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Sustainability of Agriculture Value Chain by Rural Women for Income Generation in Oluyole Local Government of Oyo State, Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Author BTO designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript, managed the analyses of the study. Author KAS managed the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

The study focused on the sustainability of agriculture by rural women as a means of income generation in Oluyole local government. The study made use of both primary and secondary data. The instrument used for collecting the primary data was a set of structured questionnaire. Data were collected from 100 rural women farmers, randomly selected from four rural wards out of the ten wards in the local government, however, only 98 filled and returned their questionnaires. Data were analyzed using frequencies and percentages. Result obtained from the study showed that (51%) rural women farmers within the age group of 40-49 years this showed that adult women were involved in sustainability of agriculture in the study area. They engaged in farming for income generation (₦8, 000 – ₦10, 000) per week to support their household. The study further revealed that majority of the respondents engaged in processing and marketing of farm produce than other farm practices. Rural farmers had challenges of inadequate

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capital, poor access to road, and ignorance due to low level of education. They also lacked collateral to access bank loan, depended on family funding and their output was subsistence.

Keywords: Sustainability; women; agriculture; income; generation.

1. INTRODUCTION

Agriculture is a science of food production i.e. crops and livestock, for the use of human and industry. It is an age long practice, most faith books have recorded that advent of agriculture production predate human existence [1].

Agriculture production has traversed between manual to mechanized with the use of biotechnology and molecular genetics as recent innovations. The advancement in agricultural production cannot totally eradicate the involvement of human being [1]. Agricultural production is labour intensive and has been a good source of employment generation in developing countries, it contributed about 75% to the Gross Domestic Product (GDP) of Nigeria, hence without agriculture, the Nigeria economy may be faced by chronic unemployment [2]. It is on this basis that this study has tried to assess the role of women in agricultural value chain.

Yussuf and Adenegan [3] Stated that women in the rural area are involved in land preparation crop harvesting, pressing, grinding, mixing, drying, processing and packaging, by this action they are involved in value addition, it is then impossible to overlook their role in agricultural production. [4] Opined that four out of ten farmers are women that combined farm work with their family responsibilities of food preparation and child bearing. It is widely agreed that projects employing agricultural extension that fail to use female agent reach fewer women and have adverse effect not only on women, but also on the sustainability of agriculture. Women make important contributions to agricultural and rural economic development in most developing countries. Their roles vary considerably within regions and changing slowly in many parts of the world. Their role include producing agricultural crops, tending animals, processing and preparing food crop working for wages in agricultural or other rural enterprises, collecting fuel wood and water, engaging in trade and marketing, caring for family members and maintaining their homes, many of these activities are not defined as economically active employment in national accounts but they are essential to the well-being of rural households.

The Federal Government of Nigeria (FGN), cooperative societies and other stakeholders have been involved in encouraging rural women to participate more in agricultural production by providing low interest loan, agricultural inputs, improved seed and education on the agricultural processing because they have been identified to play a vital role in the continuous sustainability of agricultural production [5]. Sustainability is the process of maintaining and enhancing the role of women in agricultural production so that society and its economy are able to meet their needs and express their greatest potential in the present.

Babatunde et al. [6] Stated that women are in charge of 70% of major farm work and constitute up to 60% of the farming population in Nigeria. Yaya [7] stated that 76% of women in Oyo and Bauchi State are actively involved in farming and/or engaged in their spouse farms. The omission of rural women in agricultural production will adversely affect processing, storage, cause unemployment and food wastage in Nigeria.

Nigeria government is therefore taking some proactive step to properly place the rural women in their rightful place in agricultural production in order to further boost the supply of food, raw materials for agro-allied industries as well as employment generation.

Therefore this study examined the sustainability of agriculture by rural women and also identifies their roles in agricultural value chain as a means of income generation in Oluyole Local Government of Oyo State.

2. MATERIALS AND METHODS

2.1 Selection of the Study Area

The study was conducted at Oluyole Local Government, Oluyole Local Government is one of the oldest Local Government council in Oyo State. The Local Government has its headquarters at Idi-Ayunre Old Lagos/Ibadan road. The Local Government shares boundaries with four Local Government Area i.e. Ibadan South-West, Ibadan South-East, Ona-Ara and

Ido all within Ibadan Metropolis. While it shares boarders with Ogun State through Egbeda-Obafemi, Odeda and Ijebu-North Local Government Areas. There are 10 wards in Oluyole Local Government and these wards were divided into two sectors, namely Idi-Ayunre Sector and Olode Sector. The population of the study is rural women farmers in Oluyole local government. It has 10 wards namely Ayegun, Orita/Odoona-elewe, Pegba/ Egbeda Tuba, Muslim/Ifelodun, Odo-onanla/IdiAyunre, Latunde, Olomi/Olounde, Abanla/Olonde, Onipe/ Busogboro and Orisunbare.

2.2 Sample Size and Sampling Techniques

According to Akanji and Olaiegbe [8] it is not possible most times to under study the complete nature of phenomenon. Thus there is need to devise a mechanism, which could create an understanding of a phenomenon with little cost, and time spent. Sample gives a cheaper and easier means to study than the population and helps to arrive at quicker outcome than population. Multistage sampling was used in the study. In the first stage Purposive selection of Oluyole local government of Oyo state southwest region of Nigeria was made.

Secondly, five wards out of the ten wards were randomly selected from the Local Government, which were Abanla, Busogboro, Latunde, Pegba, and Odo onanla. Thirdly twenty (20) rural women farmers were selected using simple random sampling. Thus a sample size of 100 rural women was sampled.

2.3 Data Collection and Questionnaire Design

Primary data were collected with the aid of well structured questionnaire, interview schedule was employed to collect relevant data on socio economic characteristics, farming activities, farm produce, farming experiences and farming constraints. Simple random sampling technique was used to select twenty (20) rural women farmers from each ward. A total number of 100 questionnaires were distributed to the respondents.

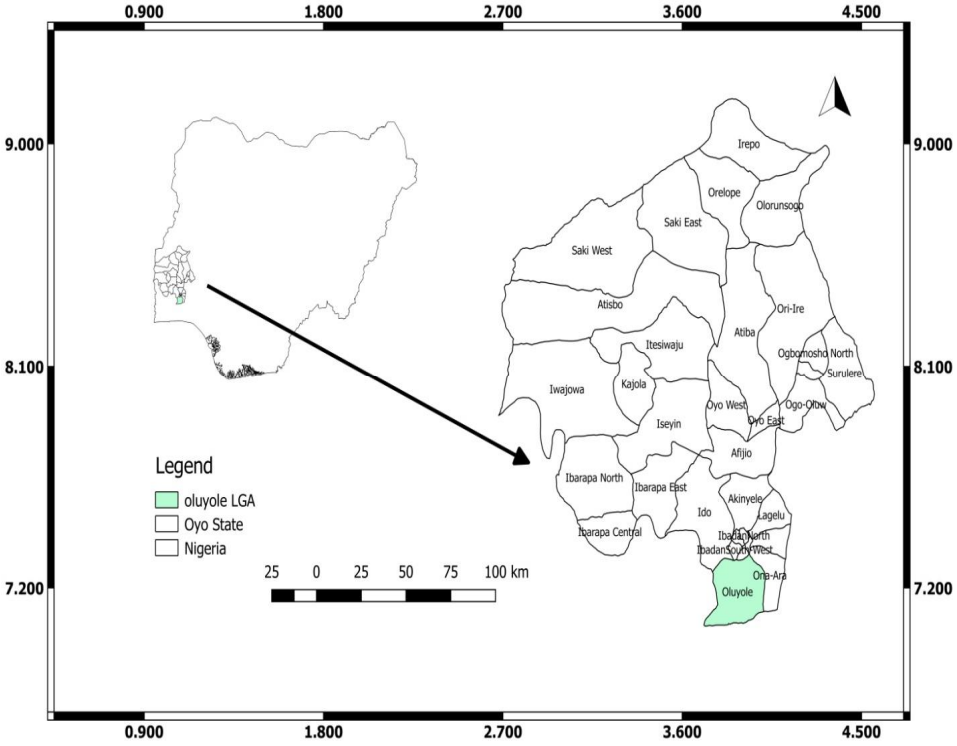

Fig. 1. Map of Oyo State, showing Oluyole

Table 1. Socio-economic characteristics of the women in farming

Age distribution of respondents	Frequency	Percentage
20-29	7	7.1
30-39	6	6.1
40-49	50	51.0
50 above	35	35.7
Total	**98**	**100**
Educational distribution of the respondents		
No formal education	40	40.8
Primary	28	28.6
Secondary	20	20.4
Higher institution	10	10.2
Total	**98**	**100**
Marital status of the respondents		
Single	10	10.2
Married	68	69.4
Divorced	15	15.3
Widow	5	5.1
Total	**98**	**100**
Substitute occupations engaged in by respondents		
Trading	60	61.2
Hunting	27	27.6
Schooling	11	11.2
Total	**98**	**100**

Source: Field survey, 2018

2.4 Data Collection Methods

Respondents were selected based on their involvement in farming and value added chain, they were trained on how to administer questionnaire and to record response.

2.5 Data Processing and Tabulation

Data collected from the field were sorted and processed. Data were then subjected to analysis using descriptive statistical method like frequency and percentage were used.

2.6 Analysis of the Data

Data collected were analyzed using simple statistical method such as frequency, percentage and results were presented and arranged in tabular form.

3. RESULTS

3.1 Socio-economic Characteristics of the Women in Farming

Table 1 show that 51.02% of the respondents were within the age group of 40-49 years. Only 35.71% of the respondents were within the age group of 50 years and above, while 7.14% were within the age group of 20-29 years.

3.1.1 Age

The results showed that majority of the respondent are within the age of 40-49 years. This result corroborated Ogumbaeru [9] who asserted that young and middle aged people are the most active in agricultural production activities for increased productivity. The result further showed that 40.8% of the respondents had no formal education while 28.6%, 20.4% had primary and secondary education respectively. The results revealed that majority of the rural women farmers (59.2%) were literate. Education has been discovered to be highly related to effectiveness of economic function [10]. Information on the marital status, showed that the women farmers were married, divorced, single and widowed represented by 69.39%, 15.31%, 10.20% and 5.10% respectively. The results revealed that majority of the respondent were married. Mafimisebi et al. [11] Opined that marital status of a person determines the degree of responsibility of that person in the society and the manner in which he or she will allocate the scarce resources at his or her disposal.

Table 2. Estimated income generated per week

Income (₦)	Frequency	% Distribution
₦500 -₦2000	5	5.1
₦2001-₦4000	6	6.1
₦4001-₦6000	7	7.1
₦6001-₦8000	19	9.4
₦80001-₦10000	48	49.0
Above ₦10000	13	13.3
Total	**98**	**100**

Source: Field survey, 2018

Table 3. Farm size cultivated by rural women in farming

Farm Size (ha)	Frequency	% Distribution
0.1-1.0	44	44.9
1.1-1.5	29	29.6
1.6-2.5	17	17.3
2.6-3.5	8	8.2
Total	**98**	**100**

Source: Field survey, 2018

Table 4. Lengthof experience (in years) by rural women in farming

Years	Frequency	% Distribution
1-5	38	38.8
6-10	50	51.0
11-20	10	10.2
Total	**98**	**100**

Source: Field survey, 2018

Apart from farming, rural women also engaged in hunting (27.6%), schooling (11.2%) and petty trade (61.2%) to better their income generation and farming activities.

3.2 Estimated Income Generated by Rural Farmer

Table 2 showed the weekly income among the women farmers, which ranged from 500 to 10,000 and above. Most common weekly income was ₦8,000-₦10, 000, indicated by 49% of the respondents. The result showed that majority of the respondent realized ₦8000 -₦10,000. This result is in contrast to Akerele [12] which found out that annual income earned by rural farmers house hold in Abeokuta north local government was well below minimum wage.

3.3 Farm Size by Rural Women

Table 3 shows that 44.9% of the respondents had 0.1-1.0 hectare (ha) of land 29.6% had 1.1-1.5 hectare (ha) of land, 17.3% had 1.6-2.5 (ha) 8.20% of respondents had 2.6-3.5 (ha) while 8.2% had 2.6-3.5(ha) of land. The result shows that most of rural women farmers engaged in small farm size and this might due to the fact that women were not given access to productive resources in the study area. This result was corroborated by [13,14] that smallholder farmers had between 0.8 -4.5 hectares of farm land.

3.4 Length of Experience by Rural Women

Table 4 show that 51.0% of the respondents have been in farming business for over 6-10 years, 38.8% had 1-5 years experience and 10.2%, had 11-20 years experience.

3.5 Farm Operations Engaged by Women

Table 5 showed that rural women were involved in land clearing (71.4%), sowing (69.4%), weeding (80.6%), harvesting (69.4%), transplanting (63.3%), processing (79.6%) and marketing (81.6%). The result revealed the involvement of rural women in farming operation to between 63.3-81.6% in the study area.

Table 5. Distribution of respondents according to farm operations engaged by women

Operations	Frequency *	% Distribution
Land clearing	70	71.4
Sowing	68	69.4
Weeding	79	80.6
Harvesting	68	69.4
Transplanting	62	63.3
Processing	78	79.6
Marketing	80	81.6
Total		

**Multiple responses recorded; Source: field survey, 2018*

Table 6. Distribution of respondent according to method of land acquisition

Crop	Frequency	% Distribution
Inheritance	19	19.4
Free hold	25	25.5
Hired	35	35.7
Communal	10	10.2
Purchase	9	9.2
Total	**98**	**100**

Source: Field survey, 2018

Table 7. Distribution of respondent based on their source of capital

Source	Frequency	% Distribution
Bank loan	5	5..1
Self savings	34	34.7
Cooperative society	31	31.6
Farm output	28	28.6
Total	**98**	**100**

Source: Field survey, 2018

This result is disagreed with the findings of Agada [15] who found out that the contribution of rural women farmers in farm operation is between 64-92%, this result is corroborated by [16,5] when they found out that rural women farmers make up about 60-80% of agricultural labour force in Nigeria.

3.6 Method of Land Acquisition by Rural Farmers

Table 6 revealed that land acquisition was by inheritance (19.4%), freehold (25.5%), hiring (35.7%), communal (10.2%) and purchase (9.2%). Hired land and free land accounted for 61.2% and land purchase was least.

3.7 Source of Capital by Rural Farmers

Farming is capital intensive and there need to identify sources of capital by women in farming in the rural area, Table 7 shows that there were four sources of funding to rural women farmers such as bank loan (5.1%), self savings (34.7%), cooperatives (31.6%) and ploughing of income (28.6%). Without family income (94.9%) rural women may not be able to play all her roles in farming.

3.8 Crops Raised by Rural Farmers

Table 8 revealed the crop produced by respondents 47.9% produced maize and vegetables, cassava (32.7%), maize (27.6%), yam & cocoyam (25.5%), yam & cassava (20.4%), vegetable (19.4%), cassava & maize (15.3%), cocoyam & water yam (11.2%), yam (10.2%), cocoyam (6.1%) and water yam (4.1%). The finding of this study showed that rural women in the study area mainly grew subsistence food crops. The result showed that the rural farmers in the area mainly grew food crop. This finding corroborated by SCFR [17] who reported that women were more involved in production of food crops such as maize, cowpea, melon, pepper, cassava and vegetables.

Table 8. Crops raised by rural farmers

Crop	Frequency *	% Distribution
Cassava	32	32.7
Maize	27	27.6
Vegetables	19	19.4
Yam	10	10.2
Cocoyam	6	6.1
Water yam	4	4.1
Cassava & maize	15	15.3
Yam & cocoyam	25	25.5
Maize & vegetables	47	47.9
Cocoyam & wateryam	11	11.2
Yam & cassava	20	20.4

**Multiple responses recorded; Source: field survey, 2018*

Table 9. Animal raised by rural farmers

Livestock	Frequency*	% Distribution
Poultry	55	56.1
Goats	30	30.6
Cattle	10	10.2
Snailery	20	20.4
Poultry & snailery	25	25.5
Goats & cattle	15	15.3
Cattle & poultry	10	10.2
Goats & poultry	35	35.7

**Multiple responses recorded; Source: field survey, 2018*

Table 10. Distribution of respondent based on constraints faced by them in their activities

Crop	Frequency	% Distribution
Lack of capital	19	19.4
Inadequate extension workers	10	10.2
Lack of government incentives/support	12	12.2
Lack of good accessible roads	19	19.4
Poor storage facility	16	16.3
Lack of education	08	8.2
Shortage of farmland	9	9.2
Inappropriate agricultural technology	5	5.1
Total	**98**	**100**

Source: Field survey, 2018

3.9 Animal Raised by Rural Farmers

Table 9 showed that majority of the rural women farmers reared poultry (56.1%), goats (30.6%), poultry & Snailery (25.5%), Snailery (20.4%), goats & cattle (15.3%), cattle (10,2%) and cattle & poultry (10.2%). The findings showed that poultry and goats are the major livestock produced by women in the study area. The major animal raised by respondent is poultry and goats. This result agreed with finding of FAO [18] that women are responsible for rearing poultry and small livestock in addition to growing food crops.

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3.10 Constraints Faced by the Rural Farmers

Table 10 shows that respondents were faced with constraints such as lack of capital (19.4%), inadequate extension workers (10.2%), lack of government incentives (12.2%), lack of good accessible roads (19.4%), poor storage facility (16.3%), lack of education (8.2%), shortage of farmland (9.2%), inappropriate agricultural technology (5.1%). The findings showed that lack of capital is a major constraint in the study area.

4. DISCUSSION

The result revealed that the highest number of rural women farmers was literate and this enhanced their adoption of new agricultural innovations, which helped them in processing and marketing of agricultural products. This result supported [13] in a study on accessibility of agricultural credit and inputs to women farmers in Osun state when he reported a positive and significant relationship between level of education and accessibility to credit and other inputs, this was further corroborated by [15] in their study on Rural women involvement in Agriculture in Okpo district Kogi State when they reported that the level of literacy can help in the adoption of certain agricultural innovation. Majority is married confirming the significance of women as a source of family labour supporting their households. This corroborate the findings of Taphone [19] who reported that married people have more responsibilities (provisions of education, food, health, well being of their spouses and children) than singles apart from farming, rural women also engaged in hunting, schooling and petty trade to better their income generation and farming activities.

Based on the weekly income generated, rural women realized above ₦18,000, if this is steady, then it is higher than the national minimum wage in Nigeria, which contradicts the findings of Akerele [12] when he stated that rural women are poor with an average monthly income lower than ₦18,000 national minimum wage. Rural women have been known to support their family in the payment of school fees and support in domestic needs and due to their supplementary income generation [6].

The range of the size of farms of the respondents in the area indicated the dominance of small scale farming, this result is supported by the findings of [14] which reported that smallholder farmers cultivate 0.8-4.5 hectares of farmland and women are in this category, this could be because women access to land is limited and most of respondents had small land for personal farm. Their accessibility to more land will bring about increase in food production. Generally women cultivate small land size, due to their low income and poor land inheritance system, which precludes women in some places from land inheritance and thus causing unemployment, reduced involvement of women in agriculture and food wastage [1].

The results showed that majority of women in the study area had much experience in agriculture which could be one of the factor that contributed to their income generated, which was high and higher than low income recorded by Akerele [12] this could be further enhanced with improved training extension, technology, and biotechnology.

The findings showed that rural women farmers in the study area engaged in diverse operations which is supported the views of [15,20] when they reported that 60-90% of rural women engaged in farming activities.

Hired land and free land accounted for 61.2% and land purchase was least, because rural women are poor and not farming for commercial purpose Akerele [12]. Farming is capital intensive and there need to identify sources of capital by women in farming in the rural area, the findings revealed that majority of the respondents mobilized their capital by self savings and borrowed from cooperative society. The same observation was reported by Ajani [16] when he stated that rural women find it difficult to assess bank loan.

The finding of this study showed that rural women in the study area mainly grew subsistence food crops. This agreed with the report of SCFR [17] that women were more involved in the production of food crops such as maize, cowpea, melon, pepper, cassava and vegetables. It is also corroborated by the works of [21,13,22,15] who reported that rural women produced food crops comprising mainly cereals (sorgium, maize, rice), tubers (yam, cassava and vegetables, okra, leafy vegetables). The production of low valued crops coupled with poor access to agricultural productive resources by women farmers could decrease their production and productivity, thereby diminishing their income and standard of living.

The findings showed that lack of capital is a major constraint in the study area, capital is important for securing fertilizer, herbicides and improved varieties of seeds. This could be due to the fact that the women farmers do not have collateral to secured bank loan. They also complained about poor storage facility. Although [23] reported that over 60% of agricultural storage operations are performed by women in Nigeria they do not have access to modern storages facilities. Rural women store their produce in traditional storage facilities such as

baskets etc. Even though most of these problems are not difficult from problem encounter by many developing nation, are particularly in a terms of lack of supervisory service that should be offered by government level is lacking on the study area.

5. CONCLUSION

Rural women farmer in the study area were more involved in farm activities apart from their legitimate roles as wives and mothers. Therefore there is need to encourage female farmers by making available all that is necessary for successful farming, such as credit facilities and farm inputs. The existing women's group in the village should be organized and empowered to increase women's access to extension services, credit facilities, agricultural inputs and even marketing services and more female extension workers should be trained and sent to help farmers. The study concluded that rural women farmers in the study area were small-scale producers who grew subsistence food crops, kept poultry and small ruminants animal.

6. RECOMMENDATION

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

- For sustaining growth in agricultural production, it is important to equip rural women farmers with relevant and timely information and technology to improve their production techniques and increase their income and standard of living.
- Extension agents should disseminate appropriate and timely information to women on crops and livestock to enhance production which could turn improve and increase their income and standard of living.
- Women's role and contribution to social and economic development should be recognize in general and that of agricultural development in particular by planners and decision makers would help to enhance the status of women and increase food security at household and national level.
- Since the contribution of women in reducing poverty and hunger is as important as men it is the job of organ of government to promote and empower women status for making decision on all economic and income generating activities.
- It's necessary to increase women's political participation, to address issues related to equality. Such improvement helps to reduce the gap between men and women in economic, decision-making power and employment opportunity.
- It's important to raise women's consciousness through participation and by organizing themselves. It can also be facilitated through education, capacity building, training and other measures. Change has to come in the structures and legal frameworks in order to make the self-transformation process of empowerment sustainable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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