

Awareness and Use of Sustainable Agricultural Practices by Arable Crop Farmers in Ikpoba Okha Local Government Area of Edo State

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Abstract

The study examined the awareness and use of sustainable agricultural practices by arable crop farmers in Ikpoba Okha Local Government Area of Edo State, Nigeria. With the use of structured questionnaire and interview schedule, a total of 96 arable crop farmers were surveyed for the study. Findings show that majority (64.4%) of the respondents were males while 68.9% of them either had primary or secondary education qualification and 18.9% had no formal education. All the respondents were aware of mixed cropping, 95.6% were aware of cover cropping and organic manure (87.8%). Only very few of the respondents were aware of practices like alley cropping, the use of green manure, crop rotation, and minimum tillage system which led to their non-usage of these practices. Information on sustainable practices was mostly obtained from fellow farmers. The major barriers to the use of sustainable agricultural practices were lack of government support, lack of funds and the cost of the sustainable practices. Findings also show that there was a significant association between farming experience and respondents' use of sustainable agricultural practices ($\chi^2 = 12.46$; $p < 0.05$) and a significant association between respondents' awareness and use of sustainable agricultural practices ($\chi^2 = 18.34$; $p < 0.05$). The introductions of adequate awareness and training programmes for farmers on sustainable agricultural practices were recommended.

Key words: Awareness, use, sustainable agricultural practices, arable crop farmers.

Introduction

Sustainable agriculture is an agricultural system adapted to a particular area so that crop and animal production do not decline over time and are reasonably stable over normal fluctuations of weather (Donahue and Troch, 2003). Francis and Youngberg (1990) indicated that sustainable agriculture satisfies human needs for fibre and food, protect natural resources and environmental quality. It is based on understanding the long-term impact of activities on the environment and other species, which invariably guides the application of resource conserving equitable farm system, maintains rural community

and quality of life. Sustainable agriculture according to Tititlola (2000) is based on practices that reduce environmental degradation, deteriorating range land and dwindling forest- conserve resources, provide an adequate and dependable farm income thereby reducing poverty.

However, the rapid change in population growth has resulted in major land degradation problems, expansion of cultivation on fragile forest cover, increased soil erosion, loss of fertility on arable lands and insufficient food production (FAD and IITA, 1999; Ewuim, *et al*, 1998). As a result of these problems, the issue of sustainable agricultural practices was introduced.

some of these practices include; mixed cropping, cover cropping, crop rotation, integrated pest management, alley cropping, organic manure application, improved varieties, green manure, minimum tillage system and mulching (Drost, *et al.*, 1996; FAD and IITA, 1999).

Unsustainable agricultural practices have led to poor agricultural productivity in Nigeria, which is a major determinant of food insecurity (Ayuk, 2001). According to Ikpi (1995), the poor performance of Nigerian farmers is attributed to their lack of use of sustainable agricultural practices and their lack of awareness about these sustainable agricultural practices. Therefore, sustainable agriculture is not only worth pursuing but also inevitable (Wilken, 1991). It was against this background that the study sought to ascertain the awareness and use of sustainable agricultural practices by arable crop farmers in Ikpoba Okha LGA of Edo State. The specific objectives were to examine the socio-economic characteristics of the farmers; ascertain the farmers' level of awareness about sustainable agricultural practices; identify the farmers' sources of information with respect to sustainable agricultural practices; determine extent of use of sustainable agricultural practices by respondents; and identify the barriers to the use of sustainable agricultural practices.

The hypotheses of the study were: a) There is no significant relationship between the farmers'

socio-economic characteristics and their use of sustainable agricultural practices. b) There is no significant relationship between the farmers' awareness and their use of sustainable agricultural practices.

Methodology

The study was carried out in Ikpoba Okha Local Government Area of Edo State, Nigeria. The target population for the study was the registered arable crop farmers of Agricultural Development Programme (ADP). Out of the 8 cells in the local government area based on the ADP classification, 4 cells were randomly selected. Twenty four registered farmers were randomly selected from each cell making a total of 96 respondents for the study. Data were collected using structured questionnaire. However, only 90 copies of the questionnaire were found useful. The questionnaire contained a 4-point Likert-type scale of very often = 4, often = 3, rarely = 2, never = 1 in determining level of usage of sustainable practices and sources of information while a 3-point Likert-type scale of Serious (3), Not too serious (2), Not a problem at all (1) for determining respondents barriers to the use of sustainable agricultural practices.

Descriptive statistics such as simple frequency, percentage, mean and standard deviation were used. Also, inferential statistics such as chi-square was used to test the level of association between variables.

Results and Discussion

Socio-economic characteristics of respondents

Table 1 shows the socio-

economic characteristics of the respondents. The result shows that majority (64.4%) of the respondents were males, indicating that males were more involved in arable cropping in the study area. Table 1 also shows that 44.4% of the respondents were above 50 years old, which means that a good number of older respondents were involved in arable crop farming. The implication could be that productivity would be low as farming activities are left in the hands of the aged who are less active. However, majority (63.3%) of the respondents were married which agrees with the findings of Onasanya (2007) that most crop farmers are married and Soyebó *et al.* (2005) that agriculture is very much practiced by married people to make ends meet and cater for their children. As regards educational qualification, majority of the respondents (68.9%) either had primary or secondary education and 18.90% had no formal education. This means that more of the respondents had low level of education.

The result also shows that majority (68.9%) of the respondents were Christians. Result also shows that majority (62.2%) of the respondents had 1-2 hectares, thus, most of them are small-scale farmers. This finding agrees with that of Omohan (1996) that small farm holdings constitute most of the farming activities in Nigeria. Majority (76.7%) of respondents practiced mixed cropping. This agrees with the view of Youdeowei and Akinwumi (1999) that most farmers practice

mixed cropping in Nigeria as it produces high total yields. However, a large number of the respondents (32.2%) had farming experience of about 20 years with many of them (55.6%) using a combination of family and hired labour, 31.1 % used family labour. This result agrees with the view of F AO (2005) that family labour is mostly used in agriculture in the developing countries.

Respondents' Awareness of Sustainable Agricultural Practices

Table 2 shows the respondents awareness of sustainable agricultural practices. The result shows that all the respondents were aware of mixed cropping, majority (95.6%) of the respondents were aware of cover cropping and organic manure fertilizer application (87.8%), while very few of them (4.4%) were aware of alley cropping. These results are in agreement with the findings of Akinbile and Odebode (2002) who reported that farmers in Osun State are aware of these sustainable agricultural practices and even more.

Respondents' Information Sources on Sustainable Agricultural Practices

Table 3 shows the information sources of the respondents. The result shows that other farmers ($\chi^2= 2.91$), friends and relatives ($\chi^2= 2.90$), radio ($\chi^2=2.33$) and extension agents ($\chi^2 = 2.19$) were the most significant sources used by the respondents to obtain information on sustainable agricultural practices. These findings supported the view of Anholt (1994) that the rise in farmers preferring other farmers as a first

Table 1. Socio-economic characteristics of the respondents

Sex	Frequency	Percentage
Male	58	64.4
Female	32	35.6
Age		
30 and above	13	14.4
31-40	17	19.0
41-50	20	22.2
Above 50	40	44.4
Marital status		
Single	13	14.4
Married	57	63.3
Divorced	8	9.0
Widow(er)	12	13.3
Educational qualification		
No formal education	7	18.9
Primary education	39	43.3
Secondary education	23	25.6
Tertiary education	11	12.2
Religion		
Christianity	62	68.9
Islam	5	5.6
Traditional	23	25.6
Farm size (hectares)		
One and below	30	33.3
1.1-2.0	26	28.9
2.1-3.0	17	18.9
Above 3.0	17	18.9
Cropping system		
Monocropping	21	23.3
Mixed cropping	69	76.7
Farming experience		
1-5	25	27.8
6-10	24	26.7
11-15	8	8.9
16-20	4	4.4
>20	29	32.2
Labour		
Family labour	28	31.1
Hired labour	12	13.3
Group labour	-	-
Family and hired labour	50	55.6
Hired and group labour	-	-

Field survey 2007

Table 2. Respondents' awareness of sustainable agricultural practices

Practices	Aware		Not aware	
	Frequency	Percentage	Frequency	Percentage
Mixed cropping	90	100.0	0	0.0
Cover cropping	86	87.8	4	4.4
Organic manure application	79	80.0	11	12.2
Mulching	72	60.0	18	20.0
Improved varieties	54	58.9	36	40.0
Integrated pest management	53	23.3	37	41.4
Minimum tillage	21	15.6	69	76.7
Crop rotation	14	5.6	76	84.4
Green manure	5	4.4	85	94.4
Alley cropping	4		86	95.6

Table 3: Information sources of the respondents and their extent of use of these practices

Sources	Very often		Often		Rarely		Never		Total Mean	SD
	Freq	%	Freq	%	Freq	%	Freq	%		
Other farmers	27	30.0	43	47.5	5	5.6	15	16.7	2.91	1.01
Friends and relatives	25	27.8	45	50.0	6	6.7	14	15.6	2.90	0.98
Radio	3	3.3	49	54.4	13	14.4	25	27.8	2.33	0.92
Extension agents	2	2.2	15	16.7	71	78.9	2	2.2	2.19	0.49
Television	3	3.3	42	46.7	14	15.6	31	34.4	2.09	0.96
Print media	1	1.1	3	3.3	5	5.6	81	90.0	1.16	0.52
Bulletin	-	-	1	1.1	3	3.3	86	95.6	1.06	0.27

Likert-type scale (4=very often, 3=often, 2=rarely, 1 = never) Source: Field survey, 2007

hand information source may be due to the apparent ineffectiveness in the public extension in the public extension services in developing countries. Ajayi (2003) also found that radio was the most frequently used media by farmers in South-West Nigeria to obtain agricultural

information. The print media ($\chi^2 = 1.16$) and bulletins ($\chi^2 = 1.06$) were not important sources of information often used by the respondents, this is not surprising as a good number of the respondents had low level of education, therefore were not able to read.

Respondents' Use of Sustainable Agricultural Practices

Table 4 shows the extent of use of sustainable agricultural practices by the respondents. The result shows that mixed cropping ($\chi^2=3.57$), minimum tillage system ($\chi^2=3.38$), cover cropping ($\chi^2=2.88$) and mulching ($\chi^2=2.76$) were the most used sustainable agricultural practices by the respondents. The result on mulching agrees with the findings of Onasanya (2007) who reported that crop farmers used mulching as sustainable practice while most of the remaining results agree with the findings of Akinbile and Odebode (2002) who reported that farmers in Osun State identified and used mixed cropping, cover cropping and mulching and minimum tillage system. The non-usage of alley farming practice is not unexpected as many of the respondents were not aware of the practice as shown in Table 2.

Respondents' Barriers to the Use of Sustainable Agricultural Practices

The result in Table 5 showed the factors that were the respondents' major barriers in using sustainable agricultural practices. These were lack of government's encouragement ($\chi^2=2.86$), lack of finance ($\chi^2=2.64$), and the practices were expensive ($\chi^2=2.33$). These findings agree with that of Drost *et al.* (1996) that Utah farmers experience financial barriers to the use of sustainable agricultural practices.

Relationship Between Respondents' Socio-Economic Characteristics and Their Use of Sustainable Agricultural Practices

Table 6 shows the relationship between respondents' socio-economic characteristics and their use of sustainable agricultural practices. The result shows that there was a significant association between farming experience and respondents' use of sustainable agricultural practices ($\chi^2=12.46$; $p<0.05$). This means that the more experienced the farmers are the more they can possibly use sustainable agricultural practices. The result of no significant relationship between respondents' educational qualification and use of sustainable agricultural practices ($\chi^2=1.24$; $p>0.05$) is surprising because it is expected that the higher the respondents' educational qualification the higher will be the use of sustainable agricultural practices and vice versa. Similarly, the non-significant association of farm size with the use of sustainable practices contradicts the findings of Akinbile and Odebode (2002) that respondents' farm size had significant relationship on respondents' use of sustainable agricultural practices in Osun State, Nigeria.

Relationship Between Respondents' Awareness and Use of Sustainable Agricultural Practices

The analysis of the data collected shows the relationship between respondents' awareness and use of sustainable agricultural practices. The result shows that there was a significant association between respondents'

Table 4: Respondents' identification practices in the study area ad their extent of use of these practices.

Practices	Very		Often		Rarely		Never		Total	SD
	Freq	%	Freq	%	Freq	%	Freq	%	Mean	
Mixed cropping	77	85.6	-	-	-	-	13	14.4	3.57	1.06
Minimum	44	48.9	40	44.4	2	22	4	4.4	3.38	0.75
Cover cropping	48	53.3	11	12.2	3	3.3	28	31.1	2.88	1.35
Mulching	37	41.1	22	24.4	3	3.3	28	31.1	2.76	1.28
Integrated pest	22	24.4	26	28.9	10	11.1	32	35.6	2.24	1.21
Organic manure	1	1.1	11	12.2	21	23.3	57	63.3	1.51	0.75
Improved	2	2.2	11	12.2	6	6.7	71	78.9	1.38	0.79
Crop rotation	2	2.2	4	4.4	3	3.3	81	19	1.19	0.62
Green manure	-	-	3	3.3	1	1.1	86	95.6	1.08	0.37
Alley cropping	-	-	1	1.1	3	3.3	86	95.6	1.06	0.27

Likert-type scale: 4 = very often, 3 = often, 2 = rarely, 1 = never)

Table 5: Respondent's barrier to use of sustainable agricultural practices

Barriers	Serious		Not too serious		Not a problem		Total	Standard deviation	
	Freq	%	Freq	%	Freq	%	Mean		
No encouragement from government	81	90	5	5,6	4		4.4	2.86	0.46
Lack of finance	72	80	4	4.4	14		15,6	2.64	0,74
Expensive	52	57.8	16	17.8	22		24.4	2.33	0.85
Lack of interest	27	30.0	12	13.3	51		56.7	1.73	0.90
Lack of labour	25	27.8	16	17.8	49		54.4	1.73	0.87
Special knowledge/skill is required	7	7.8	44	48.9	39		43.3	1.64	0.62
Not well explained	3	3.3	48	53.3	39		43.3	1.60	0.56
Difficult to apply them	8	8.9	33	36.7	49		54.4	1.54	0.66
Don't see any benefit	16	17.8	10	11.1	64		71.1	1.47	0.78

Likert-type scale 3 = serious, 2 = Not too serious, 1 = Not a problem at all

Table 6: Relationship between respondents' socio-economic characteristics and their use of sustainable agricultural practices

Socio-economic	Chi-square	p value	Decision
Age	1.19	0.560	Not significant
Educational qualification	1.24	0.162	Not significant
Farming experience	12.46	0.000	Significant
Farm size (ha)	1.48	0.426	Not significant
Farming system practiced	1.80	0.346	Not Significant

Significant at P<0.05

awareness and use of sustainable agricultural practices ($\chi^2 = 18.34$; $p < 0.05$). The significant association means that the higher the respondents' awareness, the higher the likelihood of respondents' use of sustainable agricultural practices. This result is not unexpected as this was reflected in the findings in Tables 3 and 4 which showed that the most sustainable practices respondents were mostly aware were also the most used practices.

Conclusion and Recommendations

The findings of this study have shown that awareness is an important process on the use of sustainable agricultural practices by farmers. The non awareness and reliance on fellow farmers as sources of information led to the non-usage of important sustainable practices such as alley cropping, the use of green manure, crop rotation, and minimum tillage system. The study has also shown that lack of support from government and lack of finance may be barriers to the use of sustainable agricultural practices. Based on these findings, the following recommendations are proposed:

1. There is a need for educational programmes/training courses for farmers on sustainable agricultural practices so as to be more familiar with improved sustainable practices that will improve their productivity.
2. There is a need for extension agents to lay more emphasis on sustainable practices and also to disseminate information to them and address their

needs pertaining to sustainable agricultural practices.

3. The government should consider granting incentives and assistance to the agricultural sub-sector and to the farmers in form of credit as these would enable them take action to use sustainable agricultural practices.
4. There is a need for more publicity on sustainable agricultural practices which should be done mostly on radio and television so as to create more awareness to farmers.

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