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ORGANIC FARMING PRACTICES AMONGST SMALLHOLDERS IN EKITI STATE, NIGERIA: CHALLENGES FOR EXTENSION SERVICE

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Abstract

Organic agriculture plays a crucial role of enhancing the realization of sustainable environment and human health. The study investigated the utilization of Organic Farming Practices (OFPs) by arable crop farmers in Ekiti State, Nigeria. Four rural local government areas (LGAS) Ilejemeje, Moba, Ise-orun and Emure were purposively chosen while 100 respondents were selected for the study. Findings indicated that 86% utilized OFPs, 62% have heard about OFPs through the custodians of indigenous knowledge practices. Bush fallow was the most practiced OFPs (86%) with Weighted Mean Score (WMS) of 1.99, followed by Mulching with refuse (74%, WMS = 1.88). Reasons adduced for utilizing OFPs included easy practicability (78%), environmental friendliness of the practice (78%) and costliness of inorganic fertilizer (77%).Constraints that impend the practice of OFPs included problems of land tenure system and environmental degradation. There was a significant association between OFPs utilization and religion (χ^2 = 68.63) and marital status (χ^2 = 65.84). Pearson correlation test revealed a significant and positive relationship between OFPs utilization and age (r = 0.168) and farm size (r = 0.280). Regression analysis revealed that only age and farm size significantly influenced farmers' utilization of OFPs. *A major challenge for extension therefore, is the need to improve on the existing practices.*

Keywords: Challenges, extension, organic farming, smallholders, utilization

Introduction

In response to the need to advance improved agricultural practices worldwide, extension service providers and other development agencies have made significant impacts in the dissemination of improved farming practices to help the farming communities, including the introduction of high external inputs (HEIs) in order to replenish lost soil fertility. However, the wrong and continuous use of chemical fertilizers has had numerous adverse effects on the soil environment, which included environmental degradation and toxicity of farm produce as a result of inappropriate use. There is now a global concern about high external inputs (HEIs) agricultural activities, which easily lead to environmental degradation and health risks associated with foodstuffs produced from inorganic fertilizers. Fertilizer availability and affordability are also often cited as major constraints in crop farming. As a result, interest in

organic agriculture has continued to grow in the recent times. The interest in sustainable natural resource management and healthy eating, coupled with the constraints faced by resource-poor farmers who cannot afford agrochemicals, has led to the recognition of the potential of organic farming in addressing sustainable food production and livelihoods amongst resource-poor people in sub-Saharan Africa (SSA) (Harris *et al*, 1998). This had increased the global campaign on organic agriculture. Although acknowledging that there are reservations about the productive potentials of organic agriculture, Yusuf *et al*. (2010) gave accounts of some empirical findings in some part of SSA indicating that, given necessary attention and suitable framework, organic agriculture can feed the world teeming population.

Agrarian communities in the SSA region usually farm under rain-fed condition and risk-prone environments, and production of food and fiber largely depend on small farm holders. These farmers possess and use indigenous approaches in solving their day-to-day farm problems (Kuponiyi and Bamigboye, 2009). Resolved to succeed by every means, farming communities have developed strategies for obtaining food and fiber from plants and animals, which have resulted in a wide range of farming practices which are adapted to local culture (Aitieri, 1999). Little attention has been paid to the use of indigenous approaches in improving soil fertility through organic agriculture. OFPs are less costly because they are practice with locally available tools and materials, made with locally available materials and socially acceptable. Kolawole (2002) 'Organic farming practices' (OFP) is a term used to differentiate the indigenous farming knowledge of improving soil fertility, pest and diseases control, developed by the resource-poor farmer, from that of scientific farming systems. Svotwa *et al*. (2008) defined organic farming as a form of agriculture which excludes the use of synthetic fertilizers, pesticides and plant growth regulators. The United Nations Conference on Trade and Development (UNCTAD) (2009) report affirms that organic agriculture is a sustainable, environmentally friendly production system and can offer Africa and other developing countries a wide range of economic, environmental, social and cultural benefits. It is a holistic system employing a number of strategies in maintaining as well as improving land productivity. The practices comprise integrated pest management, crop rotation, bush fallowing, use of crop residues, animal dropping and green manures, agro forestry, some aspects of biological pest control and inclusion of mycorrhizae as a bio fertilizer to maintain soil productivity, and the use of filths to support plant nutrients and control insects, weeds and other pests (IFOAM, 2009).

Against the background that the 'green revolution' is largely responsible for advancement in the use of inorganic fertilizer to maintain soil fertility and improve crop yields, Lilliston (2009) in UNCTAD's 2009 brief stated that green revolution cannot be sustainable in Africa, because continent that imports 90 percent of its agrochemicals, which most of the small-scale

farmers cannot afford and by implication increase dependencies on foreign inputs (agrochemical and seeds of protected plant varieties) and foreign aid. He therefore canvassed that Africa should build on its strengths its land, local resources, indigenous plant varieties, indigenous knowledge, biologically diverse smallholder farms and limited use of agrochemicals. Findings obtained from field trials of 114 cases indicated that organic agriculture's production was found to be equal to or better than conventional systems, with overall increase in agricultural productivity of 116 percent thereby enhancing food security, protection of natural resources, including soil and water quality, less dependency on price volatility related to external inputs, and reduced illness and death associated with agrochemical exposure' (UNCTAD. 2009). Therefore, scientists, planners and agricultural advisers could learn from local farmers because their expertise "represents the single largest knowledge resource not yet mobilized in the development enterprise" (Hatch, 1976)

From the foregoing, it therefore becomes imperative to undertake a study to assess the extent of OFP utilization in the study area with a view to identifying the challenges with the role of extension in championing sustainable and environmentally friendly agriculture. The paper specifically,

i. described the personal attributes of arable crop farmers,

ii. identified OFP utilized in the study area,

iii. determined the level of utilization by farmers, and

iv. identify the problems impeding the effective utilization of OFP by smallholders.

Materials and Methods

Ekiti State in South western Nigeria has16 local government areas and constituted the study area. It lies between latitude 6^0 20^1 and 8^0 10^1 North of the equator and between longitudes 4^0 20^1 and 5^0 40^1 East of the Greenwich meridian. It is bounded in the north by Kwara and Kogi States, in the west by Osun state, by Kogi state in the east and Ondo state in the south. It has land area of approximately 19,898,168 sq km with purely agrarian economy. Majority of the farmers engage in the production of arable crops like yam and cocoyam, cassava, potato, rice and maize.

Sample size and sampling techniques

Multi stage sampling procedure was employed to select the respondents for the study. At first stage 25% of the rural LGAs were purposely selected making 4LGAs. They are Ilejemeje, Moba, Ise-Orun and Emure. Second stage two communities were then randomly selected from each of the LGA making 8 communities and 3rd stage 2% of the arable crop farmers were randomly selected from each of the communities. In all total of 100 farmers were used for the study. Validated and pre tested structured interview schedule was used to elicit information from the respondents.

Measurement of variables

The dependent variable (level of utilization of OFP) was measured as follows. Farmers were

requested to indicate any of the eight OFPs (earlier identified during pre-field survey) which they utilized. The OFPs were bush fallowing, composting, animal dropping, mulching with refuse, agro-forestry, crop rotation, zero bush burning and green manuring and each OFP used was scored one point. The respondents were further requested to indicate the level of their utilization of these OFPs by picking from the options: very much utilized (VMU), much utilized (MU), fairly utilized (FU) and not utilized (NU) and the options were scored 3, 2, 1 and 0, respectively. Weighted mean score was computed for each OFP for descriptive purpose. Also, the summation of the scores obtained from the chosen options was computed and regarded as OFP utilization index/score, which is the dependent variable. Independent variables such as marital status, religion and source of awareness, and reasons for OFP utilization were measured at nominal level, while others including, age, farm size, household size, educational level, awareness about OFPs and income were measured at ratio level.

Data analysis

Frequency and percentages were used to summarize and describe the data collected. Pearson correlation and regression analyses were used to test the relationships between variables. Chi square statistics was also used to determine the associations between non-parametric variables.

Results and discussion

Results in Table 1 show that the mean age of the respondents was years 47.5. Majority (87 %) of the respondents were married. The average household size was 5 people. The implication of this is that family labour could be a potential labour source for OFPs utilization processes. Majority (61.0%) of the respondents were Christians, 34 per cent were Muslims, while very few (5.0 %) were affiliated with traditional religion. The inference is that the respondents had one religious affiliation or the other, and as a result, religion could be used as avenue of reaching the farmers in programmes aimed at canvassing wider recognition for organic agriculture. The results further show that the average farm size cultivated was 2.4 ha. The finding show that small sized encourage the use of OFPs . Also, 33 per cent of the respondents had no formal education, 20 per cent and 10 per cent, complete secondary and primary education, respectively, while 13 per cent had beyond secondary education, implying that fair proportion of the respondents were literate. The average annual income of the respondents is N18.95, the result revealed that the respondents are relatively poor.

Famers' awareness of OFP

Results in Table 2 show that majority (100%) of the respondents were aware of OFPs. Majority (62%) indicated custodians of indigenous knowledge practices as their source of awareness while few (21 %) became aware of OFPs through friends. These results imply that large proportion of the respondents was aware about OFPs, and custodian of indigenous knowledge practices was the major source of awareness.

Table 1: Distribution of respondents by personal attributes

Variable	Frequency (n=100)	Percentage
Age		
Less than 20 years	1	1.0
21 – 40	40	40.0
41 – 60	47	47.0
61 and above	12	12.0
Mean age	47.5	
Marital status		
Married	87	87.0
Single	3	3.0
Divorced	6	6.0
Widow/widower	4	4.0
Religion		
Christianity	61	61.0
Islam	34	34.0
Traditional religion	5	5.0
Farm size		
Less than 1 Ha	24	24.0
1 – 2 Ha	23	23.0
2 – 3 Ha	12	12.0
3 – 4 Ha	23	23.0
5 and above	18	18.0
Mean	2.4	
Household size		
Less than 2 persons	4	4.0
3 – 5 persons	57	57.0
6 – 8 persons	39	39.0
Mean	5.0	
Educational level		
No formal education	33	33.0
Only adult education	13	13.0
Incomplete pry. education	3	3.0
Completed pry. education	10	10.0
Incomplete sec. education	8	8.0
Completed sec. education	20	20.0
Had beyond sec. education	13	13.0
Income level		
Below 5,000	1	1.0
6,000 – 10,000	12	12.0
11,000 – 15,000	12	12.0
16,000 – 20,000	17	17.0
Above 20,000	58	58.0
Mean	18,950.0	

Source: Field survey, 2013

Table 3: Respondents' awareness about OFPs

Variable	Frequency	Percent
Are you aware of OFPs?		
Yes	100	100
No		
Source of awareness		
Custodians of IKP	62	62.0
Extension agents	21	21.0
Mass media	9	9.0
NGO	8	8.0

Utilization of OFP

Results in Table 4 show that majority 86 %, of the farmers utilizes bush fallowing. While 59 per cent utilized agro-forestry, 38% utilized zero bushes burning. Furthermore weighted mean scores (WMS) obtained for each OFP show that bush fallowing (with weighted mean score of 1.99), mulching with refuse (1.88), green manure (1.53) were the most utilized OFP.

Reasons for OFP Utilization

Reasons for Utilizing OFP: Majority (78.0%) of the farmers utilized OFPs in their arable farming because they were easily practicable. Also, about 52.0% of the population used OFPS because fertilizers procurement was very expensive. About 50.0% of the farmers also reported that they utilized OFPs because materials for their preparation were readily available. Whereas, 13.0 % were of the opinion that extension services encourage the usage of the practices. The results corroborate the earlier report of Kolawole (2002) that 90% of the small holders utilized IKS in conserving soil fertility in Ekiti State because it is very ease to practice.

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Benefits of OFPs utilization

Most (86.0%) farmers were of the opinion that OFPs were environmentally friendly than modern methods. It was also believed that OFP practices were economically advantageous (80.0%) and produces no toxic and poisonous substances (77.0 %).

Constraints associated with the use of OFP

The results in Table 7 show that the major impediment to OFPs utilization was 'land tenure arrangement' (69%) and 'inadequate technical know how about OFPs' (67%). Other constraints were 'lack of organic materials' (61%) and 'unfamiliarity with the practice' (60%).

Table 4: OFPs utilized and level of utilization

Variable	Frequency	Percentage			
OFP utilized*					
Bush fallowing	86	86.0			
Composting	60	60.0			
Animal dropping	63	63.0			
Mulching with refuse	74	74.0			
Agro forestry	59	59.0			
Zero bush burning	38	38.0			
Green manure	65	65.0			
Crop rotation	28	28.0			
Level of utilization of OFP*	VMU	MU	FU	NU	WMS**
Bush fallowing	41	31	14	14	1.99
Composting	13	12	15	40	1.38
Animal dropping	30	14	19	37	1.37
Mulching with refuse	48	18	8	26	1.88
Agro-forestry	29	20	10	41	1.37
Zero bush burning	8	20	10	62	0.74
Green manure	35	18	12	35	1.53
Crop rotation	8	10	10	72	0.54

*Multiple responses, ** Weighted mean score (WMS)

Source: Field Survey, 2013

Table 5 Reasons for Organic Farming Practice utilization

Reasons for utilization	Frequency	Percentage
Easily practicable	78	78.0
Fertilizer procurement is very expensive	52	52.0
Materials for preparation is readily available	50	50.0
Extension encourage farmers to use it	13	13.

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Table 6 Benefits of using Organic Farming Practice

OFP benefits*	Frequency	Percentage
It's economically beneficial	80	80.0
It's environmentally friendly	86	86.0
It increases crop yield	56	56.0
Its produces are not toxic and poisonous	77	77.0
It's not as scarce as inorganic fertilizer	62	62.0

*Multiple response

Source: Field survey, 20113.

Table 6: Constraints to use of Organic Farming Practice

Variable	Frequency	Percentage
Constraints inhibiting use of OFP*		
Lack of organic manure materials	61	61
Inadequate technical knowledge about OFP	67	67
Land tenure system	69	69
Unfamiliarity with the practice	60	60

Source: Field survey, 2013

Results of the Chi-square analysis indicate significant association between *OFP utilization* and religion ($\chi^2 = 68.63$; $P<0.05$) and marital status ($\chi^2 = 65.48$; $P<0.05$) of respondents. The correlation analysis results show that only age ($r = 0.168$; $p < 0.10$) and farm size ($r = 0.280$; $P<0.05$) had positive and significant relationship with OFP utilization Table 7 . However, household size ($r = -0.404$; $p < 0.05$), income ($r = -0.217$; $P<0.05$) and *educational level* ($r = -0.275$; $P<0.05$) of respondents had significant but negative relationship with OFP utilization. The results of the regression analysis showed that only age and farm size significantly influenced farmers' utilization of OFP at $P<0.05$. The overall F-statistic of the model was 3.34 and significant at $P<0.05$. In addition the

ntage variation in OFP utilization accounted y the explanatory variables investigated in the was 15.1 % (R^2 = 0.151 (Table 8). The iation between religion and OFP utilization ate that religion could be used as avenue for assing for organic agriculture. It could be red from the relationship between marital s and OFP utilization, that spouses influenced other with respect to OFP utilization. With ct to age, the finding indicated that the older rmer, the more they are likely to utilize OFP. may be as a result of the perceived benefits derived from the use of OFPs over time. The positive and significant relationship between farm size and OFPs could be explained from the view point that the farmers would need greater and greater quantity as acreage of land they cultivate increases. The negative relationship between education and OFP utilization could be explained on the ground that the less educated farmer, who may have been well accustomed to indigenous farming practices, is likely to utilize OFPs more, thus explaining the negative relationship.

Table 7: Relationship between some selected variables.

Variable	Test statistic	p-value
	χ^2-value	
Religion	68.63	0.050**
Marital status	65.48	0.084*
	r-coefficient	
Age	0.168	0.096*
Household size	-0.404	0.042**
Income	-0.217	0.030**
Education	-0.275	0.006***
Farm size	0.280	0.005***

*significant at 0.10
**significant at 0.05
***significant at 0.01
Source: Computed from field survey, 2013.

Table 8: Results of the regression analysis

Variable	B-coefficient	t-value	p-value	F	R^2
Farm size	0.238	2.04**	0.048		
Age	-0.042	-0.331	0.740		
Household size	-0.062	-0.564	0.574	3.34***	0.151
Education	-0.251	-2.280**	0.025		
Income	-0.113	-1.114	0.268		

*significant at 0.10
**significant at 0.05
***significant at 0.01
Source: Computed from field survey, 2013.

Challenges for extension

From the findings of the study, extension agents have a great role to play in entrenchment of organic agriculture. There is need for extension to actively join the on-going global campaign for achieving sustainable and environmentally friendly agriculture through utilization of organic farming practices. This may only be achieved if extension, as a body of professionals, rises to the challenge; pull together research findings on numerous benefits and productive potentials of organic agriculture, prepare policy brief and advocates for its legislation.

Conclusions and recommendations

In conclusion, the findings of the study revealed that most farmers in the study area were aware of OFP, with custodian of indigenous knowledge being the major source of awareness, the OFPs mostly utilized in the area were found to be bush fallowing, mulching with refuse and 'green manuring'. The major impediments to OFPs utilization was 'land tenure system' and 'inadequate technical know how about OFPs'. In addition, religion and marital status had significant association with OFPs utilization, while only two variables, farm size and educational level of respondents significantly influenced the use of OFP in the study area. The major challenge, therefore, is the need for extension to take the lead in advancing organic agriculture, through facilitating provision of institutional support and suitable framework that will pave way for this.

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