

Vegetable Farmers' Perception of Adoption of Organic Farming in Oyo State, Nigeria

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ABSTRACT

The study was designed to investigate vegetable farmers' perception of organic farming in Oyo state, Nigeria. Multistage sampling procedure was used to select 134 vegetable farmers in the state. Quantitative data were collected using structured interview schedule, and analysed using descriptive and inferential statistical tools. Result shows that vegetable farmers in the area are mostly male (63.4%), married (84.4%), with mean age of 41.2 ± 9 years. All (100.0%) of the respondents were aware of organic farming practices. However, majority had unfavourable perception of organic agricultural practices. This is in spite of the high level of benefits derived from organic farming practices among majority (66.4%). Major constraints to the practice of organic farming included health hazards associated with handling organic manure ($\bar{x} = 2.27$), lack of institutional supports ($\bar{x} = 2.27$) and inadequacy of land availability ($\bar{x} = 2.27$). There were significant relationships between respondents' sex ($\chi^2=7.490$, $p = 0.006$); educational level ($\chi^2=36.498$, $p = 0.000$), age ($r = 0.260$, $P=0.002$); farm size ($r = 176$, $P=0.042$), constraints to organic farming ($r = -0.208$, $P=0.016$) and their perception of organic farming. There is therefore the need to give incentives as well as provide adequate institutional supports to farmers so as to encourage organic vegetable production among farmers in Oyo State.

Keywords: Organic farming, Vegetable farmers' perception, Awareness, Constraints.

INTRODUCTION

Organic farming is gaining popularity today, as it can diversify agricultural production system toward attaining improved productivity and farm income. Food safety is seen as a sustainable alternative to chemical-based agricultural systems (Biao, Wang, Ding and Yang, 2003). International Federation of Organic Agricultural Movements (2000) defined 'organic agriculture as a process that develops a viable and sustainable agro ecosystem'. Organic farming produces safe and nutritious food as it helps prevent soil pollution by stopping risky chemical reactions in the soil and avoiding produce contamination, as well as soil erosion. Biological research on soil and soil organisms has proven beneficial to organic farming. Varieties of bacteria and fungi break down chemicals, plant matter and animal waste into productive soil nutrients. In turn, they produce benefits of healthier yields and more productive soil for future crops (Gillman, 2008). Long term benefits of organic farming include the preservation and enhancement of soil, increasing the likelihood that it will continue to produce quality food for future generations. Organic farming encourages healthy populations of beneficial insects that keep destructive insects under control. It also helps preserve aquatic life and clean water by minimizing the flow of toxic

pesticides into streams, rivers, and lakes especially in vegetable farms under irrigation system. Organic farming offers a unique combination of environmentally-sound practices with low external inputs while contributing to food availability (Zundel and Kilcher, 2007).

Vegetable constitute an important component in a man's diet, especially in developing country like Nigeria. It is an edible crop and usually a succulent crop plant part which could be eaten with staples as main course or as supplement food in cooked or raw form (Okobia, 2010). However, vegetable production is now a very profitable business, Examples of such vegetables commonly cultivated include, *Amaranthus cruetus*, *Celosia argentea*, *Telfera occidentalis*. Organic farming produces vegetables safe from pesticides, fertilizer residues and perforated leaves caused by infestation from pest. Suitable areas like river banks and swampy urban areas are now used for cultivating vegetables and this had gone a long way complimenting rural farming in supplies of fresh vegetables in most cities. However, pest infestation has been a problem of vegetable planting which reduces availability, market and nutritional values of vegetable produced. Attempt to increase vegetable production has increased the use of fertilizer and pesticide which leads to biodegradation of the

environment, with increasing potential harms to human health. Perhaps, this has led to a growing demand for organic vegetables among other products, and farmers all over the world are shifting their production practices to meet this challenge. Corroborating this, Hadriman (2004) found out that the nutritional value was an important factor that influences consumers' preferences in purchasing chemical free vegetable, followed by desire, freshness, health effect and taste. The importance of organic farming is thus being realised by farmers as well as the policy makers, intellectuals and sensitive citizens after observing the deteriorating situation in the agriculture sector.

In Oyo State, Nigeria however, organic agriculture appears to have existed by default among majority of vegetable farmers perhaps due to scarcity and high cost of chemical fertilizer which makes it an inaccessible input for farmers. This therefore suggests that farmers can still make use of these chemicals if available in the market. On the other side, the fact that there is near organic practice in vegetable farming by farmers suggests favourable perception or otherwise towards organic vegetable production. Neupane, Sharma and Thapa (2002) and Rogers (2003) posited that farmers' perception determines adoption of improved technology. Farmers' views therefore go a long way in influencing their decision to either accept or reject any innovation. It is in the light of the foregoing that the study provided answers to the following research questions:

1. Are the farmers aware of organic vegetable farming?
2. What are the benefits of practicing organic farming?
3. What are the constraints to organic farming faced by vegetable farmers in the study area?
4. Are vegetable farmers' perceptions of organic farming in Oyo state favourable?

METHODOLOGY

The study was carried out in Oyo State, Nigeria. Oyo State was created in February 1976 and covers a total of 27249 square kilometres of land mass. Agriculture is the main occupation of the people of Oyo State, as the climate favours the cultivation of vegetable and other important arable crops.

Multistage sampling procedure was used to select the vegetable farmers. The state was stratified into the three senatorial districts of Oyo North, Oyo Central and Oyo South. One Local Government Area (LGA) each from the three senatorial districts of the state was randomly selected. These are Saki West, Oyo West and Ido LGAs respectively. A list of vegetable farmer was generated by snowball technique and 65% of the generated list was randomly selected in each of

the selected LGAs to give a total of 134 respondents.

Measurement of variables

Benefit of organic farming

Respondents were asked to respond to a list of benefit items, using a 2-scale of yes and no. Responses in favour of a statement (yes) was scored 1, while 'no' was scored 0. Respondents' level of benefits was categorised into high and low, using the mean benefit score as the benchmark.

Constraints to organic vegetable farming practices

Respondents were asked to indicate whether the possible constraints to organic farming were very severe, severe, less severe, and not severe, with scores of 4, 3, 2, and 1 assigned respectively.. The weighted mean score for each of the constraints was computed and used to rank them on the basis of importance.

Perception of organic farming

Respondents were asked to respond to a set of 26 perception statements using a 5-point Likert-type scale to provide answers to a list of statements measuring perception of organic agriculture. Respondents' perception was either favourable (scores \geq mean) or unfavourable (scores $<$ mean), as the overall mean perception score was used as the benchmark.

RESULTS AND DISCUSSION

Personal characteristics of vegetable farmers

The result in table 1 indicates that the mean age was 41.2 ± 9 , as majority (83.5%) belonged to age range of 21-50 years. This implies that majority of the respondents are within the middle age group and they are expected to be very active and productive in vegetable production. This contradicts Fasoranti (2010) who stated that excessive drain of youth from rural populace had left only the older and aged members to constitute the labour forces of the rural area. The result in Table 1 also shows that 63.4% of the farmers were male, implying that men are more involved in vegetable farming in Oyo State.. This could be due to tedious nature of the activities involved in vegetable production. Table 1 further shows that 50.8% of the farmers had formal education ranging from primary education to higher institution, while 35.1% had no formal education and the remaining 14.2% had adult education. Table 1 further reveals that strong family ties exist across the state as majority (84.3%) were married. A study carried out by Ofuoku, Egho and Enujeke (2009) also showed that married individuals are more involved in Agriculture. Results further show the year of experience in vegetable cropping in the study area as 7.7 ± 3 years. This result shows that farmers in the study area have appreciable level of experience which is a good position to exhibit independent

disposition towards perception of any new concept in vegetable cropping. Also, 60.4% and 28.4% of respondents had household size of 4-6 and more than 6 members respectively. This suggests that majority of the households in the study area make use of family members to prosecute their agricultural practices in the study area. The result further reveals that all the respondents grew the following vegetables; *Amaranthushybridus* (Tete) (67.2%), *Corchorusolitorious* (Ewedu) (60.4%), *Telferaoccidentalis* (Ugwu) (20.9%), *Celociaargetea* (Shoko) (47.8%), *Solanummacrocarpon* (Gbagba) (37.3%). The result implies that cross-cultural vegetable varieties were hardly grown, perhaps due to lack of market.

Table 1
Frequency Distribution of respondents' personal characteristics

Variables	Frequency	Percent
Age range (Mean = 41.2 ± 9)		
Age range (Mean = 41.2 ± 9)		
Yrs		
20 and below	18	13.4
21-30	44	32.8
31-40	50	37.3
41-50	17	12.7
51-60	4	3.0
Above 60		
Sex		
Male	85	63.4
Female	49	36.6
Educational level		
No formal education	47	35.1
Adult literacy	19	14.2
Primary education	19	14.2
Secondary Education	8	6.0
Technical or grade II	18	13.4
College and Higher Institution	23	17.2
Marital status		
Single	11	8.2
Married	113	84.4
Widowed	8	6.0
Divorced or Separated	2	1.5
Household size		
1-3 Members	15	11.2
4-6 Members	81	60.4
Above 6 Members	38	28.4
Types of vegetable grown		
Tete (<i>Amaranthus hybridus</i>)	90	67.2
Ewedu (<i>Corchorus olitorious</i>)	81	60.4
Ugwu (<i>Telfera occidentalis</i>)	28	20.9
Shoko (<i>Celocia argetea</i>)	64	47.8
Gbagba (<i>Solanum macrocarpon</i>)	50	37.3
Farming experience (mean=7.2±3)		
1-5 years	43	32
6-10 years	62	46.4
11-15 years	26	19.4
Above 15	3	2.2

Perceived benefit of organic farming

The result of the analysis on Table 2 shows distribution of the benefits of organic vegetable farming as perceived by farmers in Oyo State. The results reveal that majority of the respondents agreed that organic farming maintains soil moisture content (73.1%). These benefits of which farmers are aware have been attributed to organic agricultural practice. IFOAM (2000) posited that the environmental benefits of organic farming methods are far clearer as it enhances soil structures, conserves water, mitigates climate change, and ensures sustained biodiversity. The farmers were also aware of the fact that Organic farming control pests and diseases without harming the environment (71.6%) and that organic method produces crops free from chemical residues (68.7%). This also reveals that respondents were aware of the environmental effects of inorganic chemicals in the process of getting rid of pests and diseases for improved productivity. While emphasizing the environmental friendly nature of organic agricultural practices, Gosling, Hodge, Goodlass, and Bending, (2006) highlighted that by not using soluble chemical fertilizers and limiting the use of natural biocides in organic farming, organic farming is largely dependent on biological processes for the supply of nutrients and for protection of crops from pests and disease.

Respondents also were aware that organic farming does not inject toxic waste into water bodies (67.9%), organic farming encourages healthy population of beneficial insect and micro-organism (66.4%) and that organic farming use resources which the farmers already have (63.4%) and that organic method does not lead to development of resistant varieties (53.0%). This implies that farmers were aware of the closeness of their traditional farming practices to the organic farming practices. They also accepted that organic farming is beneficial to them as individuals and to the environment.

The summary of the levels of perceived benefits is shown in Table 3: The result shows that 33.6% of the respondents had scores below the mean benefit score of 6.02, and were hence categorised as low level of benefits, while 66.4% of the respondents had score above the mean 6.02 and they are classified as high benefit. An understanding of the benefit associated with organic farming could influence a favourable perception of organic farming practices.

Table 2
Frequency distribution of respondents' perceived benefit of organic farming

Statements	F	%
Control of pests and diseases without harming the environment	96	71.6
Increasing long-term soil fertility	55	41.0
Nutritious food, feed for animals and high quality crops to sell at a good price.	65	48.5
Use resources which the farmers already have	85	63.4
Maintains soil moisture content	98	73.1
Encourages healthy population of beneficial insect and micro organism	89	66.4
Produces crops free from chemical residues	92	68.7
No injection of toxic waste into water bodies	91	67.9
Does not lead to development of resistant varieties.	71	53.0
Reduces leaching and erosion	66	49.3

Table 3
Frequency distribution of respondents' level of benefits

Level of Benefit	Score range	F	%	SD	Mean Score
Low	1-5	45	33.6	2.12	6.02
High	6-10	89	66.4		

Constraints faced by respondents in practicing organic farming

Result of the analysis on Table 4 reveals respondents' frequency distribution and ranks of constraint based on the level of severity. The

result shows the following constraints as most severe, Nigerian institutes of agriculture have not effectively champion organic practices (2.27); organic Health hazard is associated with handling manure (2.27) and inadequate support from governmental and non-governmental agencies (2.26). They also indicated that large land requirement for organic farming is a constraint (2.23) These results implies that constraints to practicing organic agriculture are of different dimensions, covering institutional, economic, behavioural and health concerns.

Table 4
Frequency distribution of respondents' perceived constraints to organic farming

Constraints	Mean	Rank
High cost incurred in organic farming practices	1.79	13
Organic manure is too bulky to transport	1.91	14
Poor pricing of organic product.	2.00	9
Insufficient knowledge on organic farming practices	1.88	16
Inadequate information on the nutritional benefits of organic product	1.98	10
Inadequate understanding of organic concepts	1.97	11
Organic farming requires much land for its practices	2.23	4
Need for increased food production necessitate the use of agrochemicals	2.19	6
Inadequate support from governmental and non-governmental agencies	2.26	3
Organic practices require technical services which are not available	1.91	14
Nigerian institutes of agric have not effectively championed organic practices	2.27	1
Vegetable farmers are not aware of residual effect of inorganic fertilizer on vegetable.	1.92	12
Health hazard is associated with handling organic manure	2.27	1
Inadequate trained manpower	2.17	7
Research neglect	2.20	5
Inadequate government support on organic practices	2.17	7

Respondents' perception of organic farming

The summary of the respondents on their perception of organic farming is as shown on Table 5. The grand mean of the total respondent was 2.96, therefore statements with mean score below 2.96 were considered not favourable about the initiative while statements with mean score of 2.96 and above were considered favourable. Respondents have favourable perception of the following statement in respect of organic farming; Organic farming produces better yield in crop production (mean = 3.12), organic fertilizer of plant origin improves crop performance better (mean =3.16), organic vegetables are tastier compared with inorganic ones (mean=3.11), as

well as organic vegetables are more expensive (mean = 3.01). Respondents also perceived that most farmers mix organic fertilizer with inorganic fertilizer(mean=4.26), Weeds and remains of harvested crops should be allowed to decay(mean=3.43). However, results further reveals that majority of the respondents do not show favourable perception with respect to other statements (Table 6), as their mean values fall below 2.96, suggesting farmers' lack of information of these components of organic agriculture This could also be as a result of serious constraints faced by the small scale farmers to the practice of organic vegetable farming in the study area.

Respondents' level of perception of organic farming is shown on Table 6. The perception index was categorized based on respondents' score. Respondents with score below mean (74.04) were categorized as having unfavourable perception while respondents with score above mean value (74.04) were categorized as having favourable perception. Hence, 44% of the

respondents had favourable perception of organic agricultural practice, while 56% had unfavourable perception. This implies that majority of vegetable farmers do not prefer organic farming to conventional farming despite its benefit. This negates the findings of Dipeolu *et al.* (2006) that farmers, in general, had a positive perception of organic production.

Table 5
Frequency distribution of respondents' perception of organic farming (N = 134)

Statements	Mean	SD
Organic farming produces better yield in crop production.	3.12	1.48
Most farmers are not aware of the use of biological agent.	2.81	1.33
Herbicide and fertilizers reduces labour cost.	2.20	1.35
Organic method encourages the influx of pest and diseases.	2.54	1.42
Most farmers improve the fertility of their soil through only organic fertilizer.	2.86	1.50
lack knowledge on other methods of weed control	2.89	1.47
Organic manure harbours pathogens	2.85	1.40
Organic fertilizer of plant origin improves crop performance better.	3.48	1.39
Organic fertilizer is not readily available	2.95	1.41
Organic products are not expected to be cheaper as compared to inorganic.	2.84	1.51
Crop rotations is commonly used as a strategy for disease and insect pest management	3.16	1.53
Organic vegetables are tastier compared with inorganic ones.	3.11	1.54
Organic vegetables are more expensive	3.01	1.51
Organic farming is common among vegetable farmers.	3.73	1.23
Most farmers mix organic fertilizer with inorganic fertilizer	4.26	1.00
Weeds and remains of harvested crops should be allowed to decay.	3.43	1.36
There is positive effect on the quality of crop produced resulting from the use of organic fertilizer.	2.94	1.56
Organic vegetables are not attractive	2.98	1.52
Organic methods bring about pest and disease incidences due to use of plant and animal remains	2.38	1.36
Organic vegetables have no harmful effect	3.00	1.43
Insufficient training for farmers on preparation of organic manure.	2.65	1.45
Many farmers are not aware of the residual effect of inorganic fertilizer	2.34	1.34
The use of organic fertilizer is labour intensive	2.20	1.26
Organic vegetable are superior in quality to inorganic ones	2.97	1.49
Organic vegetable are more healthier to consume	3.23	1.5

Table 6
Frequency distribution of respondents' level of perception of organic farming

Level of perception	Score range	F	%	Grand Mean	SD
Favourable	74-96	59	44.0	74.0	12.59
Unfavourable	50-73	75	56.0		

Relationship between selected personal characteristics of respondents, constraints to organic farming practices and perception

Table 7 reveals that there were significant relationships between farmers' sex ($\chi^2=7.490$, $p = 0.006$), educational level ($\chi^2=36.498$, $p = 0.000$), primary occupation ($\chi^2 =36.878$, $p =0.000$) and their perception of organic farming. The position of FAO (2010) that male are often given greater priorities than female in terms of their access to credit facilities, land tenure system and training of farmers could better position male farmers in terms of disposition to organic agricultural practices. It also partially agrees with Clay, Reardon and Kangasniemi (1998) also reports a significant relationship between education and adoption decisions. It however disagrees with Ayanwuyi *et al.* (2010), which establishes no significant relationship between education and adoption of agricultural technology.

Table 7
Chi square Analysis of Respondents' personal characteristics their perception of organic farming

Variable	χ^2 -value	Df
Sex	7.490*	1
Educational level	36.498*	5
Marital status	3.446	3
Primary Occupation	36.878*	13
Cropping pattern	0.446	1

* $P \leq 0.05$

Table 8 shows that there were significant relationship between respondents' age ($r = 0.260$, $P = 0.002$), farm size ($r =176$, $P = 0.042$) and their perception of organic farming. This means that older people have favourable disposition towards organic agricultural practices for vegetable production. This may be due to the fact that the

traditional system of farming to which the older farmers are used requires minimal use of systemic substances. The favourable disposition of the farmers with larger farm size could be as a result of the available land and possibly resources which gives them an edge over others, in terms of practicing organic vegetable farming in the state. The result also reveals that there is a significant relationship between constraints to organic farming faced by the respondents and their perception of organic farming. ($r = - 0.208$, $p = 0.016$). This implies that constraints to organic farming go a long way in diffusing the minds of farmers towards organic agricultural practices.. Corroborating this, Helme,(2010) asserted that understanding the barriers to development is an important first step in promoting stronger opportunity for career decision making.

Table 8
PPMC Analysis of age, household size, farm size, farm experience, constraints to organic farming and respondents' perception of organic farming

Variable	N	r- value
Age	134	0.260*
Household size	134	-0.011
Farm size	134	0.176*
Farming experience	134	-0.065
Constraint	134	- 0.208*

• $P \leq 0.05$

CONCLUSION

From the findings of this study, it can be concluded that the vegetable farmers in Oyo State were mostly male, who enjoyed the supports of their household members in vegetable production. Vegetable farmers in Oyo State plant varieties of local vegetables. However, cross-cultural vegetable varieties are rarely planted. It can also be concluded that high level of awareness of organic agricultural practices of the respondents did not translate into favourable perception of its practices, in spite of high level of perceived benefits of organic vegetable production practices. It is therefore concluded that respondents were faced with different constraints in their attempts to practicing organic vegetable production, which significantly affected their overall perception. Based on the conclusion of the study, the following recommendations are made:

1. There is need for more commitment of various agencies involved to seriously sensitize farmers and channel the course of organic farming in order not to jeopardize long time sustainability of agriculture in the study area and the country at large.
2. There is need to create more awareness in respondents and organization of training programs on various potentials and prospects of organic farming, especially to sustained healthy living and environmental stability. This

is expected to boost their perception, and will therefore make adoption of organic agricultural practices easier.

3. Considering high level of constraints faced by vegetable farmers, there is need for the government and other organic agriculture related organizations to give and/or mobilize incentives and supports to farmers in order to boost their interest in organic farming.

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