

Innovations

Opportunities and Challenges of Organic Farming in Delta State, Nigeria

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Abstract

The Study Examined the Opportunities and Challenges of Organic Farming in Delta State, Nigeria. The specific objectives were to; identify the forms of organic farming practices in Delta State, Nigeria, ascertain the opportunities of organic farming in Delta State, Nigeria and find out the challenges of organic farming in Delta State, Nigeria. A sample size of 187 respondents was drawn for the study using purposive sampling technique. The instrument used for data collection was questionnaire. Frequency and percentage were used to analyze the socioeconomic characteristics of the respondents, while mean and standard deviation were used to answer the research questions. The findings of the study showed among others that the opportunities of organic farming practices in Delta State, Nigeria were higher incomes due to lower input costs, creation of employment opportunities as it is highly labour intensive, increase in livestock production, production of quality crops that promote good health and environment conservation. It was also found out that the challenges of organic farming in Delta State, Nigeria were limited access to credits, insufficient manual labour, high cost of labour, low knowledge of organic farming practices, poor access to market for selling farm outputs, pest and diseases, limited access to agricultural inputs, absence of agriculture policy that promotes organic farming, long period of decomposition of organic manure and low soil fertility. Based on the findings, it was recommended among others that Delta State Government should make available credit facilities to farmers to encourage organic farming in large quantities.

Keywords: 1. Opportunity; 2. Challenges; 3. Organic Farming; 4. Farmers

Introduction

The agriculture sector is one of the mainstays of the Nigerian economy. The agriculture sector has contributed to food security, income generation, alleviation of poverty and economic diversification in Nigeria. Udemezue (2019) asserted that the agriculture sector contributes to Nigerian economy by providing food for the increasing population, creating employment opportunities, supplying raw materials for industries and increasing public revenue. Majority of the active labour force especially in rural areas engage in agricultural activities in Nigeria. Despite, the active involvement of majority of labour force of rural areas in agricultural production in Nigeria, the food produced is insufficient to meet the demand of populace. However, attempt to meet the food demand of the continuously rising population of the country brought about expansion of farming area, as well as an increase in the use of agro-chemicals, the long-term effect of which leads to soil depletion and does not support sustainable crop production (Abdullahi, Salihu, Umar & Hassan, 2018).

Some farmers engage in non-organic farming that involves the use of chemical fertilizers and pesticides in cultivation of crops. Mgbenka, Onwubuya and Ezeano (2015) noted that Nigerian governments are advocating massive use of inorganic farming by making available chemical fertilizers to farmers. Similarly, Abusomwan, Adedayo and Titilayo (2021) pointed out that the Nigerian government support non-organic farming by engaging in annual subsidy of chemical fertilizers that helps plant growth and production of food for the growing population. Farmers majority of Nigeria farmers who continue to have improved access to chemical fertilizers and other agro-chemical input become organic producers (Oguamanam, 2015). Okoroh and Ejike (2019) asserted that the synthetic fertilizers and other agrochemicals utilized in non-organic farming are manufactured using resources such as fossil fuels which are renewable. Furthermore, Okoroh and Ejike (2019) stressed that the synthetic fertilizers and other agrochemicals may cause pollution and contribute to environmental degradation, thus making such agricultural practices unsustainable. Suresh and Patidar (2015) noted that non-organic farming has negative effects on the environment which are manifested through soil erosion, salination, water shortages, genetic erosion and soil contamination among others.

The synthetic fertilizers and other agrochemicals may trigger erosion, reduce soil fertility and have insufficient nutritional values to individuals. Obabire, Sosina, Oke, Akeredolu and Obabire (2022) noted that non-organic farming compromise food production in terms of quality and safety. This could contribute to the reasons that people are no longer as healthy as they used to be over few decades. People are getting health conscious these days and are ready to pay a premium price for good chemical free products (Abusomwan, Adedayo & Titilayo, 2021). Attempts to improve food production free of chemicals have brought about improvement in organic farming in Nigeria.

Organic farming is a form of agriculture which excludes the use of synthetic fertilizers, pesticides and plant growth regulators in cultivation of crops (Abdullahi, Salihu, Umar & Hassan, 2018). Organic farming emphasizes the use of animal manures, mixed farming bush fallow, conservation tillage, crop rotation, use of off-farm organic wastes in production of crops, shifting cultivation, natural control of weed, pest and disease among others. To buttress this, Mgbenka, Onwubuya and Ezeano (2015) pointed out that techniques that organic farmers use include crop rotation, crop residues, animal manures and green manure; cover cropping, application of compost, legumes, mineral-bearing rocks to feed the soil and supply plant nutrients. According to Emegha-Okonkwo, Achoja and Okeke (2019), organic farming is the natural production of quality crops; animals and vegetables without inflicting harm on the people or polluting the environment. The authors added that organic farming is the usage of rich natural fertilizer to maximize biological activities and maintain long-term soil health. Suresh and Himanshu (2015) noted that organic farming prohibits the use of almost all synthetic inputs to maintain the health of the soil. Organic farming is ideal for environmental sustainability. Organic farming is the use of rich natural fertilizer to maximize biological activity and maintain long-term soil health (Okonkwo-Emegha, Umebali & Isibor, 2019). Organic farming is act of cultivating crops without the use of synthetic and manmade chemicals. According to Mgbenka, Onwubuya and Ezeano (2015), organic farming has become one of the best approaches for production of highly nutritious food and long term sustainability. The authors added that the notion of organic farming is to avoid the use of synthetic pesticides herbicides, chemical fertilizers, growth hormones, antibiotics or gene manipulation in agricultural activities

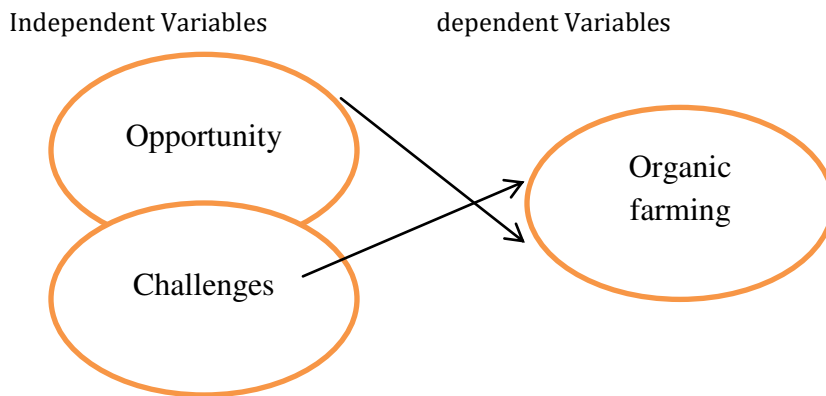
Organic farming is beneficial to farmers as it promotes environmental conservation, improves top soil by reducing nutrient loss and erosion, increasing organic matter and lowering carbon emissions (Anugwa & Nwobodo, 2020). Organic farming accommodates the use of inputs (pesticides, fertilizers,) but prohibits the use of manufactured (synthetic) fertilizer, pesticides (i.e. fungicides, herbicides and insecticides), plant growth regulars such as livestock antibiotics, hormones, food additives, generally modified organisms (Iyagba & Ovai, 2015). The benefits of organic farming include: food security, environmental sustainability, social inclusion and reducing exposure of crops to toxic pesticides (Onoja,

2018). Organic farming activities are geared towards a sustainable production of quality food with little or no effect on the environment (Okoroh, & Ejike (2019).

The practice of organic farming practice appears to remain unsatisfactory in Delta State, Nigeria. Abdullahi, Salihu, Umar and Hassan (2018) noted that Nigerian farmers are still very much in the system of producing crops inorganically. Majority of farmers are yet to engage organic farming in Delta State, Nigeria. To buttress this, Obabire, Sosina, Oke, Akeredolu and Obabire (2022) noted that there is low organic farming practices by farmers in Nigeria. The low practice of organic farming is associated with poor knowledge of the methods, lack of interest, shortage of labour, high cost, scarcity of organic materials and insufficient supports from the government (Iyagba & Amesi, 2015). This prompted this study on opportunities and challenges of organic farming in Delta State, Nigeria.

Conceptual Framework

The conceptual framework shows the relationship between the independent and dependent variables of the study. The independent variables are opportunity and challenges, while the dependent variable is organic farming. The level of opportunity and challenges could determine the level of farmers’ engagements in organic farming.



Methodology

The study was conducted in Delta State. The state was created on August 27th, 1991 from the defunct Bendel State. Delta State is bounded in the north by Edo State, south by Bayelsa State, east by Anambra and Rivers States and west by Atlantic Ocean. The capital of the state is Asaba and Warri is the biggest commercial city in the state. Delta State is an oil-producing state in Nigeria located in Niger Delta region of Nigeria. According to National Bureau of Statistics (NBS), 2016), the state has population of 5,663,362 people (2,888,315 males and 2,775,047 females). Delta State lies between longitude 5^o.00 and 6^o45^oE and latitude 5^o.00 and 6^o.3^oN.

Delta State has 25 Local Government Areas grouped into three senatorial zones which are: Delta South, Delta North, and Delta Central. The state enjoys a tropical climate with two distinct seasons: rainy season (March to November) and dry season (December to February). Rainfall is at its highest peak in July. The State is richly endowed with fertile agricultural land that is suitable for agricultural production. Agriculture is the predominant occupation of the people especially in rural areas of the state. Major food crops and cash crops are grown in the State include Maize, Millet, Cassava, Yam, Plantain. The vegetables cultivated in the area are pumpkin leaf, scent leaf, curl leaf, bitter leaf and waterleaf among others. Fruits such as banana, mango, oranges, guava, pineapples, paw-paw, coconut, cashew, guava and avocado are also grown in the area. The people of the area also engage in livestock farming such as pigs, poultry birds, goats and fisheries among others. Some agricultural problems faced by farmers in the area

include inadequate capital, insufficient land, flooding, limited access to credit oil spillage and low infrastructural development.

The sample size for the study comprised one hundred and eighty seven (187) respondents drawn using purposive sampling technique. The criterion for the selection is based on farmers who practice organic farming. Data were collected from the primary source using a structured questionnaire. The questionnaire contained two sections, A and B. Section A sought socioeconomic characteristics of respondents such as gender, age, marital status, educational level, household size, farm size and farming experience. Section B contains 25 items spread across three clusters (I-III). Cluster I contains 9 items on forms of organic farming practice, Cluster II contains 6 items on opportunities of organic farming and Cluster III contains 10 items on challenges of organic farming. The items of the instrument are structured on a 4-point rating of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) weighted 4, 3, 2 and 1 respectively. The instrument was duly validated by three experts in the field of agriculture. The reliability test of the instrument was determined using Cronbach alpha which yielded coefficient value of 0.79. The data collected were analyzed using descriptive statistical tools of frequency and percentage for socioeconomic characteristics of the respondents as well as mean and standard deviation to answer the research questions. In taking decisions on the research questions, mean item rating of 2.50 and above was taken as agreement and any mean rating that falls below 2.50 was taken to indicate disagreement.

Model Specification

The formula for weighted mean

$$X_w = \frac{\sum xw}{\sum w}$$

Where

X_w = weighted mean

$\sum xw$ = Summation of score \times weights

$\sum w$ = Summation of weights

Results and Discussion

Socioeconomic Characteristics of the Respondents

The result present in Table 1 shows the socioeconomic characteristics of the respondents that engage in organic farming in the area of the study. The socioeconomic characteristics examined were gender, age, marital status, educational level, household size, farm size and farming experience.

Gender: Table 1 shows that the majority (54%) of the respondents were males, while (46%) of the respondents were females. The result indicates that organic farming in this area are mostly practiced by males. This agrees with the finding of Ogunya and Tijani (2022) which revealed that men constitute the majority of farmers that engage in organic farming. The cultural practice that gives men the privilege to inherit land could explain their involvement in organic farming than their female counterparts.

Age: As shown in Table 1, majority (43%) of the respondents were between 25-32 years; (18%) of the respondents were between 18 to 24 years; (18%) of the respondents were between 26 to 38 years, while (27%) of the respondents were between 39 to 44 years. The average age of the majority of the farmers is 29 years old. This reveals that majority of the farmers are young people. This agrees with the finding of Oyagba and Ovai (2015) which indicated that there is high level of involvement of young people in organic farming activities. This disagrees with the finding of Oyesola and Obabire (2011) which revealed that the majority (90%) of the respondents was between the ages of 40 and 70 years, with the mean age of 53.8 years and youth comprised only 10%.

Marital Status: The result presented in Table 1 reveals that majority 50% of the respondents are married; 37% of the respondents are single; 4% of the respondents are divorced, while 17% of the respondents are widowed. This is in agreement with finding of Iyagba, Eze and Isirima (2017) who revealed that most of the people that engage in organic farming were married and this translate into having lowlabour cost as the family members will provide the needed manpower for organic farming.

Educational Level:The result presented in Table 1 reveals that majority 43% of the respondents attended secondary school; 4% of the respondents had no formal education 30% of the respondents had primary education, while 23% of the respondents had tertiary education. This implies that most people involved in organic farming are literate as they had secondary education. This disagrees with Okonkwo-Emegha, Umebali and Isibor (2019) who reported that majority of the respondents that involve in organic farming had tertiary education. The formal education acquired by majority of the farmers may improve their technical know how of organic farming.

Household Size: Table 1 shows that the majority (44%) of the respondents had household size of 5 to 8 persons, (40%) of the respondents had household size of 1 to 4 persons; while (16%) of the respondents had household size of 9 to 13 persons. The result indicates that organic farming in this area could mostly be practiced by farmers with average household size of 7 persons. This agrees with the finding of Okoroh and Ejike (2019) which indicated that the majority of people that involve in organic farming had mean household size of approximately 7 persons. This shows that most people who engage in organic farming have relatively large family sizes which serve as source of labour.

Farm Size: As shown in Table 1, majority (49%) of the respondents had 1.00-1.99 hectares of land; (26%) of the respondents had less than 1.00 hectare of land; (14%) of the respondents had 2.00-2.99 hectares of land, while (11%) of the respondents had 3.00-3.99 hectares of land. The average hectare of land for majority of the farmers was 1.49 hectares of land. This shows that majority of the respondents were small-scale farmers which predominates in the agricultural sector in Nigeria.

Farming Experience:The result presented in Table 1 reveals that majority (48%) of the respondents had 1-5 years of farming experience; 33% of the respondents had 6-9 years of farming experience; while 13% of the respondents had 10-13 years of farming experience. The average farming experience of 3 years implies that majority of farmers that engage in organic farming are relatively new in farming business.

Table 1: Socioeconomic Characteristics of the Respondents

Variables	Frequency (%)	Mean/Mode	Remarks
Gender			
Male	101 (54%)	Male	Dominated by male farmers
Female	86 (46%)		
Age			
18-24 years	34 (18%)		
25-32 Years	81 (43%)	29 years	Average
26-38 Years	45 (24%)		
39-44 Years	27 (14%)		
Marital Status			
Single	69 (37%)		
Married	94 (50%)		Married farmers dominated
Divorced	7 (4%)		
Widowed	17 (9%)		
Educational Level			
Non-formal	8 (4%)		
Primary	56 (30%)		
Secondary	81 (43%)		Dominated by farmers that attended secondary school
Tertiary	42 (23%)		
Household Size			

1-4 persons	75 (40%)		
5-8 persons	82 (44%)	7 persons	Average
9-13 persons	30 (16%)		
Farm size			
Less than 1 Ha	48 (26%)		
1.00-1.99 Ha	92 (49%)	1.49 hectares	Average
2.00-2.99 Ha	27 (14%)		
3.00-3.99 Ha	20 (11%)		
Farming experience			
1-5 years	90 (48%)	3 years	Average
6-9 years	61 (33%)		
10-13 years	36 (19%)		

Research Question One: What are the forms of organic farming practices in Delta State, Nigeria?

Table 2: Mean and Standard Deviation Scores on Forms of Organic Farming Practices

S/N	ITEMS			
		X	Sd	Remarks
1	Use of animal manures,	2.67	1.07	Agree
2	Conservation tillage	2.65	1.03	Agree
3	Bush fallowing	2.76	1.06	Agree
4	Intercropping	2.54	1.00	Agree
5	Mixed cropping	2.70	1.04	Agree
6	Natural control of weed	2.61	1.03	Agree
7	Natural control of pests and diseases	2.54	1.11	Agree
8	Shifting cultivation	2.73	1.03	Agree
9	Use of off-farm organic wastes in production of crops	2.57	1.05	Agree
Cluster Mean		2.64	1.05	Agree

As shown in Table 2, the mean scores of the respondents for all the items are above the cut off mean of 2.50 and this indicated agreement that farmers engage in all the forms of organic farming practices in Delta State, Nigeria. The cluster mean of 2.64 is above the cut off mean of 2.50 and this shows that organic farming is practiced in Delta State, Nigeria.

Research Question Two: What are the opportunities of organic farming in Delta State, Nigeria?

Table 3: Mean and Standard Deviation Scores on the Opportunities of Organic Farming

S/N	ITEMS			
		X	Sd	Remarks
1	Higher incomes due to lower input costs	2.81	1.03	Agree
2	Creation of employment opportunities as it is highly labour intensive	2.77	1.00	Agree
3	Increase in livestock production	2.56	1.02	Agree
4	Production of quality crops that promote good health	2.60	1.07	Agree
5	Environment conservation	2.55	1.12	Agree
6	Improvement on food security	2.47	1.10	Disagree
Cluster Mean		2.63	1.06	Agree

Table 3 indicates that the mean scores of the respondents for all the items with exception of item 6 are above the cut off mean of 2.50 indicating agreement with items as the opportunities of organic farming. The cluster mean of 2.63 is above the cut off mean of 2.50 and this shows that organic farming has many opportunities in Delta State, Nigeria.

Research Question Three: What are the challenges of organic farming in Delta State, Nigeria?

Table 4: Mean and Standard Deviation Scores On the challenges of Organic Farming

S/N	ITEMS			
		X	Sd	Remarks
1	Limited access to credits	2.82	1.06	Agree
2	Insufficient manual labour	2.75	1.03	Agree
3	High cost of labour	2.61	1.12	Agree
4	Low knowledge of organic farming practices	2.58	1.10	Agree
5	Poor access to market for selling farm outputs	2.79	1.08	Agree
6	Pest and diseases	2.65	1.12	Agree
7	Limited access to agricultural inputs	2.67	1.09	Agree
8	Absence of agriculture policy that promotes organic farming	2.74	1.02	Agree
9	Long period of decomposition of organic manure	2.84	1.03	Agree
10	Low soil fertility	2.69	1.17	Agree
Cluster Mean		2.71	1.08	Agree

Result in Table 4 reveals that the mean scores of the respondents for all the items are above the cut off mean of 2.50 and this indicated agreement with the items as the challenges of organic farming practices in Delta State, Nigeria. The cluster mean of 2.71 is above the cut off mean of 2.50 and this shows that there are many challenges of organic farming in Delta State, Nigeria.

Forms of Organic Farming Practices

The finding of this study presented in Table 2 shows that organic farming is practiced in Delta State, Nigeria. The forms of organic farming practices in Delta State were use of animal manures, conservation tillage, bush fallowing, intercropping, mixed cropping, natural control of weed, natural control of pests and diseases, shifting cultivation and use of off-farm organic wastes in production of crops. This agrees with the finding of Abdullahi, Salihu, Umar and Hassan (2018) which revealed that organic farming practices among farmers were residues incorporation, mixed cropping, mixed farming, hoeing/hand weeding, slash-burn/flame weeding, crop rotation, zero/hoe tillage, farm yard manure and use of organic fertilizer among others.

Opportunities of Organic Farming

The result in Table 3 shows that organic farming has many opportunities in Delta State, Nigeria. The opportunities of organic farming practices in Delta State, Nigeria were higher incomes due to lower input costs, creation of employment opportunities as it is highly labour intensive, increase in livestock production, production of quality crops that promote good health and environment conservation. This is in line with the finding of Iyagba and Amesi (2015) which revealed opportunity of organic farming include: controls pests and weeds, increase in crop yield, improves soil fertility, increase in livestock production and not harmful to the environment

Challenges of Organic Farming

The result of data analysis presented in Table 4 showed that there are many challenges of organic farming in Delta State, Nigeria. The challenges of organic farming in Delta State, Nigeria were limited access to credits, insufficient manual labour, high cost of labour, low knowledge of organic farming practices, poor access to market for selling farm outputs, pest and diseases, limited access to agricultural inputs, absence of agriculture policy that promotes organic farming, long period of decomposition of organic manure and low soil fertility. This supports the finding of Okoroh and Ejike (2019) which revealed that constraints militating against organic farming included; inadequate extension agents and high cost of labour, lack of institutional support, low yield, high price of organic products by government, lack of technical know-how, incidence of pests and diseases and poor local marketing. This affirms the finding of Ngereza and Pawelzik (2016) which revealed that the constraints to organic farming were lack of capital, high organic certification costs, knowledge of quality, post-harvest losses, lack of publicity, poor infrastructure, inadequate market information, pest and diseases. This agrees with the finding of Ogunya and Tijani (2022) which indicated that the major constraints to organic farming are high labour cost, pest and disease infestation, lack of adequate information on organic practices and inadequate capital.

Conclusion

Based on the findings of the study, it is concluded that organic farming is practice in Delta State, Nigeria. The farmers who engage in organic farming earn high income, create job opportunities, produce food with high nutritious food and conserve the environment. However, the farmers that engage in organic farming are faced with the challenges of funds, labour, pests and disease among others. Tackling of these challenges is bound to promote organic farming in large scale to improve availability, accessibility and affordability of nutritious food in order to reduce hunger and poverty in Delta State, Nigeria.

Recommendation

Based on the findings, the following recommendations were made:

- Delta State Government should make available credit facilities to farmers to encourage organic farming in large quantities.
- Delta State Government should embark on public enlightenment programmes through mass media to create awareness on the need for organic farming.
- Agricultural extension workers should educate farmers on how to engage in organic farming.
- Delta State Government should make available organic fertilizer and healthy organic seeds/seedlings at subsidize cost to farmers to encourage organic farming.
- Government should be given optimum priority to the supply of animal manure to farmers.

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