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Organic Agricultural Practices and Sustainable Production Among Farmers in Central Agricultural Zone of Cross River State, Nigeria

Isong, Lawson Enang[1], Esekpa, Ofem Ibor[2], and Essien, Nkoyo Adednego[3]

[1]Department of Agricultural Education, University of Education & Entrepreneurship, Akamkpa, Cross River State, Nigeria
Lawsonisong@gamail.com

[2]Department of public Administration, Faculty of administration and management Science, University of Calabar, Nigeria
ofem~ibor@yahoo.com

[3]Federal School of Statistic Enugu, Nigeria
e-mail nkoyobednego@gmail.com.

ABSTRACT

This study examines organic agricultural practice and sustainable crop production among farmers in central agricultural zone of Cross River State, using the theory and principle of organic agriculture with emphasis on addressing the challenging roles and factors that limit the organic and crop production in the central zone. Both primary and secondary data were obtained to analyze and identify the various initiative programmes embarked upon by government. the paper sought to establish the relationship between organic agricultural practice and crop production and to achieve the purpose of the study, research questions were posed and hypothesis were formulated and tested at 0.05 level significant. Relevant literature was reviewed, and field survey was carried out and stratified and purposive sampling techniques were used in three (3) selected communities with a population of 150 using descriptive statistical table sample percentage and analysed by exploratory factor. The findings of the study revealed a large extent that organic agricultural produce and crop production has significant relationship among farmers in the central zone of Cross River State. Base on the result of the finding, it was recommended that Improved communication channels and joint initiative co-operative should be initialed to encourage crop production in the central zone of Cross River State and Nigeria at large.

***Keywords**: Organic agricultural, sustainability, crop production pragrammes, Farmers, Central Agricultural Zone.*

INTRODUCTION

The organic agricultural practice has been in century, since the emergence of Cross River State as a central zone and over sixty years of conventional farming practice. Yet the state is still grappling with the of challenges organic agricultural practice, which remains in promoting sustainable production despite the biodiversity potential in the central agricultural zone of Cross River State. Of recent, the zone has witnessed several challenges and barriers, ranging from socio-economic factor, lack of awareness and knowledge, environmental threats, limited input access and lack of government support which include but not limited on behavioural changes, extension services, policy intervention and financial support involvement. This has posed serious threat in food production and development, resulting in hunger, inflation abject poverty and economic stagnation.

The central zone is generally known as an “agrarian zone” with fertile agricultural land. The zone grows variety of crops such as yam, cassava, maize, coca-yams, banana, rice and other plantation farming crops like cocoa, Rubber and oil palm production, which are seem as income generating commodities for consumption and foreign exchanged earning. The zone account for over 22%

(percent) of the total forest land mass for gross-domestic product. According to Roy, Farougue and Rahman (2023) no zone can really boast of advancement and development of a large percentage of its citizenry where citizens are wallowing under hunger, poverty economic stagnation and adopt in socio-economic penury.

Ejf (2007) affirmed that majority of farmers in the central zone primarily practice conventional faring system with adopting rate of less than 20%. This system employed the use of improves soil viability, organic manure from crop and animal remnants. The sustainable practice includes mixed cultivation, crop rotation, intercropping, mulching, agro-forestry in some Local Government Area. Roy et al (2013) observed that conventional farming system can change their existence traditional system to increase profitability, sensitivity to implementation and changing circumstances of new technologies, using knowledge acquired through learning process. In central Europe, Asia and America have developed a paradigm for organic agricultural practice and sustainable crop production which terms to be innovative, interactive and participative. The system has since been developed and expanded to encompass livestock, forestry, nutrition, food security, water conservation and soil fertility management (Braun, et al, 2016). The photography below, shows the plantation farm found in Assiga, Yakurr Local Government of Cross River State, where cash crops are cultivated for the benefit of man and its environment, this aim at providing employment opportunity, reduction of poverty, inflation, hunger, and income generation.

In Nigeria, organic agricultural practice is less than 30 years of the existence practice (Abudillahi and Kulamo, 2012) experiences shows that less than 50 hectares under the organic agricultural of which 10-20 hectares were fully developed. The practicing farming is still few; despite the great economic and agricultural potential, Kempet (2010) affirmed that, the practices in Nigeria have the following main-stakeholders such as;

- The worldwide opportunities on organic farms (WWOOF)
- Dara/Euro bridge farm
- Organic fertilize association of Nigeria
- Organic agricultural project in territory institution in Nigeria (OAPTIN).
- Organic farmer association of Nigeria
- Nigerian organic agricultural network (NOAN)
- Olusegun Obasanjo centre for organic agricultural research and development.

This zone aimed at promoting organic agricultural practice through employment generation, pest control, soil conservation, environmental and Human Health, Higher biodiversity, farmers market and good quality and consumer acceptance.

Purpose of the study

The study therefore aimed at determining the relationship between organic agricultural practices and sustainable crop production amongst farmers in central agricultural zone of Cross River State, Nigeria. Specifically, the study is to:

1. Determine the relationship between organics agricultural practice and crop production in central agricultural zone of Cross River State.
2. Find out the extent to which organic agricultural practice crop production among farmer relates to central agricultural zone of Cross River State.

Research questions

This indicates open ended question, legerity and focused that guides the study by identifying a problem or a topic to be answered and explored through a particular investigation (Micheal, 2014).

i. How does organic agricultural practice and crop production affect the central agricultural zone in Cross River State?
ii. To what extent does crop production and organic agricultural practice relate to central agricultural zone in Cross River State?

Statement of hypotheses

i. There is no significant relationship between organic agricultural practices, and crop production among farmer in the central agricultural zone of Cross River State.
ii. There is no significant relationship between organic farming practice and production among farmers in central agricultural zone in Cross River State.

Review of related literature

Organic agricultural

Organic agricultural practiced occupied a prominent place within the central zone of Cross River State development discourse. The concept encapsulates ecological farming or biological farming with emphasis lay on natural or non-input – synthetic such as borne meal, compost manure and green manure as well as techniques like biological control pest, crop rotation, mixed cropping and companion planting method which focuses on insect predator.

Paul (2011) observes that organic agricultural is an integrated farming system that strives enhancement of soil fertility, sustainability and biological diversity as well as antibiotic rare-exception, growth hormones, prohibiting synthetic pesticides, and genetically modified organisms. In central zone this farming system or practice have its origin around early 20^{th} century in reaction to practical farming changes, certified to organic agriculture which account between 20 – 70 hectares in a designed organic agriculture, allows for the basic use of natural occurring substances with a limited synthetic substance. This implies that organic agriculture work with nature to enhances adequacy health balance and naturally available resources and farming why increasing food-system resilience without the use of chemical pesticides synthetic fertilizer as well as relies on ecological sustainable practice such as maintenance of production, maximal disease control and feeding the soil with organic material. Ravallion (2005) defined organic agriculture as a productive system which helps in sustaining the soil profile, people and ecosystem. This lies on relies on ecological process, local input biodiversity and cycles adapted for local condition.

Abbas (2019) observed that organic agriculture combines conventional, science and innovation to shared benefit and promote fair relationship and good quality of life for all. This implies that it embodies renounce livestock feed additive, excluded genetic modified organism, minimize animals' drugs synthetic and, best use of both conventional farming and new scientific technology to come up with adequate farming practice to employed opportunity and local condition. Adeboyo & Oladed (2014) sees organic agriculture as a holistic production system management that avoids pesticides, fertilizer and genetically modified organisms (GMO's) to promote biodiversity, healthy eco-system and soil fertility. From the aforementioned to the concept organic agriculture is a system that create an opportunity for increased in productivity, poverty alleviation and employment opportunity at all levels of agricultural sector, government and nongovernmental organizations (NGOs).

Crop production

Crops are essential product needed by man for growth and development, which is produced and harvested for commercial, consumable and scientific purposes. This purposes includes, food, oil and fiber. Crop refers to as a total yield from specific areas in a particular season. This can be cultivated either for subsistence, or commercial purposed with a wide used variety, categorized by "National Geographic Society".

Adeneganele (2013) sees crop production as a systematic process which embodies growing of plants, harvesting of plants for profit, food and fiber. This implies that, from the preparation of soil, adding to nutrients, sowing, pest control and irrigation to achieve a high yield. This system became necessary as it enhanced food security, contribution and raw materials supply for industrial health, soil maintains and biodiversity. Crop genetic potential, water and sun light Piha & Giler (2003) in this view noted that crop production involves a set of documents that explained the adequate process of crop growth food, fiber and other product. These documents practically cover the entire agricultural cycle from soil preparation, fertilize application, irrigation control and harvesting which ensure influential crop yield, like climate, soil fertility, water availability and pest. Also crop production can be said to be the total embodiment of crops from the planting period to the time of harvest. According to Samuel (2007) refers to a cultivation of sources feeds needed for livestock include input resources, water, machinery, and fertilizer and other essential needed crops like soybeans, corn and alfalfa. Esekpa (2014) sees it as a launching multifaceted which embodies modern life, animal and human populations.

Theoretical framework

As a zone, Cross River State is basically an agrarian state, have been divinely and richly endowed with fertilizer agricultural land with varieties of plants growth. Hence the paper adopts the theory and principles of organic agriculture. According to Amalu (2002). The theory and principles of organic agriculture owe its origin to the agricultural theoretical postulation of Sir Alber Howard and Rudolf Steiner in 20th century. A major player on conventional farming practice and biodynamic agriculture. Alber Howard felt that, the use of compost, animal manures and crop rotation help in the building healthy, living soil which eschewed input synthetic and viewed the farm as a single organized hollistic. Other on the basic of organic agricultural articulations and pursuit.

“Individuals, acting independently and in collaboration, developed the core principles that forms the basic organic agricultural as a reaction to industrialization of agriculture and the rise of synthetic pesticides and fertilizer.”

In central zone of Cross River State, there have been several issues relating to crop production, pest control and fertilizer application with transformational, social, economic, infrastructure service and health effects. The zone has made a considerable programme in slowing populational growth, improvement in food security and life of its citizenry which sustainable development depends on, according to Ravallion (2005),

“The origin of the theory and practice of organic agriculture is really the acknowledged that, the central zone is composed of conventional and modern agricultural farmers who are product of diverse crops potential which aids the development of the zone, through poverty reduction, provision of employment as well as foreign income generation.

Practically, it is rare to have organic agricultural crop production practice among farmers mostly in rural areas rather than co-operative society. Hence the agitation presently is translated into the public demand like food, employment and poverty reduction. As Abullaji & Kufama (2012), the demand for food production is high due to lack of incentives or loan government policies as well as ecological effect. Here it becomes important for the central zone to carefully highlight these challenges and come up with policy framework to guide and addressed the agitation/demand for the citizenry. In the word of Roy, Farougue and Rahman (2013) organic agricultural farming practice and crop production supported food security programme, with positive tremendous impact on farmers productive as set in the zone with different major or production which entail non-beneficiaries and beneficiaries support, as observed based on livestock production with a significant input of crop farmers based.

Methodology

The study was carried out within the central zone of Cross River State. This zone incidentally corresponds with six local government that made up of the 18 local government of Cross River State. The study site/ communities are Ochon, (Obubra), Assiga (Yakurr) and Igbo-Imabana (Abi). The zone enjoys a very good agro-climatic condition show in table 1 that favour cultivation and production of crops varieties such as cash crops, wild life species, livestock and forestry, with a temperature range from 23.5' to $32.8^{\cdot c}$ and relative humidity, from 70.5 – 83.2%. the soil types include red deep, acid sandy soil, fertile laterite, basacts clay and dark while the cover vegetation include mangrove swamp, wet lands creeks, virgin and secondary forests and land wood savanna. The major food and tree crops include yams, cassava, maize, rice, groundnut, oil palms, cocoa, fruit and domestic livestock such as grass cutter, goats and sheep.

Study duration, composition and quality research composition

Thirty working days were employed on the field survey (ten day on each selected village). The survey was carried out on a specific area of discipline with a consultant added by each of the selected communities to guides recounted from the various communities under the study areas. The researchers employed an analyst with ordinary national certificate on Agriculture (OND) in related field of study and enumerator as well as a guide in consultation worth community head, interpreter and data collection

Table 1: Showing the performance of commodity enterprise modules among the selected communities

S/N	Site	Location	Crop module	2020	2021	2022	2023	2024	Total
1.	Assiga	Yakurr	Yams	6	-	6	22	-	22
			Cassava	7	10	43	65	-	5
			Seed yam	3	-	5	8	-	8
			Rice	2	-	-	3	-	3
			Maize	2	-	1	3	-	3
2.	Igbo Imabana	Abi	Seed yam	-	-	-	-	-	1
			Cassava	3	15	77.6	95.9	-	9
			Rice	1	-	-	-	-	95.9
			Maize	1	-	-	-	-	1
			Yam	4	-	16	16	-	1
									28
3.	Ochon	Obubra	Cassava	-	4	20	-	34	34
			Plantain	-	-	2	-	3	3

Source: Field work, 2025

Sample approach and the rationale

The study employed stratified and purposive sample techniques to select the sample from three selected communities within the central zone of Cross River State. The village selected participate were first carried out for each community with the application of purposive sampling technique; community, eligible to participate interview. The techniques were appropriate since it characterized by communities. Therefore, a total of 150 respondents participated in the study. The interview and questionnaire were used as a method to elicit information from the respondent. Data were analyze using descriptive statistical tables and simple percentage. The survey item at each community were assessed through psychometric and literature review. The analysis also took into consideration experience of respondent, variability in responses and exploratory factor was also used to analyze the data. The unit sampling consists of farmers, apex group representative and enterprise primary group. Others include the youth representative, elder representative which provides the basic for the larger population.

Table 3: Group formation, size and membership in central zone of Cross River State

S/N	Local Govt	Community sites	Start date	No. of primary	Estimated No.	Total membership
1.	Abi	Igbo Imabana	2025	7	72	50
2.	Obubra	Ochon	2025	8	22	50
3	Yakurr	Assign	2025	10	25	50
Total	3	3		25	69	150

Source: Field work, 2025

Organic agricultural and crop production in central zone in Cross River State

Over the years, several imitative policy programmes were initiated. This is targeted toward poverty eradication hunger, and inflation reduction, agricultural productivity, our dependency on foreign product and improvement on food security. Some of the notable programme include;

- Operation feed the nation (OFN)
- Green revolution programme
- Ecological organic agricultural imitative (EOA-I)
- Agricultural transformation Agenda
- E.U. Supported programme
- Export promotion of organic product
- National programme for food security
- Food and Agricultral Organization (FAO)
- Anchor Borrowers Programme
- Ecologically found Organic Farming method
- National Accelerated Food Progremme (NAFPP)
- SEKEM Project
- River Basic Development Authorities (RBDAS)

In Cross River State central agricultural zone initiative include farm credit scheme, Agricultural and Rural Empowerment Scheme (CARES), Rural Access and Mobilization project scheme (CR – RAMP) Agricultural Credit Guarantee Scheme, Director of Food, Road and Rural Infrastructural. Community – Based National Resource Management Programme and poverty Alleviation Programme (NAPEP). This programme aimed at provide infrastructural support, finance and developmental materials across the six local government areas that made up the central zone agricultural crop production.

Challenge of organic agricultural and crop production

Despite the numerous programme initiative emphasis in the central Agricultural zone of Cross River State; the zone has encountered some major challenge. Uche (2013) noted that many government policies on organic agricultural practice and crop production fail within the central zone due to soil topographic, environmental condition, technological limitation and population density. Other challenges include weak implementation of policy framework, poor funding and unrealized goal.

Mustapha & Sanusi (2010) highlighted additional challenges to include corruption, intra-agency conflict and administrative bottleneck. Mismanagement of funds, lack of accountability which create room for socio-economic and political abandonment of promising initiative. Moreso, heavy reliance on a single revenue source, limits the capacity development for economic, political and Agricultural

programmes, while economic instability and poor communication facilities contributes to discontinuity of policy framework.

Demographic analytical profile

Analytical profile composed of the sample revealed study. This include:

- Gender: The total male account indicate the highest participation in organic agricultural and food production at 61.4%.
- Age distribution: The age group between 26-35 constitutes the majority of 13-25 years (26.18%), 36 – 45 years respectively. This means, the younger generation are more in organic agricultural production and crop farming system.
- Education: Most respondents held HND/B.Sc (53.4%) seconded by Ordinary Diploma Certificate (OND) (33.33%) and SSCE (13.3<99%).
- Occupation: the Dominant occupation is farming (56.7%) follows by trade (26.7%) and civil service (16.6%).

These findings suggest a youthful, agriculturally active people, yet that is vulnerable to engaged organic Agricultural and crop production.

Table 1: Percentage frequency variable

Gender	Male	92	61.4%
	Female	56	38%
Occupation	Farming	85	56.7%
	Civil servant	25	16.6%
Educational	H.N.D/B.Sc.	80	53.4%
Level	Diploma	50	33.3%
	SSCE	20	13.3%
Age	18-25	40	26.7%
	26-35	70	46.7%
	36-45	30	20.0%
	46 – above	10	6.6%

Source field work, 2025

From the above analysis, the study concluded that, the demographic responded profile used in the area overwhelming with middle aged, farming, HND/BSc hold and male forming the majority class.

Hypothesis test

For purposeful objective one, to be achieve that state that the relationship between organic agricultural practice and crop production in central agricultural zone in Cross River State, a null hypothesis was formulated that state that there is no significant relationship between organic agricultural practice and crop production in central agricultural zone in Cross River State.

In order to determine the study concern, the respondents were subjected to question and answers the questionnaires. The responses to the questions were analysis in tabulated form with the statistical hypothesis test. This is show in table three below.

Table 3 organic Agricultural practice and crop production

S/N	Statement	Disagree of acceptance				
		Strongly	Disagree	Neutral	Agree	Strongly agree
1.	Is organic agricultural practice and crop production challenges common to us	70(46.7) %	42(28.0) %	Nill	30(20.0) %f	8(5.3)%
2.	Has government made any effort	55(36.7)%	63(42.0)%	2(1.4)%	14(9.3)%	16(10.3)%

	towards the challenges					
3	If yes, is the effort efficient or affective?	44(29.3)%	70(46.7)%	12(8)%	10(6.7)%	14(9.3)%
4	Are the zonal officers actively involve in decision making	30(20)%	30(53.3)%	20(13.5)%	10(6.7)%	10(6.7)%

Source field work; 2025

In order to realistically determine the relationship between agricultural practice and crop production in central agricultural zone of Cross River State. The responses to question 5 -8. The responses are shown on table 4.

Step 1

The responsive are determine averagely by the respondent that either agree or disagree to the above statement.

Table 4

Alternative	Frequency	Percentage
Agree	40	27
Disagree	110	73
Total	150	100

Source field work, 2025

Table 4 shows that out of 150 respondents' sample 40 representing 27& believes that organic agricultural practice and crop production in central agricultural zone of Cross River State. Thereby failing to support the "NULL hypothesis formulated" whilst the remaining 110 (75)% held a converse view, i.e support the null hypothesis. The actual statistical test was developed using the z – score test proportion which formula is shown below;

$$Zc = \frac{x - p}{s\sqrt{n}}$$

Where z is the z – score calculate
S = Standard Deviation
N = Sample Size
P = Probability that Ho is true
X = respondent supporting Ho
The hypothesis was tested base on the formula by 0.5% significant level.

Table 5: Standard deviation computation

Alternative	X	$x\text{-}x^1$	$(x - x)^2$
Strongly disagree	110	50	-2,500
Strongly agree	40	-50	2,500
Total	150		5,000

Source: Field work, 2025

Table 6: Agricultural practice and crop production

Alternative	Mention frequency	Percentage
Unaccepted	110	73
Accepted	40	2.7
Total	150	100

Source: Field work, 2025

From the above table, we could observe that 110 (75)% of the respondents significantly responded negatively. Meaning that organic agricultural practice does not related to crop production in central

zone of Cross River State. While 40(37)% accepted the organic agricultural practice production. this implies that, organic agricultural practice is related to crop production in central zone of Cross River State. The statistical test shows that, 2 score test, promotion which has been earlier stated on the study which relationship between crop production and organic agricultural with a computalization of standard deviation shown in table 7.

Alternative	X	x-x	$(x-x)^2$
Unaccepted	110	- 49	-2,40
Accepted	40	- 49	2401

Source: Field work, 2025

This implies that organic agriculture and crop production have positive predictor in the central zone of Cross River State. The empirical findings yielded two significant outcome that warrant scholarly and interpretational effectively, since Zc < Z, resulting to rejection of the null hypothesis and acceptance of an alternative hypothesis.

Discussion of findings

The primary aim of this study was to determine the relationship between organic agricultural practice and crop production in the central zone of Cross River State. This is characterized based on the respondent which yielded empirical outcome that warrant inflection interpretation and scholarly studies.

First, the result indicates that, organic agricultural practice significantly relates to crop production outcome in the central zone of Cross River State. This is was validated through the application of Z – score and test proportional with a basic predictive confirmation of organic agricultural relationship. This finding aligns with the empirical conclusion of Ejf(2007) and Adenegan el at (2018) who observed that determination initiative is integral to facilitating crop production. Similarly, Piha and Giller (2003) highlighted that crop production growth for food and other products. The emphasis is determined on production, and development process.

Similarly, the findings reveal the extent to which organic agricultural practice and crop production relates within the central zone of Cross River State. The result was practically supported through Z – score proportional empirical analysis with a conclusive resonate of preview studies by Paul (2011), Mustapha, Bzugu and Sanusi (2010) who highlighted the challenges to include corruption, intra-agency conflict, lack of funds, administrative bottleneck, lack of accountability and limited fertilizer. Additional constraint according to Kemper (2010) include absence of modern technology, topographic, soil profile and climatic factor.

Implication of findings, soil profile

The organic agricultural practice and crop production implication of those findings are substantial since the result suggest that organic farming and crop production is intricately tired on government policy framework and foreign export. The non policy implementation of poor execution of initiative programmes over the years have resulted in the wide-spread socio-economic stagnation in the central zone of Cross River State. According to Micheal (2014), argued that poor record keeping and farms sale is a major constraint, the further hampers the effective monitor and evaluation. Its also necessary to design the record book carefully and it visit fairly frequently to keep up interest to ensure that documents are filled correctly and to help the organic farmers interpret the information and collection. Ravallion (2005) observed that, a number of beneficiary communities were very privilege to have been provided with leading – edge support machinery and mobility facilities like cultivation implement, tractors and motor-cycle for farm operation, farm produce conveyance and local travels, while other communities are littered with under-utilized shortage of machinery and lack of spare parts.

Obiefuna (2013) added that, insecurity is more prevalent tropically, in central zone of Cross River State. In this light, crop production remains fragile and is largely dependent in government policy framework directive, institutional stability, fertilizer application and technological skills. This resulted on failure of establish robust governance policy for increase in Cross production, from maintenance and poor outcome.

Finally, the finding indicates that, lack of dedicated organic and crop production farmers and policy mechanism continuous to hamper programme effectiveness. There is a notable lack of federal, state, and local government cooperation society for the development of organic agricultural practice and crop production.

Conclusion

This study explored the nexus between organic agricultural practice and crop production in central zone of Cross River State. The study analysis revealed the relationship between organic agricultural practices and crop production in central agricultural zone of Cross River State. The finding suggests that while organic agricultural practice initiative exist, their socio-economic implementation is hampered by resource mismanagement, lack of awareness and limited input access.

The study further highlight that conventional farming system remains dominant in the central zone of Cross River State with limited intake of modern technology farming system. Moreso, government policy framework failed to involves skilled individual due to poor amenities and limited economic resources or incentives. Overall bridging of organic farming and crop production is tailored towards strategic policy enforcement at all level of government institutional reforms, and renewed commitment.

Recommendations

To enhance the effectiveness of organic agricultural practice and promote crop production in central zone of Cross River State. The following recommendations are proposed;

1. Promote joint initiative: Organic agricultural from practice show by jointly initiated and implemented by either the government or individuals to ensure increased in crops productions.
2. Improve communication channel: Consistent and transparent communication platform should be created to enhanced easy crop production.
3. Establish monitoring agencies: central zone should create specialized Agencies responsible for supervisory monitoring and evaluating the crops production.
4. Conduct feasibility studies; comprehensive feasibility studies should be encouraged as a precede for development to enhanced sustainability and contextual relevance and equally encourage farmer to produced more crop for the benefit of the country and the world at large.

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