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AWARENESS AND PERCEPTION OF ORGANIC FARMING AMONG LOCAL FARMERS IN OWO LOCAL GOVERNMENT AREA OF ONDO STATE, NIGERIA

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ABSTRACT

Organic Agriculture is a justified innovation potent in addressing major challenges facing the Sub-Saharan African countries and especially Nigeria such as food insecurity among others. However, its practice is relatively low in Nigeria. This study was conducted in Owo Local Government Area in Ondo State, Nigeria to ascertain the awareness and examine the perception of organic farming among farmers in the study area. A multistage sampling procedure was used to select a total sample of 160 farmers for the study. Data analysis was done through descriptive and inferential statistics using the linear regression analysis. Findings from the study show that the majority (95.6%) of the farmers were aware of Organic farming, though not all the farmers adopted the technology. The farmers had a positive perception of organic farming. The perception of the farmers were positively related to their marital status ($t= 2.31, p \leq 0.05$) and income ($t= 3.56, p \leq 0.05$) while it was negatively related to their farm size ($t= -6.36, p \leq 0.05$) which means farmers with large farm sizes have the likelihood of having negative perception of organic farming. The findings affirm the farmers' lack of knowledge about the innovation, a majority agreed to the statement that they have shallow knowledge of organic farming. The study, therefore, recommends a cogitate effort by all stakeholders of the subject matter to promote the adoption of this technology.

1. INTRODUCTION

Agriculture in Nigeria occupies a central place in annual national strategic planning as it is perceived as the engine room of the nation's economy. The massively growing population of the country and the projected hike to 180 million by 2030 has made the sector a prioritized one following the need to feed the growing population. Conventional agriculture (non-organically certified) is the direct inverse of organic agriculture which involves farmers typically utilizing synthetic and chemical inputs in their agricultural practices and 98.9% of the world's foods are provided through this inorganic system (Willer and Lernoud, 2017). The quest of farmers to open up large expanse of land as a result of the population pressure has informed the vast and conventional utilization of agrochemicals and synthetic means in boosting their productivity and yield as well as reducing the drudgery nature through herbicide applications for controlling weeds and pests.

However, analogous to the imperative need to increase yield and need for reduction in the drudgery of agricultural practices, is the importance for ensuring sustainable agriculture, as well as a the safest means of production which would not have adverse effect on final, consumes of the products. The need for integrating both the goal of increasing yield and sustainable safe agricultural practices has led to the concept of organic agriculture. The prominence of organic farming as a safe alternative for improved agricultural practices while ensuring its safety, sustainability and high yield in Nigeria came to limelight after the second national conference on organic agriculture that took place in Nigeria under the auspices of the International Federation of Organic Agricultural Movement (IFOAM 2007).

Organic agriculture is a holistic production management system which promotes and enhances agro-systems health including increased functional biodiversity, biological cycles and soil biological activities (Ibeawuchi *et al.*, 2015). The major goal of organic farming activities is sustainable production of quality food with little or no effect on the environment (Oyesola *et al.*, 2010), this system of agriculture also promotes ecological resilience and its capable of mitigating many environmental hazards. Its benefit cut across different spheres as economic, environmental and social function hence making the practice multifunctional (Atoma *et al.*, 2018). Organic farming works in harmony with nature rather than in conflict with natural systems, adopting the approach that minimizes the use of non-renewable forms of energy (Oyedele *et al.*, 2018) thereby had been reputable as an eco-friendly alternative to inorganic agriculture. The Food and Agriculture Organization of the United Nations regards organic agriculture as an effective strategy for mitigating climate change and building robust soils that are better adapted to extreme weather conditions associated with climate changes (IFOAM, 2009). According to Food and Agriculture Organization (2010), organic agriculture promotes ecological resilience, improves bio-diversity, healthy management of the farm and surrounding environment and building community knowledge and strength.

The growing acceptance of organic farming is not a mirage as it helps to curtail the menace of environmental degradation caused by inorganic farming and climatic change (Tiamiyu *et al.*, 2018) which could be a resultant effect of the utilization of continuous practice of inorganic and synthetic farming through the bioaccumulation of chemicals which results in soil and food contamination, soil erosion and land degradation (Gomiero, 2016), thereby posing threats to the safety of humans and sustainability of agricultural productions. Organic farming is not only a potent method of overcoming the harmful effects of chemical farming (Ramdwar and Siew, 2018) but also an environmentally friendly way of achieving optimal and sustainable food production (Darnhofer *et al.*, 2010).

Despite the global awareness of environmental degradation by the inorganic system of agriculture, and the corresponding acceptance of organic farming as a promising and potent practice of reducing or ameliorating this damning effects on the environment and the farmers, farmers are still very much in a system of producing inorganically as reported that the global food production consists of 98.9% inorganic products (Willer and Lernoud, 2017) and also evidently shown in the report of FiBL 2019 that only 53,402ha (0.1%) share of Nigeria's land are utilized for organic agriculture out of the total agricultural land. The reason for this has long been sought. However, according to Eyinade and Akharume (2018), to enthrone a viable organic farming culture among farmers, the farmers must not only have a buy-in but be

positively disposed to making it a way of life. This disposition is key to the realization of making organic farming a plank and pathway to sustainable economic development. It is in this interest that this study was designed to achieve the following the specific objectives;

- i. ascertain the farmers' awareness about organic farming in the study area;
- ii. identify the organic materials and organic farming system used by farmers in the study area;
- iii. ascertain the extent of utilization of organic fertilizers by the farmers; and
- iv. determine the perception of farmers on organic farming;

1.1 Hypothesis

Ho₁: there is no significant relationship between the farmers' socio-economic characteristics and Perception of the farmers about organic agriculture.

2. METHODOLOGY

2.1 Study Area

The study was carried out in Owo LGA of Ondo State, Nigeria. Owo LGA is one of the eighteen LGAs in Ondo State that is known for crop production with high capacity of the forest reserve. The total population of the people in Owo LGA is 222,262 (NBS, 2007). The geographical coordinates are 7° 11' North and 5° 35' East of the equator. The area enjoys lowland tropical rain forest climate type with distinct rainy season (April – October) and dry season (November – March). The temperature ranges between 21°C and 28°C with high humidity. Agriculture is the mainstay of the Owo LGA's economy. It employs over 75% of the Owo LGA working population.

The area produces crops like cassava, yam, cocoyam, maize, vegetables, cowpea, cocoa, oil palm, plantain and fruits like cashew, mango and orange (citrus). The area is endowed with forest products such as trees like Teak, Mahogany, Messenia, Obeche etc.

The population of the study comprised of all the crop farmers in Owo Local government area of Ondo State.

2.2 Sampling Procedure

Multi-stage sampling technique was used in selecting the respondents for the study. The first stage was the purposive selection of Owo LGA due to convenience and predominance of local farming. The second stage involved the random selection of four communities in Owo L.G.A., the communities were Emure, Ehin-Ogbe, Isijogun and Iyere. The third stage involved random selection of 40 local farmers each from the four communities. In all making, a total sample size of 160 local farmers. Data for the study was collected through the administration of pre-tested and validated structured interview schedule. The data collected for the study include socio-economic characteristics of the respondents, awareness of respondents about organic farming, extent of utilization of organic fertilizers and perception on organic farming.

2.3 Measurement of variables

The awareness of the farmers about organic farming was ascertained by asking the farmers if they were aware of organic farming through a dichotomous response of Yes = 1 and No = 0. The extent of use of organic farming was determined by asking the farmers to indicate the extent to which they utilize various organic fertilizers on their farm on a five (5) point Likert type scale of Very high extent = 5, High extent = 4, Fairly high extent = 3, Low extent = 2 and Very low extent = 1

To determine the perception of the respondents about organic farming, list of perceptual statements were provided for the respondents to respond to on a five (5) point Likert- type scale of Strongly agree = 5, agree = 4, undecided = 3, disagree = 2 and strongly disagree = 1. Mean statistics was used to analyze this and the ranking of the perception was done.

3. RESULTS AND DISCUSSION

3.1 Socio-economic characteristics of farmers

Table I: Socio-Economic characteristics of respondents (N=160)

Socio-economic characteristics	Frequency	Percentage (%)	Mean
Age			
Less than 31 years	26	16.3	
31-40	67	41.9	
41-50	45	28.1	41
51-60	17	10.6	
Above 69	5	3.1	
Sex			
Male	113	70.6	
Female	47	29.4	
Marital status			
Single	22	13.8	
Married	85	53.1	
Widowed	13	8.1	
Divorced	18	11.2	
Cohabiting	22	13.8	
Household size			
<5	30	18.7	
6-10	94	58.8	8
11-15	36	22.5	
Years of Farming experience			
<10	48	30.0	
11-20	44	27.5	18
21-30	31	19.4	
>30	37	23.1	
Farm size			
1-5	130	81.3	3.8
6-10	30	18.7	
Average monthly income			
< 100,000	54	33.7	
100001-200000	62	38.8	178112.56
200001-300000	28	17.5	
Above 300000	16	10.0	
Highest level of education attained			
No formal education	2	1.3	
Attempted primary education	5	3.1	
Completed primary education	17	10.6	
Attempted secondary education	49	30.6	
Completed secondary education	65	40.6	
Attempted tertiary education	5	3.1	
Completed tertiary education	17	10.6	
Types of major farming enterprise			
Cassava	49	30.6	
Maize	52	32.5	
Plantain	15	9.4	
Vegetables	12	7.5	
Yam	32	20.0	

Source: Field Survey, 2018.

3.1.1 Age

Result in Table 1 revealed that the mean age of the respondents was 41 years with the majority (70.0 percent) of the respondents between the age of 31 and 50 years. This implies that the farmers were still in their active age as well as been matured enough to make decisions. The mean age been 41 years could be good leverage for extension agents and other people working on ensuring the adoption of organic farming as an innovation following the belief that young farmers tend to adopt innovations faster than their old counterparts.

3.1.2 Sex

The majority (70.6 percent) of the farmers were male, which implies that farming in the study area is dominated by men. This is in congruent with the findings of (Oyedele *et al.*, 2018) where they found out that small scale farmers in Ondo State were largely constituted by male. The women are responsible for the post-harvest operations and other off-farm activities.

3.1.3 Marital Status

Table 1 also indicated that 53.1 percent of the respondents were married while 13.8 percent were single. This implies that their decision to utilize an organic system of production or not may be due to consultation and advice from their spouses.

3.1.4 Household size

The mean household size was 8 persons with 58.8 percent having between 6-10 persons in their household. This means the farmers could have more hands to help on the farm and could serve as an impetus to the adoption of organic farming since its labour intensive.

3.1.5 Farming Experience

Table 1 also revealed that the farmers had an average of 18 years of farming experience which suggests they have quite appreciable years of farming experience which could enhance their decision making for their activities as well as enhances farming practices through the adoption of new technology.

3.1.6 Farm size

81.3 percent of the farmers had farm size of between 1 and 5 hectares while 18.7 percent has farmland of about 6-10 hectares. It was observed that the farmers have their farms in bits however, the aggregate of farmland possessed by the farmers was gathered and the average was 3.8 hectares.

3.1.7 Monthly income

The mean of the average monthly income of the farmers both from on-farm and off-farm activities was 178112.56 naira. This implies that the farmers have quite reasonable returns and income from their activities. This would inversely affect their perception and level of adoption of the organic farming innovation as income level is one of the determinants to the adoption of technologies.

3.1.8 Level of Education

The majority (98.7 percent) of the respondents are literates as they had access to formal education. This suggests that the farmers are educated and literate which could form a basis for their disposition and perception towards any technology or innovation. According to Obinne, 1991, cited in Nmadu *et al.*, 2015 high educational level of farmers enhances their level of understanding and proneness to change or adoption of new farm technologies, Adamu *et al.*, 2015 also found out that education level of farmers influenced the perception of organic-based vegetable farmers in Ogun State Nigeria.

3.1.9 Cultivated crops

Table 1 further revealed that maize, cassava and yam were the most cultivated arable crops in the study area. Hence, interventions and innovations on organic farming in the study area should be tailored and designed to be compatible with these crops.

3.2 Awareness of organic farming

Figure 1 shows the distribution of respondents according to the awareness of organic farming. The result revealed that majority (95.6 percent) of the respondents stated that they were aware of organic farming while 4.4% were unaware. The findings of the study support the findings of Fasina, (2013); Iyagba and Amesi (2016), that large numbers of the farmers are aware of organic farming.

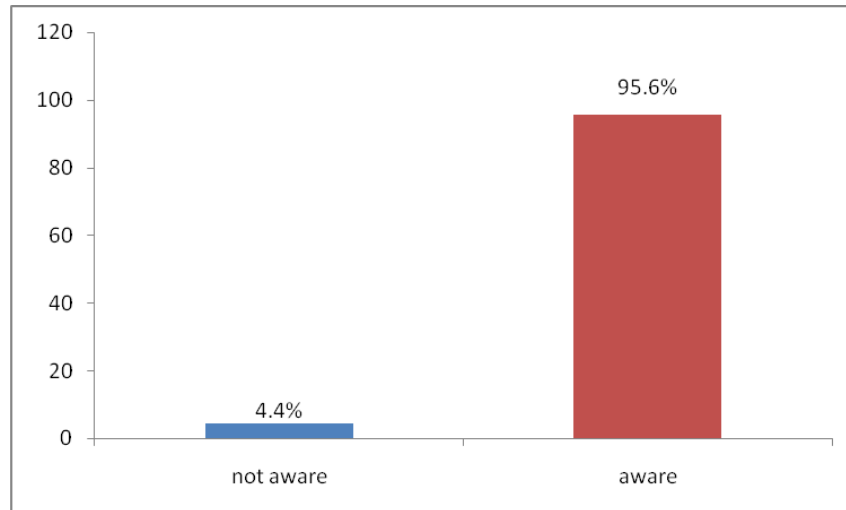


Figure I: percentage distribution of respondents according to awareness of organic farming (N=160)
Source: Field Survey, 2018.

3.3 Practice of organic farming based on awareness

Figure 2 revealed that almost half (47.71%) of the respondents, that consented to be aware of organic farming as shown in figure 1 practiced organic farming while (52.29%) of the respondents who were aware of the organic farming do not practice organic farming stating that it is irritating to practice, labour intensive and highly demanding which corroborate the position of Adamuet.al, (2015), that organic farming is labour intensive and highly demanding. Also the finding corroborates the position of Global Agricultural Information Network, 2014 that in Nigeria, farmers who practise organic farming either by proxy following their subsistence and traditional production of uncertified organic products due to inability to secure synthetic inputs or intentionally are in their substantial numbers.

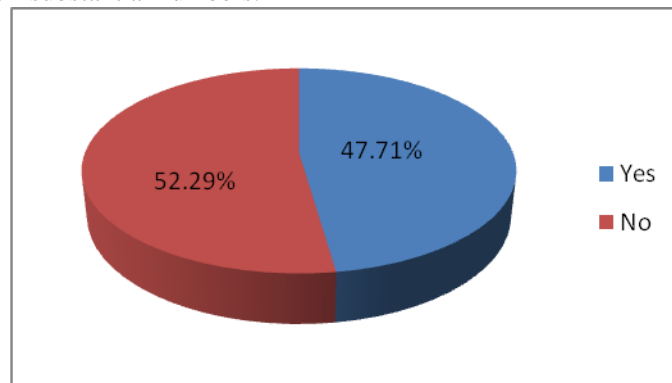


Figure II: percentage distribution of respondents according to practice of organic farming base on awareness (N=153)
Source: Field Survey, 2018.

3.4 Extent of use of organic fertilizer

Result in Table 2 reveals that in the organic fertilizer user category, urea (mean = 22.40), cow manure (mean =16.80) and poultry manure (mean = 19.80) were rated highest while sheep manure (mean = 18.00) and blood meal (mean = 18.40) was ranked lowest in the extent of usage. The finding agrees with that of Aderinoye-Abdulwahab and Salami, (2017) that found out that poultry droppings and cow manure were the prominently used organic fertilizer in Kwara State of Nigeria. This could be due to its ease of accessibility, as the farmers have poultry and cages in their locality where they get the manure from, also the low ranking of the use of sheep manure could be because sheep rearing is not prominent in the study area been a Christian dominated area.

Table II: Distribution of respondents according to their extent of use of various organic fertilizers

Variables	Very high extent	High extent	Fairly high extent	Low extent	Very low extent	Mean	Rank
	F (%)	F (%)	F (%)	F (%)	F (%)		
Poultry manure	19 (19.19)	26 (26.26)	30 (30.30)	15 (15.15)	9 (9.09)	19.80	3 rd
Cow manure	24 (28.57)	14 (16.67)	22 (26.19)	8 (9.52)	11 (11.96)	16.80	2 nd
Urea	16 (14.29)	47 (41.96)	20 (17.86)	19 (16.96)	10 (8.93)	22.40	1 st
Sheep manure	10 (11.11)	17 (18.89)	39 (43.33)	15 (16.67)	9 (10.0)	18.00	4 th
Blood Meal	11 (11.96)	14 (15.22)	16 (17.39)	20 (21.74)	31(33.70)	18.40	5 th

Source: Field Survey, 2018

3.4 Type of organic material and Farming system used

Table 3 shows that green manure (36.2 percent) crop waste (31.3percent) and Mulch (30.0 percent) were predominantly used as organic material by farmers in the study area. This could be because these are the cheapest form of organic materials as the farmers have access to green manure when they slash their farms and utilize it for compost. Also, the high utilization level of crop waste as a source of organic material could be attributed to the ease of obtaining it following the proximity in distance to the popular fruit and crop market (Ogbese and shahsha) market where post-harvest loss are high and they get them in cheap rate to utilize them as an organic material. It further shows that mixed cropping, crop rotation and shifting cultivation were highly practised by the farmers in the area. This is in agreement with the findings of Nenna and Ugwumba, (2014) where they found mixed cropping and crop rotation as the high fliers among the adopted organic farming system in Nigeria.

Table III: Distribution of Famers according to the type of organic material and Farming system used

Organic Material Used	Frequency	Percent
Wood ash	4	2.5
Mulch	50	31.3
Green manure	58	36.2
Crop waste	48	30.0
Farming System Used		
Shifting cultivation	46	28.8
Crop rotation	46	28.8
Bush fallow	8	5.0
Mixed farming	51	31.9
Intercropping	8	5.0
Continuous farming	1	0.6

*multiple responses

Source: Field Survey, 2018.

3.5 Farmers' perception towards organic farming

Table 4 revealed farmers' perception towards organic farming. The cut-off mean for this variable measurement was calculated to be 3.0, while the mean for each statement was calculated and compared with the cut-off mean. Any means that falls above the cut-off mean implies that the respondent agreed to the statement, and any mean that falls below the cut-off mean indicate that the respondent disagreed with

the statement. Thus, the result in Table 4 shows that respondents agreed to all the statements that were provided for them except one. The top-ranking (first four) perceptions that were agreed by the respondents include; Organic farming has increased the microbial activity of my soil. (\bar{x} =4.57); Contact with extension agent has enhanced the practice of organic farming (\bar{x} =4.52); Organic farming has enhanced high level of nutrient retention capacity of my soil (\bar{x} =4.49); I have shallow knowledge of organic farming (\bar{x} =4.44).

This all implies that the farmers had a favourable perception of organic farming and its profitability in all spheres in comparison to its alternative method of inorganic farming. Although, worthy of note is the agreement by the farmers that they have shallow knowledge of organic farming which aligns with the position of the Global Agricultural Information Network, 2014 on the state of organic farming in Nigeria, that in Nigeria, farmers who practice organic farming does that by the shallow idea and knowledge certified organic practices but rather follow their subsistence and traditional production and of uncertified organic products due to inability to secure synthetic inputs or intentionally are in their substantial numbers.

However, the respondents disagreement on the statement that they don't practice organic farming because of its health hazards (\bar{x} =2.56) implies that the farmers do not accept the fact that organic farming is hazardous unlike the conventional practice of inorganic farming which is believed to be dangerous to human health both during practice and even harmful when products of such practices are heavily consumed.

Hypothesis Testing

In table 5 below it was hypothesized that there is no significant relationship between the farmers' sex, marital status, educational level, household size, income, farm size of the farmers and their Perception score about organic farming. The regression results in Table 5 further showed that marital Status ($t = 2.31$; $p = 0.02$) is positively significant and affects the perception of the farmers on organic farming, income ($t = 3.56$; $p = 0.00$) is also positively significant and affects the perception of the farmers on organic farming. However, farm size ($t = -6.36$; $p = 0.00$) is negatively significant and affects the perception of the farmers on organic farming. This implies that, the more the income of the farmers, the more favourable their perceptions towards organic farming. This could be because there is a need for enough capital for farmers to fully engage in pure organic farming and not integrated with inorganic farming. The result also implies that the lesser the farm size possessed by the farmers the favourable their perception of organic farming. This could be resultant to the fact that organic farming practices can be practiced better and conveniently with small farm size since it would not demand large quantity. It corroborates the assertion of Mwangi and Kariuki, (2015) and Ntshangase, (2018) who opined that small farm size may provide incentive to farmers to adopt/ favourably perceive innovations that are input-intensive such as labour-intensive in the case of organic farming and also because some are land-saving technology such as mixed cropping.

The R Square (0.628) value indicates the proportion of variability in the perception of organic farming by farmers (dependent variable) which are accounted for by the linear regression equation. The Adjusted R Square (0.413) is an estimate of r^2 for the population. Nearly 41.3% (adjusted R Square) of the variance in the perception of farmers about organic farming is explained by the variables included in the model. Level of education ($t = -0.06$; $p = .950$), and sex ($t = 0.17$; $p = .862$), household size ($t = 1.30$; $p = .194$), were not significant and does not affect the perception of the farmers on organic farming.

Table IV: Distribution of the respondents according to Perception towards organic farming (n=160)

Statement	SA F (%)	A F (%)	U F (%)	D F (%)	SD F (%)	Mean \bar{x}	Rank	Decision
It has increased my farm yield	62 (40.6)	92 (57.5)	- (-)	2 (1.3)	1 (0.6)	4.36	7 th	Agree
The practice of organic farming has increased my soil water holding capacity	71 (44.4)	84 (52.5)	3 (1.9)	1 (0.6)	1 (0.6)	4.39	5 th	Agree
Organic farming has improved my soil structure	61 (38.1)	95 (59.4)	1 (0.6)	2 (1.3)	1 (0.6)	4.33	8 th	Agree
I practice organic farming because of the less cost	72 (45.0)	83 (51.9)	1 (0.6)	3 (1.9)	1 (0.6)	4.39	5 th	Agree
There is scarcity of organic materials	57 (35.6)	101 (63.1)	- (-)	- (-)	2 (1.3)	4.32	9 th	Agree
I have shallow knowledge of organic farming	79 (49.4)	76 (47.5)	2 (1.3)	2 (1.3)	1 (0.6)	4.44	4 th	Agree
Practicing organic farming is time consuming and labour intensive	55 (34.4)	102 (63.8)	1 (0.6)	1 (0.6)	1 (0.6)	4.31	10 th	Agree
Organic farming has increased the microbial activity of my soil.	98 (61.3)	58 (36.3)	2 (1.3)	1 (0.6)	1 (0.6)	4.57	1 st	Agree
Organic farming has increased the level of my farm production.	34 (21.3)	120 (75.0)	4 (2.5)	1 (0.6)	1 (0.6)	4.16	12 th	Agree
I don't practice organic farming because of it health hazards.	1 (0.6)	2 (1.3)	6 (3.8)	55(34.4)	96 (60.0)	2.56	14 th	Disagree
The type of crop I cultivate determine the practice of organic farming	42 (26.3)	112 (70.0)	2 (1.3)	3 (1.9)	1 (0.6)	4.19	11 th	Agree
Contact with extension agent has enhanced the practice of organic farming	90 (56.3)	65 (40.6)	4 (2.5)	- (-)	1 (0.6)	4.52	2 nd	Agree
Organic farming is cheap to practice	38 (23.8)	70 (43.8)	5 (3.1)	3 (1.9)	44 (27.5)	3.05	13 th	Agree
Organic farming has enhanced high level of nutrient retention capacity of my soil	91 (56.9)	62 (38.8)	3 (1.9)	2 (1.3)	2 (0.3)	4.49	3 rd	Agree

Source: Field Survey, 2018.

SA = Strongly Agree; A = Agree; U = Undecided; D = Disagree; SD = Strongly Disagree

Table V: Linear regression Analysis of socio-economic characteristics Affecting Perception of Organic Farming

Variables	Beta	t stat.	Sig.	Remark
(Constant)	0.915	-7.25	0.000	
Sex (X ₁)	1.014	0.17	0.862	Ns
Marital Status (X ₂)	1.7077	2.31	0.022*	S
Level of Education (X ₃)	0.998	-0.06	0.950	Ns
Household Size (X ₄)	1.012	1.30	0.194	Ns
Income	1.000	3.56	0.000*	S
Farm Size (X ₆)	0.763	-6.36	0.000*	S

Source: Field Survey, 2018.

Dependent variable: perception of organic farming

R Square = 0.413; **R²**=0.628; **F-value** = 1.359; * Significant at $p \leq 0.05$; NS = not significant, S = significant

5. CONCLUSION AND RECOMMENDATIONS

The study concludes based on its findings that the farmers were aware of the innovation (organic farming) and a reasonable percentage of the farmers that were aware practiced the innovation. The most utilized organic material used by the farmers for fertilization and soil enrichment is Urea, cow manure and poultry droppings. Majority of farmers had good knowledge of organic farming and favourable perception towards organic farming. Hence, the study recommended that stakeholders related to the subject matter should leverage on the positivity of the farmers' perception of organic farming and thereby develop strategies and enhance sensitization programmes that will help foster the adoption of this eco-friendly innovation towards food security.

Conflict of interests

The authors declare no conflict of interest.

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