

REALIZING SUSTAINABLE FOOD SYSTEMS AMONG ORGANIC FARMERS IN NIGERIA: EVIDENCE FROM COMMUNITY SUPPORTED AGRICULTURE

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Abstract

Achieving a resilient food system through the Community Supported Agriculture (CSA) greatly depends on how informed farmers and subscribers are to the benefits associated with it. The study examined the role of Community Supported Agriculture (CSA) on organic farmers. Multistage sampling technique was used to select 130 respondents; data were collected with the use of a well-structured questionnaire and analysed through the use of descriptive statistics. The results of the socio-economic characteristics revealed that majority of the respondents are male, middle-aged, married and had tertiary education. The result also characterizes respondents as organic-based crop farmers, fewer adopters of community supported agriculture and inadequate access to extension agents. Also, "increasing food security for the population" was perceived as the most (Mean=4.56) important about community supported agriculture and "effecting change through awareness-raising and encouraging sustainable behaviour" was perceived as the greatest (Mean=4.39) effect of community supported agriculture. The study concludes that community supported agriculture helps consumers, producers, and the environment build connections together through a local food network. The study recommends the need for policy and popularization that would encourage community supported agriculture. Also, extension agents and other relevant stakeholders need to be supported and strengthened in order to disseminate agricultural innovations to farmers in rural communities.

Key words: *community supported agriculture, sustainable agriculture, organic farming*

INTRODUCTION

Globally, population increase coupled with environmental challenges continues to raise questions on how to transform the global food system. According to the Food and Agriculture Organization (FAO), an estimated 821 million people on a global scale still lacked sufficient food for healthy living [9]. Thus, the need for a food system that is based on the principles of sustainability. In sub-Saharan African (SSA) countries, Nigeria inclusive, agriculture continues to play a vital role in the economy, with organic farming contributing to agricultural productivity and the food system [2,13,19,6,8]. Consequently, in order to strengthen the food system and meet the food demand of the growing population, sustainable agriculture with localised alternatives that have a direct connection between consumers and farmers such as the concept of community supported agriculture (CSA) is necessary and cannot be overemphasized [17].

Community Supported Agriculture (CSA) continues to be an innovative partnership that connects the farmers (producers) with end consumers, where the risks and benefits of farming are shared [10]. The CSA concept was first initiated in Japan and Chile in the 1970s and subsequently spread to the USA after World War II [4]. The CSA concept over the years has provided resilient in times of crisis as well as awareness of local foods and dietary diversity among its members (or shareholders). Also, the concept is conceived as a sustainable way to produce food, and at the same time connecting farmers and subscribers who are both shareholders. At present, the CSA concept is spreading across the continents of the world [11]. However, achieving a food system that is sustainable through the Community Supported Agriculture (CSA) greatly depends on how informed farmers and subscribers are to the benefits associated with CSA. This is also coupled with the dissemination of

extension messages and agricultural innovations among farming communities to allow for more participation. In Nigeria, attaining a resilient food system through Community Supported Agriculture (CSA) is still unsuccessful as community farmers and subscribers are less informed about its benefits. The ratio of extension agents to community farmers is very low consequently leaving farmers to no or less adequate information and neglecting agricultural innovations. This situation calls for virile extension services that will link farmers with researchers effectively and allow them to adopt sustainable agricultural practices.

Furthermore, despite recognition garnered by CSA, most research [14,4,12,17,18,20] focus more on the consumers' side of the partnership with little attention given to the farmers—the suppliers of this product. Also, few studies have examined if the CSA concept is providing adequate and sustainable food system, considering farmers perception and the effects of CSA on the farmers. Therefore, this paper aims to address these gaps in the literature: first, by determining the level of familiarity and knowledge of CSA; second, by examining farmers perception about CSA; and third, by analysing the effects of CSA on farmers.

MATERIALS AND METHODS

Study Area

This research was conducted in Southwest region of Nigeria. The Southwest region is made up of six states: Ogun, Ondo, Osun, Oyo, Ekiti and Lagos. Southwest is mainly a Tropical Rainforest Zone, with swamp forests in the coastal regions of the states of Lagos, Ogun and Ondo. The zone covers an area extending from the swamp forest to the western upland, between the rainforest and the northern sections of the Oyo and Ogun states, which have developed Guinea savannah vegetation. The areas lie between latitude 5 degrees and 9 degrees North and longitude 2 degrees and 8 degrees East. It is bounded by the Atlantic Ocean in the south, Kwara and Kogi states in the north, Eastern Nigeria in the east and Republic of Benin in the west. It has

an area of approximately 114,271 km² representing 12% of the country's total land area. The high concentration of agricultural activity supports the option of the study area [15].

Types and Sources of Data

Primary data was employed to obtain information from organic farmers with the aid of well-structured questionnaires. Data was collected on variables such as socio-economic characteristics of respondents including; age, gender, farming experience, farm size, marital status, farming experience, household size, organic farming practised, awareness of CSA and adopters of CSA. Also, information was collected on knowledge and perception of farmers to adopt community supported agriculture, willingness to participate in CSA and the effect of CSA.

Sampling Technique and Sample Size

Multistage sampling technique was employed for this study. The first stage involves random sampling of three states in south-west Nigeria which are Oyo, Ogun and Ondo due to the prevalence of organic agriculture in these states. The second stage involves a random selection of two agricultural zones from each state to give a total of six agricultural zones which are Ibadan, Oyo, Abeokuta, Ilaro, Akure North and Ifedore. In the third stage, two communities/villages were chosen from each of the zones to give a total of 12 villages. Finally, twelve organic farmers were selected each from the 12 communities, bringing a total of one hundred and forty-four (144). One hundred and thirty organic farmers were however used for the study due to incomplete responses and outliers.

Analytical Technique and Model Specification

Descriptive statistics such as (frequencies, table, charts, percentages, mean, and standard deviation), was used to describe the socio-economic characteristics.

Also, a 5-point scale was employed in the study to identify the relevance and significance of the farmers' perception of community supported agriculture. Strongly agree (5), Agree (4), Undecided (3), agree (2) strongly disagree (1).

RESULTS AND DISCUSSIONS

Socioeconomic Characteristics

Table 1 shows the frequency distribution of respondents according to sex, age, marital status, education, farming experience, household size and membership of cooperative society. The results show that most farmers, most (63.08%) are male while others, (36.92%) are female. This result agrees with the findings of [5] that low percentage of women participation in organic farming could be attributed to cultural differences were married women are to carry out domestic responsibilities and the limitations in accessing capital to operate on the farm. About (33.85%) of organic farmers fall within the age group of 21-30 years. The mean age is 39 years. This indicates that most of the farmers are in their active and productive ages. This result is similar to that of [1]. The majority (56.15%) are married, this result corroborates the findings of [3] that farmers are matured and responsible to cater for their households as well as have a clear knowledge of their wellbeing, there is also an implanted sense of responsibility as marital status prompts commitment to business because of the family needs that must be met and this would subsequently enhance production. Most (53.07%) of organic farmers had tertiary education, this implies that majority of the farmers are literate which will help them in decision making process as well as the adoption of innovations. Also, being educated will influence their participation in community supported agriculture. This result contradicts the findings of [1] that the majority of organic farmers had secondary education. The mean household size is 4 people and the standard deviation is 1.73. This result is against the report of [7] cited in [16] that the average household size for farmers in Nigeria is about 6-7 persons per household. Most (76.92%) of the respondents had 1-10years experience with mean farming experience of 7years. The majority (90.77%) of organic farmers cultivates on the farm land that ranges within 1-5 ha, this result is in tandem to that of [1], that is organic farmers in the study are small to medium scale farmers.

Table 1. Distribution of Respondents According to their Socioeconomic Characteristics

| Variable | Frequency | Percentage | Mean | St. dev. |
|---------------------------|-----------|------------|------|----------|
| Sex | | | | |
| Female | 48 | 36.92 | | |
| Male | 82 | 63.08 | | |
| Total | 130 | 100.00 | | |
| Age | | | | |
| 21-30 years | 44 | 33.85 | 39 | 10.78 |
| 31-40 years | 34 | 26.15 | | |
| 41-50 years | 30 | 23.08 | | |
| 51 years & above | 22 | 16.92 | | |
| Total | 130 | 100.00 | | |
| Marital status | | | | |
| Single | 54 | 41.54 | | |
| Married | 73 | 56.15 | | |
| Widow | 3 | 2.31 | | |
| Total | 130 | 100.00 | | |
| Level of Education | | | | |
| Primary | 2 | 1.53 | | |
| Secondary | 59 | 45.40 | | |
| Tertiary | 69 | 53.07 | | |
| Total | 130 | 100.00 | | |
| Household size | | | | |
| 1-3 persons | 61 | 46.92 | 4 | 1.73 |
| 4-6 persons | 56 | 43.08 | | |
| 7 persons & above | 13 | 10.00 | | |
| Total | 130 | 100.00 | | |
| Farming experience | | | | |
| 1-10 years | 100 | 76.92 | 7 | 6.59 |
| 11-20 years | 22 | 16.93 | | |
| 21-30 years | 8 | 6.15 | | |
| Total | 130 | 100.00 | | |
| Farm size (ha) | | | | |
| 1 - 5 | 118 | 90.77 | | |
| 6 - 10 | 12 | 9.23 | | |
| Total | 130 | 100.00 | | |

Source: Field Survey, 2019.

Organic Farming and Community Supported Agriculture

Figure 1 showed the pie chart result of the type of organic farming practice distribution among respondents which indicated that most

(60.77%) of the organic farmers majored on crop cultivation alone. Figure 2 presented the pie chart of the time of extension visit to farmers' farm. It indicated that the majority (56.15%) claimed that extension agents visit their farms annually. Figure 3 showed the cylinder chart result of farmer's awareness about community supported agriculture. It showed that the majority (73.82%) are not familiar with community supported agriculture. Figure 4 showed that about (17.69%) have adopted community supported agriculture in their communities.

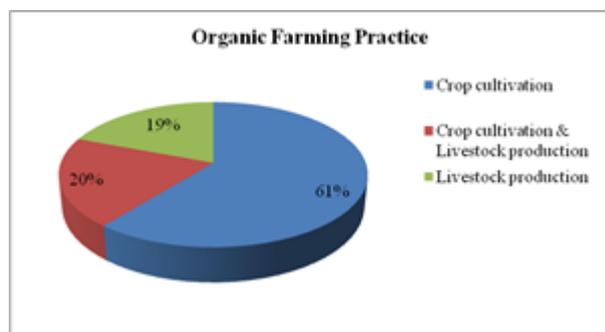


Fig. 1. Types of organic farming practice
 Source: Field Survey, 2019.

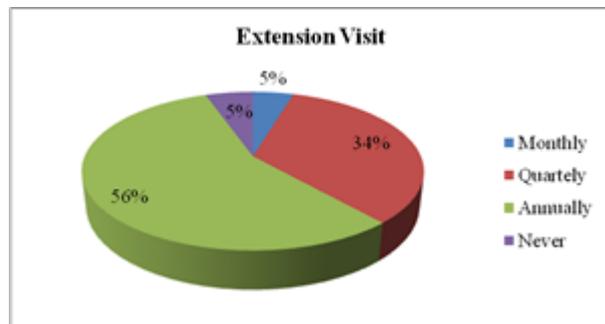


Fig. 2. Time of extension visit
 Source: Field Survey, 2019.

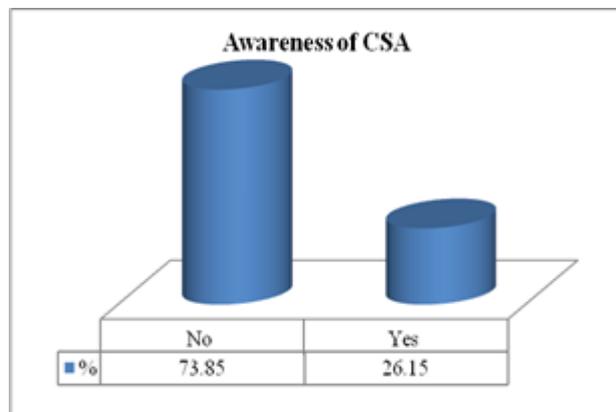


Fig. 3. Awareness about community supported agriculture
 Source: Field Survey, 2019.

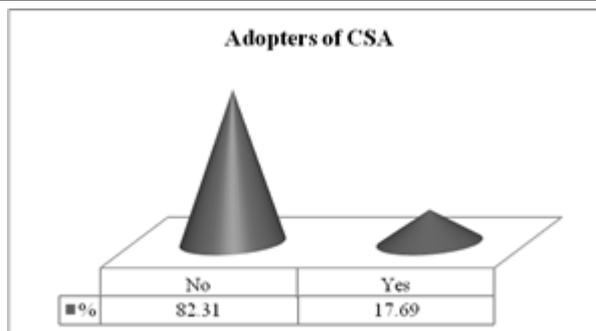


Fig. 4. Adopters of community supported agriculture
 Source: Field Survey, 2019.

Farmers Perception about Community Supported Agriculture

Table 3 revealed the results of farmers' perception of community supported agriculture among respondents. The mean scores were used to identify perception that is significant or important to community supported agriculture. "Increasing food security for the general population" was ranked 1st as it had the highest (Mean=4.56), this was followed by "CSA helps tackle marketing and financial problems of the farmer" were ranked 2nd with the (Mean=4.45). "Both parties share the costs and benefits of maintaining the farm", "Bridges the gap between farmer and ordinary individuals through community involvement" and "allows the underprivileged sectors of society to afford healthy, nutritious produce, bringing more money and wealth into the community" were ranked 3rd as they have equal (Mean=4.40). "Help to sustain the economic viability of individual farms" was ranked 6th with the (Mean=4.36), followed by "Fostering a close intimate relationship between two vital parts" was ranked 7th with the (Mean=4.31) and "High-quality produce that is readily available at the community level" was ranked 8th with the (Mean=4.30). "Makes the consumer more conscious of his or her role in the food production process" was ranked 9th with the (Mean=4.28) and lastly, "Refining the food supply chain as it reduces our need to rely solely on the unsustainable practices" was ranked 10th with the (Mean=4.26).

Table 2. Distribution of respondents by their perception about Community Supported Agriculture

| STATEMENT | Max | Min | MEAN | STD. DEV | RANK |
|--|-----|-----|------|----------|------------------|
| CSA helps tackle marketing and financial problems of the farmer | 5 | 3 | 4.45 | 0.68 | 2 nd |
| Both parties share the costs and benefits of maintaining the farm | 5 | 3 | 4.40 | 0.70 | 3 rd |
| Bridges the gap between farmer and ordinary individuals through community involvement | 5 | 3 | 4.40 | 0.68 | 3 rd |
| Help to sustain the economic viability of individual farms | 5 | 2 | 4.36 | 0.67 | 6 th |
| Fostering a close intimate relationship between two vital parts | 5 | 3 | 4.31 | 0.73 | 7 th |
| Makes the consumer more conscious of his or her role in the food production process | 5 | 3 | 4.28 | 0.75 | 9 th |
| High-quality produce that is readily available at the community level | 5 | 2 | 4.30 | 0.81 | 8 th |
| Reduces the travel miles that are required to reach people's places | 5 | 1 | 4.36 | 0.83 | 4 th |
| Refining the food supply chain as it reduces our need to rely solely on the unsustainable practices | 5 | 2 | 4.26 | 0.82 | 10 th |
| Increasing food security for the general population | 5 | 3 | 4.56 | 0.63 | 1 st |
| Allows the underprivileged sectors of society to afford healthy, nutritious produce, bringing more money and wealth into the community | 5 | 3 | 4.4 | 0.68 | 3 rd |

Source: Field Survey, 2019.

Effect of Community Supported Agriculture on Respondents

Table 3 revealed the results of farmers' perception of the effect of community supported agriculture on both farmers and subscribers in the study area. The mean scores were used to identify perception that is significant or important as the effect of

community supported agriculture on both farmers and subscribers. "Effecting change through awareness-raising and encouraging sustainable behaviour" was ranked 1st as it had the highest (Mean=4.39), followed by "Improving the local environment through land management" was ranked 2nd with the (Mean=4.36).

Table 3. Effect of community-supported agriculture on respondents

| STATEMENT | Max | Min | MEAN | STD. DEV | RANK |
|--|-----|-----|------|----------|-------------------|
| Perceived effect on members' health, skills and well-being | 5 | 1 | 4.33 | 0.82 | 4 th |
| CSA is cost saving for both farmers and members | 5 | 2 | 4.29 | 0.94 | 10 th |
| Increased food production, improve farmers' income level | 5 | 3 | 4.33 | 0.82 | 4 th |
| Improving the local environment through land management | 5 | 3 | 4.36 | 0.75 | 2 nd |
| Effecting change through awareness-raising and encouraging sustainable behaviour | 5 | 3 | 4.39 | 0.75 | 1 st |
| Providing food of low environmental impact | 5 | 2 | 4.26 | 0.90 | 11 th |
| Provide a high proportion of their members' food needs | 5 | 2 | 4.33 | 0.79 | 4 th |
| Bring together a set of assets to create a wider enterprise | 5 | 2 | 4.31 | 0.79 | 12 th |
| Contribute directly to local economies through the employment they provide | 5 | 3 | 4.32 | 0.77 | 8 th |
| Build economic potential through the provision of education, training and volunteering opportunities | 5 | 2 | 4.35 | 0.65 | 3 rd |
| Offer a wide range of social events and activities for participants and other community members | 5 | 1 | 4.06 | 0.88 | 13 th |
| Bringing people together or providing a focal point for community activities | 5 | 3 | 4.33 | 0.71 | 4 th n |
| Actively developed or supported other community enterprises | 5 | 3 | 4.25 | 0.68 | 9 th |

Source: Field Survey, 2019.

“Build economic potential through the provision of education, training and volunteering opportunities” was ranked 3rd with (Mean=4.35).

“Perceived effect on members' health, skills and well-being”, “Increased food production”, “improve farmers’ income level”, “Provide a high proportion of their members' food needs” and “Bringing people together or providing a focal point for community activities” was ranked 4th with each having equal (Mean=4.33).

“Contribute directly to local economies through the employment they provide” was ranked 8th with the (Mean=4.32), “Bring together a set of assets to create a wider enterprise” was ranked 9th with the (Mean=4.31), “CSA is cost saving for both farmers and members” was ranked 10th with the (Mean=4.29), “Providing food of low environmental impact” was ranked 11th with the (Mean=4.26), “Actively developed or supported other community enterprises” was ranked 12th with the (Mean=4.25) and “Offer a wide range of social events and activities for participants and other community members” was ranked 13th with the (Mean=4.06).

CONCLUSIONS

It could be concluded that farmers were middle-aged and the major type of organic farming is organic-based crop production. It is also established that organic farmers are new to community supported agriculture and are willing to participate in it as they have favourable perception toward community supported agriculture. Also, community supported agriculture helps consumers, producers, and the environment build connections together through a local food network.

The following recommendations are presented below:

(i) There is a need for policy and popularization that would encourage community supported agriculture, especially in rural Nigeria. Hence, the government should employ seamless awareness campaigns to sensitize Nigerian populace on the

significance and relevance of community supported agriculture in ensuring sustainable food security and environmental conservation.

(ii) Extension agents and other relevant stakeholders need to be supported and strengthened to disseminate agricultural innovations to farmers in rural communities.

(iii) There is need to develop on indigenous knowledge in response and partnership with community farmers; and encourage the expansion of local and regional markets for organic products.

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