 50 years	102	17.0
51 – 55 years	54	9.0

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56 years and above	22	3.66
Marital Status		
Single	160	26.67
Married	380	63.33
Divorced	45	7.5
Widow	15	2.5
Religion		
Christianity	575	95.84
Islam	5	0.83
African Tradition	20	3.33
Occupation		
Farming	486	81
Fishing	92	15.33
Trading	10	16.66
Civil servant	5	0.83
Unemployed	5	0.83
Others (Specify)	2	0.33
Educational Level		
Primary education	384	64
Secondary education	30	51.33
Informal education	186	31.0
Income Level Per Month		
Less than ₦50, 000	164	27.33
Less than ₦100, 000	240	40.0
Less than ₦200, 000	182	30.33
Above ₦300, 000	14	2.33
Source of Income Per Month		
Profit from fishing	92	15.33
Salary	5	0.83
Profit of enterprise	10	16.66
Profit of agriculture	486	47.66
None	2	0.33
Number of Children		
1 - 2	246	41.0
3 - 5	302	50.33
6 and above	52	8.67

Source: Field survey, 2019.

Based on the table, the highest age bracket is 35-40 years (39.67 percent) while the lowest is 56 years and above. The table shows that married women, 380(33.33 percent) are more in number; also, the majority of the rural women, 575 (95.84) are Christians. Almost all respondents, 486(81 percent) are farmers. Educationally, majority384 (64 percent) have acquired formal education at least as far as the primary school level. Profit from farming activities is the highest source of income for these rural women.

Data analysis.

Hypothesis one. Women household agricultural production activities have no significant relationship with food security in rural communities of southern Cross River State.

Table 2: Responses on rural women food production activities and food security (600).

S/N	Items	Responses	
		Positive (%)	Negative (%)
10	Women are involved in subsistence food production to meet household consumption and nutrition needs.	546 (91%)	54 (9%)
11	Women’s food production efforts have improved the living conditions of people by making food available and accessible.	448 (74.7%)	152 (25.3%)
12	The traditional small land holder farmers are raising subsistence crops such as maize, cassava, yam, rice etc.	482 (80.3%)	118 (19.7%)
13	The community is self-sufficient in food production through women’s efforts	406 (67.7%)	194 (32.3%)

Source: Field survey, 2019

Based on the table above, 546 (91 percent) agree that women are involved in domestic food production; 445(74.7 percent) assert that women's food production efforts have improved their living conditions; 482(80.3 percent) respond positively that traditional smallholder farmers are raising subsistence crops such as maize, cassava, yam etc; 492 (82.1 percent) admit that the community is self-sufficient in food production through women efforts;499 (83.1) express the view that women’s agricultural efforts have helped to reduce hunger and starvation in the community. Also, 501 (83.5 percent) agree that households have benefited from subsistence food production because they are now able to eat nutritiously.

Hypothesis two. Women household food processing/preparation activities do not significantly relate to food security in rural communities of southern Cross River State.

Table 3 Responses on rural women household food processing/preparation activities and food security.

S/N	Items	Responses	
		Positive (%)	Negative (%)

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17	Women are responsible for extracting milk from dairy animals.	474 (79%)	126 (21%)
18	Women are responsible for processing grain legumes for the family.	488 (81.3%)	112 (18.7%)
19	At home, women cook food for the whole family even when the men are at home.	436 (72.7%)	164 (27.3%)
20	Women are involved in local rice milling.	502 (83.7%)	98 (16.3%)

Source: Field data, 2019

The table indicates that women are involved in rural food processing in southern Cross River State. Although the opinions are mixed, the majority, 474 (79 percent) agree that women are responsible for extracting milk from dairy animals; 488(81.3 percent) agree that women are involved in processing grain legumes for the family; 436 (72.7 percent) stated that at home women cook food for the whole family even when the men are at home; 502((83.7 percent) agree that women solely engage in rice milling; 487(81.2 percent) admit that women process cassava into garri, fofo and other products for home consumption and commercial purpose; 475(79.2 percent) asserted that women are involved in storage of food crops for the family. The majority, 468(78 percent) also stated that women are involved in grinding cereals and drying vegetable leaves.

Result of the analysis in Table 3 show that the calculated (X^2) value of 49.24 is greater than the critical (X^2) of 11.1 at 0.05 level of significance, with 5 degrees of freedom. This means that women household food production has a significant association with food security in rural communities of southern Cross Rivers State.

Hypothesis three. Rural women agro-biodiversity activities do not significantly relate to food security in rural communities.

Table 4: Responses on rural women agro-biodiversity activities and food security in rural communities.

S/N	Items	Responses	
		Positive (%)	Negative (%)
24	Women are preservers of indigenous knowledge of planting at stake.	434 (72.3%)	166 (27.7%)
.25	Women are often preservers of indigenous seeds.	466 (77.7%)	134 (22.3%)
26	Women grow traditional varieties of vegetables for home consumption	445 (74.2%)	155 (25.5%)
27	Women grow indigenous herbs and species in the home garden.	497(82.8%)	103(17.2%)

Source: Field data, 2019

Table 4 indicates the responses on women agro-biodiversity initiatives and food security. From the table, 466 (77.7 percent) agree that women often preserve indigenous seeds for immediate and future purposes; 445(74.2 percent) are of the opinion that women grow indigenous herbs and species in their home garden; 480(80 percent) admit that women also breed indigenous animals for consumption and commercial purposes; 497(82.8 percent) agree that women often introduce new varieties of crops into their local communities; 468(78 percent) assert that women engage in animal husbandry.

Table 5: Chi-square (χ^2) contingency analysis of the association between women household food production activities and food security (N =600)

Variables	Food security		Total
	High	Low	
Women in household food prod.			
Prepare food for farmworkers.	55	25	80
Labour for crop production.	50	45	95
Rice value chain production.	120	30	150
Running of restaurant	60	40	100
Marketing farm produce.	32	53	85
Sowing/weeding/fertiliser appl.	48	42	90
Total	365	235	600

Source: Field data, 2020.

Table 6: Contingency table showing the association between women household food processing activities and food security.

Cell	O	E	O - E	(O - E) ²	(O - E) ² /E
1	55	48.67	6.33	40.0689	0.82
2	25	31.33	-6.33	40.0689	1.28
3	50	57.79	-7.79	60.6841	1.05
4	45	37.21	7.79	60.6841	1.63
5	120	91.25	28.75	826.5625	9.06
6	30	58.75	-28.75	826.5625	14.07
7	60	60.83	-0.83	0.6889	0.01
8	40	39.17	0.83	0.6889	0.02
9	32	51.71	-19.71	388.4841	7.51
10	53	33.29	19.71	388.4841	11.67
11	48	54.75	16.75	45.5625	0.83
12	42	35.25	6.75	45.5625	1.29
Total	600				49.24

Source: Field data, 2020.

Calculated (χ^2) value = 49.24

Critical (χ^2) value = 11.1

Level of significance = 0.05

Degree of freedom = 5

Table 7: Pearson product-moment correlation analysis of the relationship between women household food processing/preparation activities and food security (N=600)

Variables	$\sum x$	$\sum x^2$	$\sum xy$	r-cal
	$\sum y$	$\sum y^2$		

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Women household food processing activities				
a. Processing grain/garri (X ₁)				
b. Storage of food crops/milk extraction (X ₂)	1050	1950	1775	0.878
c. Rice milling/grinding cereals (X ₃)	1055	1970	1750	0.614
d. Drying ,salting, smoking/fermentation (X ₄)	1040	1945	1780	0.925
Food security (y)	1046	1952	1774	0.860
	950	1650		

Significant at 0.05, critical- $r = 0.195$, $df = 598$

Source: Field Data (2019).

Results of analysis in Table 7 show that the calculated values of 0.878, 0.614, 0.925, 0.860 are greater than the critical r -value of 0.195 at 0.05 level of significance, with 598 degrees of freedom. By these results, the null hypothesis is rejected and alternate hypothesis upheld. This means that rural women household food processing/preparation activities significantly relate to food security.

Table 8: Chi-square (X²) contingency analysis of the association between rural women agro-biodiversity activities and food security (N= 600)

Variables	Food security		Total
	Increased	Decreased	
Preserve indigenous seeds/species.	220	100	320
Engage in animal husbandry	125	155	280
Plant traditional herbs/veg.	345	255	600
Total			

Table 9: Contingency table showing the association between rural women agro-biodiversity activities and food security.

Cell	O	E	O - E	(O - E) ²	(O - E) ² /E
1	220	184	36	1296	7.04
2	100	136	-36	1296	9.53
3	125	161	-36	1296	8.05
4	155	119	36	1296	10.89
Total	600				35.51

Source: Field Data (2019).

Calculated (X²) value = 35.51

Critical (X²) value = 3.84

Level of significance = 0.05

Degree of freedom = 1

Conclusion

Results of analysis in table 9 show that the calculated (X²) value of 35.51 is greater than the critical (X²) value of 3.84, at 0.05 level of significance with 1 degree of freedom. By this result, the null hypothesis is rejected while the alternate hypothesis is accepted. This means that there is a significant association between rural women agro-biodiversity activities and food security in rural communities in Cross River State.

Discussion.

The overall findings of this study indicate that women smallholder farmers' initiatives in food production significantly impact on food security. UNFAO (2001) emphasised that agriculture is a vital engine of growth and socio-economic development in countries where it serves as the major occupation of the poor. Women represent a crucial resource in agriculture and the rural economy itself by reason of their roles as farmers, labourers and entrepreneurs. The findings of this study are consistent with Roy and Mondal (2015) that women have culturally been involved as household labourers in livestock, mushroom, animal husbandry and preparing fish-catching instrument. Women in Thailand contribute immensely to the production of fruits and vegetables in the homestead and small area of farm, tree plantain and processing. These help to increase the total family income and guarantee food security.

Titus and Adetokunbo's (2007) findings, which are supported by this study, revealed that women make up 65 percent of field workers in farms, comprise 60 percent of the contractual workers in the fruit sector and women constitute 40 percent of the field workers for vegetables and 90 percent of the packers. Titus and Adetokunbo further reported that women provide 70 to 80 percent of the labour in packing and labelling of horticulture. Women perform many tasks in household crop production, including sowing seeds, weeding, applying fertilisers and pesticides, 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 communities also grow legumes and vegetables to feed their families (Gellen,2004; Ben, 2015).

The findings here validate Tambi *et al.*, (2017) that women working in subsistence agriculture give in more than other occupations. Prakash (2006) earlier concluded from his study on women in Cameroon that about 90 percent of the food needed for subsistence by the rural population are supplied by women. The present study in Southern Cross River State has validated this conclusion. In the Focus Group Discussion (FGD) and Key Informant Interviews (KII) carried out in some communities in the sub-stratum of the study, it was reported that women comprised a higher proportion of small holder farmers. The women work in agriculture, produce food, process basic food and also undertake rural marketing. In response to research question one, the consensus was that rural women have acted as a very strong catalyst of positive change in tackling the phenomena of malnutrition and starvation. In the FGD at Esighi, in Bakassi Local Government Area, *women reported that: because if we do not, our children will be hungry. Our women in the community, even those who are not members of this community, are involved in farming activities. We clear the bush, cut down trees, plant cocoyam, melon, cassava, pumpkin, okro (FGD Esighi, 2019).*

A Key informant, women leader of the Women Organization, Asian Iban Obio, Akiba, aged 51 years, reported that: It is clear that without women, no community can exist. We are the pillars in all manner of agriculture. Do not be deceived by our men who only wait for us to suffer to bring them food. Many of us have large family land that we plant a variety of crops. So in our homes, we are able to eat well. See, now most of us can consume such food as chicken and eat fresh fish because women sell farm produce and have extra money to feed their families well. "Let me tell you, without women, the entire community here will die of hunger. Our women plant and produce enough cassava for the community" (KII, 2019).

Women have culturally been deeply involved as household labourer in preparing fish-catching instruments, such as mat in some areas. Women in Thailand contribute immensely to producing fruits and vegetables in the homestead and small areas of farms, tree plantation and crop processing. These help to increase the total family income. Women more often than men are involved in cultivating vegetables and planting fruit trees (Roy & Mondal, 2015). Roy and Mondal (2015) observed that in a developing country such as Thailand and even in other sub-Saharan societies, most farmers, including women, are involved in farming activities. Farmers involved in traditional farming together with integrated farming are converted into farming systems for their maximum production. Organic

vegetable production is a significant sector in Thailand. Demand for organic vegetables is rising due to population growth. The involvement of women in this type of farming has also increased.

The findings of the present study support Ben (2010) that rural women have contributed significantly to preserving agrobiodiversity. This 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 etc.) and those in the broader environment that support agro-ecosystems (agricultural, pastoral, forest and aquatic) and the diversity of agro-ecosystems themselves (Ben,2015; FAO,2008). Rural women help to preserve traditional knowledge of indigenous plants and feed. Being involved in supplying their families with food and care, the rural women have exceptional knowledge of the importance of plants for nutrition, health and income (Ben, 2010). Women grow traditional varieties of vegetables as well. Agbor and Eteng (2018) that rural women play an active role in the rice value chain. They are involved in poultry farm activities than men. Women produce crops like watermelon, beans, cucumber, oranges and onions. From the FGD, it was reported that: *our women breed goats and pigs. Also, native chicken and dogs. All these give us ready meat for the family, and when we sell them, we have extra income. Many of us have fish ponds at home where we are sure of eating fresh fish regularly. We carry out every aspect of farming. We are proud to be the ones supplying our homes with a variety of farm products for our survival.*

The respondents for FGD in Obomitiat community in Odukpani Local Government Area reported that: *We are involved in agriculture because we have land and there is no government work for many of us. We cannot stay without farming. We are farmers here. Our farm products are consumed by us and are also sold. Through what we do, our status in both the family and community have improved.* In the Key Informant Interview (KII), the Secretary of the women fellowship, a middle-aged woman of 47 years, also in Urugbam in response to study specific objectives, stated thus: *Our women are the ones providing money at home through the sale of our farm inputs. Women in my community do not lack job, we work in our farms from morning till night. This community or the environment is blessed with land good enough for farming. Some women keep livestock. Two years ago, my neighbour's wife was able to make much money from her crops and livestock that her children who were out of school were now able to go back (KII, 2019).*

Challenges of women smallholder farmers.

Women are significant contributors to agricultural practices in South Asia as in Sub Saharan Africa and are typically in charge of clearing the land, planting, selecting and feeding their families. Unfortunately, women farmers are less productive and unable to reach their full potential compared to men. This puts real families and communities at the danger of lacking adequate nutritious food to consume all year round or any extra for commercial purpose. The existence of the gender gap is a principal factor in agriculture-food insecurity equation. Women lack significant access to improved seeds, farm inputs, training and markets. In comparison to men, women initiatives in the agricultural domain, according to OECD (2012), are constrained by smaller farms; fewer livestock typically of small breeds and earning less from livestock they own. They have a greater overall workload that includes low-productivity activities like fetching water and firewood; less access to innovation and productive assets and services and are much less likely to purchase inputs such as fertilisers, improved seeds and mechanical equipment; have weaker property rights and tenure security and reduced incentives to invest in their land and are poorly represented in the leadership of rural organisations.

Conclusion and recommendation

A survey of agricultural programmes that existed in Nigeria in the past such as the National Accelerated Food Production Programme, the River Basin Development Scheme, The Operation Feed the Nation Programme, The Green Revolution, Agricultural Development Project and Agricultural

Credit Guarantee Scheme and even the National Development Plan documents (1975-80 and 1981-85) revealed that non made any direct provision for rural women as the target group. In this direction, vigorous and sustained design and implementation of food security programmes should be women-centred and women-focused as they are the engine of rural agriculture. The maximisation of the contribution of rural women should be prioritised in policy documents.

Feminisation of agriculture is the most vital variable in agriculture – food security equation in Sub Saharan rural communities because farming is the women’s major source of livelihood. This paper posits that women’s greatest contribution to the Nigerian economy is in the domain of agriculture. Therefore, any effort to address food security by boosting food production must acknowledge the crucial role played by rural women and integrate them into agricultural programmes. All over Nigeria, food processing and preservation activities are done primarily by rural women using traditional methods. The new shape of agriculture must put women at the centre. This is because women are necessary participants and require better support and control over productive resources. Agricultural development programmes must be very assertive and proactive in dismantling gender gaps and inequalities. The government, therefore, must understand and formulate policies to suit women farmers in order to effectively reduce hunger and poverty. The government must integrate a gender-responsible approach in the agricultural development work.

Feminisation of agriculture should be adopted as a strategic framework which incorporates abolishing gender-specific barriers in rural farming manifesting as lack of access to land; providing women with vital funding and adapting to climate change, extension service, research. Access to technology and education would empower rural women to achieve Sustainable Development Goal (SDG)2 of zero hunger. The overarching goal of this strategic framework should be that of mainstreaming food security. The agricultural policy framework should be coordinated with other related measures of local actors directed at food self-sufficiency and achievements of objectives consistent with feminisation of agriculture.

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