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Utilization of Organic Farming Practices Among Rural Farming Households in Imo State, Nigeria

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Abstract

The study examined utilization of organic farming practices among rural farming households in Imo State, Nigeria. It specifically, described socio-economic characteristics of the respondents; determined level of utilization of organic farming practices among rural farming households; and ascertained perceived effects of organic farming practices on arable crop farming among rural farming households in the study area. Purposive and multistage sampling procedures were used to select 120 respondents for the study. Data were collected using structured questionnaire and analysed using mean, percentages and multiple regression analysis. The findings showed that (65%) of the respondents were female and (92.5%) were farmers with mean age 47.0 years and mean farming experience of 11.1 years, Results indicated that the level of utilization of most of the organic farming practices was high with grand mean of 3.51 and showed positive perceived effect with grand mean of 4.23. Multiple regression result showed that coefficient of income and household size were statistically significant at 1% while coefficient of education was significant at 10% and positively related. The study concluded that most of the organic farming practices were highly utilized and recommended that there is need for NGOs and government to encourage organic farmers through procurement of loans for promoting and enhancing the full practice of organic agriculture.

Key Words: Organic farming, Utilization, Households, Rural

Introduction

Organic agriculture is still young in the country, with less than fifteen years of practical existence (Abdullahi and Kutama, 2012). As at 2007, Nigeria had 3,154 hectares under organic agriculture, of which 50 ha were fully converted and managed by a few farmers and NGO's, with little government involvement. However, it was reported that in 2010, land under organic production increased by five percent (Willer and Kilcher, 2009).

Considering the huge challenges ahead of us, it is important to assess the potential contribution of different types of farming systems to sustainable food security. Alternative farming systems that try to mimic ecological processes while minimizing external inputs are often

suggested as more sustainable form of food production (Leified, 2012). Organic farming is an alternative agricultural system which originated early in the 20th century in reaction to rapidly changing farming practices. It can be defined as an integrated farming system that strives for sustainability, the enhancement of soil fertility and biological diversity while, with rare exceptions, prohibiting synthetic pesticides, antibiotics, synthetic fertilizers, genetically modified organisms and growth (Danielle et. al., 2016). Explaining the potential role of organic agriculture in sustainable food security, Kazeem (2010) stated that organic agriculture is something that should be given priority in Nigeria because it is demand-driven as the products are needed in advanced countries. Jurgen (2001) defined sustainable agriculture as a system of agriculture that is able to balance productivity with low vulnerability to problems such as pest infestation and environmental degradation while maintaining the quality of land for future generations.

Improving poor famers' livelihood is central to addressing rural development (World Bank, 2007).Most small-scale farmers are faced with food insecurity and their main objective is to set food on the table every day (FAO, IFAD and WFP, 2013). Scientific reports based on informal indications show that compared to other families, organic producers are more food secure and are able to sell excess produce, enabling them to educate and clothe their children better than other non organic farmers (IFOAM and FiBL, 2006). Kazeem (2010) observed that the contribution of organic agriculture to the Gross Domestic product (GDP) of countries practicing organic agriculture is very high. He further reported that currently, some other African countries (Ghana, Kenya, and Tanzania) export organic agriculture commodities to Europe and America. On the other hand Oyeniran (2011) opined that African countries (Uganda, Kenya, Tanzania, South Africa, Cameroon and Ghana) have gone far ahead of Nigeria in production of certified organic food. It is therefore necessary for Nigerians, especially the small-scale farmers in different communities to embrace with full force the practice of organic farming, in order to fully maximize the profits from agricultural exports in the world market (Awotide *et al.*, 2013).

In view of these facts and considering its contributions to GDP of nations practicing organic agriculture, Nigeria cannot afford to continually be an on-looker, hence there is need to study the utilization of organic farming practices among rural farming households in Imo State, Nigeria. Specifically, this study described the socio-economic characteristics of the respondents in the study area; determined the level of utilization of organic farming practices among rural farming households and ascertain the

perceived effect of organic farming practices on productivity of the rural farming households in the study area.

Methodology

This study was conducted in Imo state, Nigeria. Imo State lies within Latitudes $4^0 45'$N and $7^0 15'$ N, and between Longitude $6^0 50'$E and $7^0 025'$E of the Greenwich meridian with an area of around 5,100sqkm(Vanguard, Nigeria, 2015). The State has a population of about 4.13 million people (NPC, 2013). It is bounded on the East by Abia state, on the North by Anambra and Abia State, and on the West by Rivers State. The State is divided into 27 administrative units called Local Government Areas which are grouped into 3 agricultural zones viz Owerri, Okigwe and Orlu. Agriculture is the predominant occupation of the people, for almost all the farm families either as primary or secondary occupation. The ecological zone favours the growing of tree crops, roots and tubers, cereals, vegetables and nuts (Onyenwaku and Nwachukwu, 2010).

Agriculture is the predominant occupation of the people, for almost all the farm families either as primary or secondary occupation. The ecological zone favours the growing of tree crops, roots and tubers, cereals, vegetables and nuts. These crops are grown in small holder plots usually in mixtures of at least two simultaneous crops (Imo ADP, 1994) Major animals reared include chicken, turkey, goats, sheep and pigs.

Multistage random sampling technique was used for the study. In the first stage, two Local Government Areas (LGAs) were purposively selected from each agricultural zone. In the second stage, five communities were randomly selected from each of the selected LGA. In the third stage, one village was randomly selected from each community. Finally, four farmers were randomly selected from each of the villages to give a sample size of 120 organic farmers for the study. These farmers were selected from the list of households who are into organic agriculture in the selected villages and this list was obtained from the Agricultural Development Programme (ADP). Primary data were collected through the use of a set of structured questionnaire and analysed using both descriptive and inferential statistics.

Objective two (2) which is to ascertain the level of utilization of organic farming practices among rural farming households was measured using five point likert-type scale of always = 5, often = 4, sometimes = 3, rarely = 2, and never = 1, the mean level were obtained by adding together 1+2+3+4+5=15, which was later divided by 5 to get a mean score of 3.05. the level of

utilization of organic farming practices on arable crop farming among rural farming households was categorized as follows, greater than (>)4.00 = always utilized, 3.5 to 3.99 = often utilized, 3.05 to 3.499 =sometimes utilized, 2.5 to 3.04 = rarely utilized ,less than or equal to (≤) 2.05 = never utilized.

$H0_1$: Hypothesis on there is no significant relationship between socio economic factors and organic farming utilization was tested using multiple regression approach and is implicitly given as:

$Y=f(X_1, X_2, X_3, X_4, X_5, X_6, e_i)$

Where:

Y=Utilization of organic farming practices (mean score)

X_1-X_6= Independent variables (socio-economic characteristics)

X_1 = Age (measured in year)

X_2 = Income level (₦)

X_3 = Education level (years)

X_4 = membership of organization (dummy: member = 1, otherwise = 0)

X_5 = household size (number)

X_6 = Farming experience (years)

ei = error term

Results and Discussion

The result of the personal characteristics of respondents is presented in Table 1

Table I: Distribution of respondents according to socio-economic characteristics

Socio-economic variables	Frequency (n = 120)	Percentage	Mean(X)
Age			
20-29	01	0.8	
30-39	32	26.7	
40-49	42	35.0	47.0
50-59	21	17.5	
60-69	20	16.7	
70-79	04	3.3	
Sex			
Female	78	65.0	
Male	42	35.0	
Marital Status			
Single	24	20.0	
Married	74	61.7	
Separated/Divorced	8	6.6	
Widow	14	11.7	
Income/month			
5000-10,000	62	51.7	
10100-15,000	58	48.3	11453.4
Level of Education			
NFE	20	16.7	
FSLC	19	15.8	
WACE	45	37.5	9.9
OND/NCE	16	13.3	
HND/BSc.	20	16.7	
Membership of Organization			
Yes	68	56.7	
No	52	43.3	
Household size			
1-4	29	24.2	
5-10	89	74.2	5.9
11-15	2	1.6	
Experience			
1-11	86	71.7	
12-22	22	18.3	
23-33	4	3.3	11.1
34-44	2	1.7	
45 -55	6	5	

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Sourc : field survey, 2018.

The result showed that 35.0% of the respondents fell within the age bracket of 40-49 years; while 26.7% were within the age bracket of 30-39. It can also be deduced from the table that 17.5% were within the age bracket of 50-59 followed by 16.7% who fell within the age bracket of 60-69; 3.3% were within the age bracket of 70-79 and 0.8% were observed to be 20-29years. The mean age of the respondent was 47.0 years. The result showed that a greater proportion of the respondents were at their active working age which enables them to engage in intensive organic farming practices in the study area. Onu (2012) posited that age determines the level of involvement in farming.

The result further showed that there were more females (65.0%), than males (35.0%). This study suggests that most of the women are the bread winners of their families and this motivated them to participate more in organic farming.

The result also showed that majority (61.7%) of the respondents were married; while 20.0% were single. However, 11.7% were widowed, 3.3% separated and 3.3% divorced .This implies that most of the farmers who practice organic farming were married. The married organic farmers obviously have family members that constituted the farm households who would serve as source of labour to long value chain in food production. Similarly Egwu (2003) observed that married people play more active roles in rural development and technology adoption as they desire to boost their production in order to meet numerous family responsibilities.

The result showed that (51.7%) of the organic farmers earn #5000-10,000 monthly, while 48.3% of them earn #11000-15000. And the mean income per month was #11453.4 which means that the farmers in the study area are still in practice of subsistence farming. Okello (2005) remarked that increase in income would enable poor households to save more financial resources and consequently gain the required financial ability to invest in crop production.

The result presented in Table 1 showed that 37.5% of the respondents completed 12 years formal education, while 16.7% had 16 years formal education (HND/BSC). Also, 16.7% had no formal education; whereas 15.8% completed 6 years formal education and 13.3% of them had 14 years formal education. The mean number of years spent in the acquisition of formal education in the area was 9.9 years. This implies that most of the organic farmers are moderately literate and can easily understand innovation on improved production technologies more than illiterate counterparts. This is similar to Fabiyi *et al.*, (2007) who reported

that being educated is an important factor that encourages community participation as well as for rapid agricultural development.

The result in Table 1 showed that (56.7%) of the respondents belong to cooperative organization, whereas 43.3% were not members to any organization. This showed that most of the respondents were members of cooperative societies. This may enhance their access to productive resources as cooperative membership enables farmers to pull their resources together and attract inputs easily at cheaper cost for the benefits of their members. This is because cooperatives create social relations that enable organic farmers to achieve goals that they may not otherwise be able to achieve by themselves.

Odoemelam *et al* (2016) stated that farmers who are not members of associations are expected to have lower probabilities of adoption and low level of adoption of conservation technologies. Moreover, Nathitakarn Pinthukas (2015) stated that education level, experience, natural water and farmers' membership significantly contributed to farmers' adaptation on organic vegetable production. Singh (2006) stated that the organizational structures supporting smallholder organic agriculture in Nigeria fall in four categories. These include: farmers organized by a company, farmers operating under NGO initiatives, farmers organized or facilitated by government, and farmers who have formed their own organizations like cooperatives, associations, self-help groups, etc.

The result in Table 1 showed that majority, (74.2%) of the respondents have household size between 5-10 persons. Also 24.2% of the respondents had household size between 1-4 persons while 1.6% had household size between 11-15 persons. This is highly desirable and of great importance in most rural communities in Nigeria as most of them contribute to family labour supply. Ezihe et al, (2014) had reported that the smaller the household size, the higher the need to engage in hired labour to supplement family labour, thereby increasing transaction cost.

The result in Table 1 showed that the farming experience of the majority (71.7%) ranged between 1-11 years; 18.3% had farming experience between 12-22 years; 5% had farming experience between 45-55 years, whereas 3.3% and 1.7% ranges between 23-33 years and 34-44 years respectively. The mean farming experience of the respondents was 11.1 years.
The number of farming years a farmer spent in farming business according to Nwaru and Ekumankama (2004) determines the farmer's managerial ability.

The result of the level of utilization of organic farming practices is presented in table 2

Table 2: Distribution of respondents according to the level of utilization of organic farming practices

S/N	Organic arming Practices	always	Often	sometimes	rarely	Never	Total	Mean
1	Crop rotation	62(310)	32(128)	14(42)	4(8)	8(8)	496	4.13
2	Biological pest control	49(245)	36(144)	18(54)	6(12)	11(11)	466	3.88
3	Application of animal dungs	25(125)	15(60)	31(93)	27(54)	22(22)	354	2.95
4	Use of compost manure	19(95)	35(140)	29(87)	19(38)	18(18)	378	3.15
5	Mulching	56(280)	19(76)	26(78)	4(8)	15(15)	457	3.81
6	Use of wood ash for liming	20(100)	25(100)	35(105)	25(50)	20(20)	364	3.03
7	Cover cropping	39(195)	29(116)	34(102)	11(22)	7(7)	442	3.68
8	Shifting cultivation	69(345)	21(84)	20(60)	4(12)	6(6)	507	4.23
9	Mixed cropping	82(410)	14(56)	8(24)	4(8)	12(12)	510	4.25
10	Mixed farming	52(260)	13(52)	13(39)	13(26)	26(26)	403	3.36
11	Contour farming	5(25)	16(64)	17(51)	34(68)	48(48)	256	2.13
	Grand mean							3.51

Source: Field survey, 2018

Decision rule: greater than (>) 4.00 = always utilized, 3.5 to 3.99 = often utilized, 3.05 to 3.499 =sometimes utilized, 2.5 to 3.0 = rarely utilized, less than or equal to (≤) 2.05 = never utilized.

Level of utilization of organic farming practices

The Table 2 identified the following as the major organic farming practice with their mean scores, mixed cropping ($\bar{x}$=4.25), shifting cultivation ($\bar{x}$ = 4.23) , crop rotation ($\bar{x}$ =4.13), which signifies that they were always utilized, while biological pest control ($\bar{x}$=3.88), mulching ($\bar{x}$=3.81), and cover cropping ($\bar{x}$ = 3.68), were often utilized, The mixed farming ($\bar{x}$ =3.36), and use of compost manure ($\bar{x}$ =3.15), were sometimes utilized, use of wood ash for liming ($\bar{x}$ = 3.03), application of animal dung ($\bar{x}$ = 2.95), and the least contour farming ($\bar{x}$ = 2.13) were rarely utilized in the study area. The level of utilization grand mean was 3.51. This result is in consonance with the findings of Nwachukwu (2010) who reported that farmers in Nigeria practice mixed cropping, crop rotation, planting of legumes among others with or without the knowledge and principles of organic agriculture.

The result of the perceived effects of organic farming by organic farmers is presented in table 3.

Table 3: Distribution of respondents according to their perceived effects of organic farming

S/N	Perceived effects	SA(5)	A(4)	U(3)	D(2)	SD(1)	Total	Mean
1	Enhances soil fertility	68(340)	36(144)	11(33)	5(10)	1(1)	528	4.4
2	Increase in income level	40(200)	47(188)	24(72)	8(16)	1(1)	477	3.98
3	does not harm soil or other organisms	45(225)	41(164)	20(60)	13(26)	1(1)	476	3.97
4	It is labour intensive	52(260)	31(124)	23(69)	9(18)	5(5)	476	3.97
5	Increase in yield	39(195)	49(196)	24(72)	5(10)	3(3)	476	3.97
6	Enhances productivity	39(195)	51(204)	22(66)	16(32)	5(5)	471	3.93
7	Cost of production is high	39(195)	46(184)	16(48)	19(38)	1(1)	466	3.88
8	Sustainability of the environment	38(190)	43(172)	25(75)	12(24)	2(2)	463	3.86
9	It is good for health	30(150)	48(192)	22(66)	16(32)	4(4)	444	3.7
10	It does not generate poisonous fumes in the air	26(130)	37(148)	30(90)	22(44)	5(5)	417	3.48
11	There are adequate buyers for organic products	18(90)	43(172)	32(96)	22(44)	5(5)	407	3.39
	Grand mean							**4.23**

Source: Field survey, 2018 Decision rule: mean ≥ 3.05 indicates positive effect; mean < 3.05 indicates negative effect. SA=Strongly agree, A=Agree, U=Undecided, D=Disagree, SD=Strongly disagree. Multiple responses were recorded

Perceived effects of organic farming practices

Table 3, showed the perceived effects of organic farming practices by farmers in the study area. Most of the organic farmers with a mean value of 4.4 strongly agree(SA) that organic farming practice enhances soil fertility, increases income level of the farmers with a mean value of 3.9, does not harm soil or other organisms ($\bar{x}$ = 3.97), it is labour intensive ($\bar{x}$ = 3.97), increase in yield ($\bar{x}$ = 3.97), enhances productivity ($\bar{x}$ = 3.93), cost of production is high ,($\bar{x}$ = 3.88), sustainability of the environment, ($\bar{x}$ = 3.86), it is good for health ($\bar{x}$ =3.70), does not generate poisonous fumes in the air ($\bar{x}$ = 3.48), there are adequate buyers for organic products with mean values of ($\bar{x}$ = 3.39), and has a grand mean of 4.23. This implies that organic farming practices had positive effect and were perceived desirable and sustainable by the farmers. This finding is in tandem with the finding of (Orji, 2013) that organic farming is an agricultural technique of naturally producing quality crops, vegetables or animals without harming the environment, the people, the animals as well as other micro-organisms that are living around.

The result of $H0_1$: there is no significant influence of the selected socio-economic factors on the use of organic farming practices is presented in table 4.

Table 4: Multiple regression estimates of the influence of selected Socio-economic factors on the use of organic farming practices in the study area

Variables	Linear	+Exponential	Semi log	Cobb Douglas
Constant	.295(1.642)	-.933(-3.091)**	-5.401(-4.563)***	-8.220(-8.583)***
Age	-.010(-.211)	.032(.551)	-055(-801)	-.026(-607)
Income	8.44(17.248)	749(12.176)***	.785(10.641)***	.820(17.810)***
Education	-.067(-.1.296)	114(1.760)*	.036(.471)	.010(.205)
Membership of Organization	-.065(-1.358)	-066(1.106)	.017(.260)	-.014(-.347)
Household size	-.180(-3.320)	265(3.876)***	-123(-1.396)	-183(-3.319)**
Experience	-009(-154)	.0.46(-650)	.012(.126)	-058(-1.007)
Cost of organic	.076(1.646)	-010(-.165)	.139(1.950)*	.061(1.374)
R^2	.821	.717	.702	.884
R.Adjusted	.805	.692	.673	.873
F-Ratio	50.979***	28.188***	23.946***	77.396***

Source: Field Survey, 2018.

Key: *, **, and * are significant at 10%, 5%, and 1% level of probability respectively**

Hypothesis Testing

$H0_1$: there is no significant influence of the selected socio-economic factors on the use of organic farming practices.

The result in table 4 showed the multiple regression estimates of the influence of the selected socio-economic factors on the use of organic farming practices in the study area. The four functional forms of multiple regressions were tried and the exponential functional form was chosen as the lead equation. The lead equation was chosen based on the magnitude of Coefficient of multiple determinations (R^2) and the number of significant variables. The R^2 value of 0.717 which indicated about 72% of the variation in the dependent variable was accounted for by these independent variables, while others were due to error. The F-ratio of 28.188 was statistically significant at 1% alpha level indicating the goodness of fit of the model used in the analysis. The coefficient of income and household size were statistically significant at 1%, while coefficient of Education was significant at 10% and positively related. Coefficient of income, education and household size were therefore the socio-economic variables that influence the use of organic farming practices in the study area. This implies that the larger the household size the more the utilization of organic practices, The large household size will ensure availability of labour for agricultural activities as confirmed by Awotide *et al*., (2013) that propensity to participate in rice value chain increases as number of household members increase. The hypothesis which stated that there is no significant influence of the selected socio-economic factors on the use of organic farming practices was hereby rejected.

Conclusion and Recommendations

The study concluded that majority of the organic farming practices were always utilized in Imo State, Nigeria. The findings from the study showed that most of the organic farming practices had positive effect and were perceived desirable and sustainable by the farmers. We therefore concluded that organic farming is gradually gaining ground and people are developing interest as it has to do with life and recommended that:

1. There should be more awareness on the health benefits of organic farming and risk imposed by inorganic farming in order to encourage organic farmers to make use of organic farming practices. This can be done by extension agents and NGOs.

2. Extension agents can also help to educate farmers on the need to sustain their environment and harness the profits embedded in organic farming which will enhance increased income.

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