

UTILISATION OF SUSTAINABLE AGRICULTURAL PRACTICES AMONG CROP FARMERS IN IBESIKPO ASUTAN LOCAL GOVERNMENT AREA, AKWA IBOM STATE

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ABSTRACT: *The study examined utilisation of sustainable agricultural practices among crop farmers in Ibesikpo Asutan Local Government Area of Akwa Ibom State. A total of 120 respondents were selected for the study using multi-stage sampling technique. Structured questionnaires were used for data collection. The data were analysed using descriptive and inferential statistical tools. Results showed that the mean age of the respondents was 44.77 years. Also, 60.00% were married, while 65.00% were females. Mixed cropping and organic manure application ranked 1st and 2nd most used sustainable agricultural practices. Utilisation of sustainable agricultural practices was low. Significant relationships existed between household size ($r^2 = 0.342$, $p < 0.05$), educational status ($\chi^2 = 4.325$, $p < 0.05$), knowledge level ($r^2 = 0.154$, $p < 0.05$) and use of sustainable agricultural practices. It is recommended that policies and programmes of the government be directed at increasing utilisation of sustainable agricultural practices. Moreover, extension and farmers' organisations should work towards increasing farmers' knowledge on the importance and use of sustainable agricultural practices.*

KEYWORDS: Utilisation, Sustainable, Agricultural practice, Mixed cropping, Knowledge Level

INTRODUCTION

Agriculture plays important role in shaping the economy of many countries. In Nigeria, it is the highest employer of labour and serves as a major means of livelihood to about 70% of its population (World Bank, 2001). Agriculture provides over 90% of the food consumed locally and contributes about 41.5% of the Gross Domestic Product (GDP) of Nigeria (Oluigbo, 2012). It is a major source of household income and provides raw materials for agro-based industries. Agriculture enhances food security and impacts on the overall economic growth of the country. It also provides feed for domestic animals and most of its by-products are of economic importance.

Man's activities in his quest to make ends meet have caused vital damages to natural balance. Soils are depleted due to continuous cropping and other activities. The increasing population and excessive pressure on land on one part and inappropriate activities on the other have caused great damage to the soil. Estimates indicate that nearly two billion hectares of land worldwide are seriously degraded, some irreversibly (FAO, 2010). Also, based on the report by FAO (2003), more than one third of lands in the world have been subjected to soil erosion and about 5 to 7 million hectares of arable agricultural land have been destroyed due to lack of proper management, use of improper methods of farming and over-grazing.

In terms of economic impact, soil degradation is a serious threat to the Nigerian economy. Agriculture accelerates the loss of natural ecosystems. In addition to loss of natural ecosystems, it adds significant and detrimental amounts of nitrogen and phosphorus to the environment. The detrimental effects of these agricultural practices are often not recognised by many farmers, therefore do not consider how to avert them. These however, result in unsustainable agricultural production. However, an increasing knowledge of the effects of these practices has brought about the desire for sustainable agriculture. To achieve the sustainability in agricultural production, agricultural systems must intensify the use of land and water resources without damaging the environment (Dixon, Gibbon and Gulliver, 2001).

Sustainability is a concept increasingly used in reference to economic performance of human activities and actions that affect not just the present but also future generations. These activities include farming, logging and mining in relationship to the environment. Following the most general definition, an economic activity is considered sustainable if it could be carried out indefinitely. Therefore, for an activity to be sustainable, it must meet the present demand without jeopardising its ability to meet the demands of generations to come. Sustainable Agricultural production is the management and utilisation of agricultural ecosystem in a way that maintains its biological diversity, productivity, regeneration capacity, vitality and ability to function so that it can fulfil the present and future significant economic and social functions that do not harm other ecosystems (Budelman, 2002). It aims at providing an adequate and dependable farm income thereby reducing poverty (Titilola, 2000).

The issue of sustainable agricultural practices was introduced as a result of some problems associated with the cultivation of land overtime. Some of the sustainable agricultural practices include mixed cropping, cover cropping, organic manure application, minimum tillage and mulching. These practices are effective in increasing agricultural productivity and at the same time enhance the quality of the soil. Sustainable crop production practices minimize the use of non-renewable inputs that damage the environment or harm the health of crop farmers and consumers. The use of sustainable agricultural practices brings much benefit to the farming community in the long-run in terms of combating hunger and poverty and enhancing higher agricultural productivity. Not only does sustainable agriculture address the protection of the environment, it also considers the returns on agricultural enterprise to the farmers. Therefore, sustainable agricultural production is not only worth pursuing, but also essential. However, though the benefits of sustainable agricultural practices are enormous, their use seems low.

In Nigeria, the most serious challenge to agriculture is how to meet the food needs of the ever increasing population in the face of political, social, cultural and economic problems. Natural resources such as land, water and energy are unsustainably used. This has brought about issues relating to gradual decline in land productivity such as top soil depletion, erosion and soil compaction in agrarian communities, including Ibesikpo Asutan Local Government Area of Akwa Ibom State. It is therefore necessary to change from harmful practices that bring about negative effects on the soil to more sustainable practices. In order to achieve this, policies and programmes have to be developed and implemented to encourage farmers utilise these practices. However, data on the extent of use of these practices in the study area are lacking. This study therefore assessed the extent of use of sustainable agricultural practices among farmers in Ibesikpo Asutan Local Government Area of Akwa Ibom State.

The specific objectives of the study were to:

- i. identify the personal characteristics of crop farmers in Ibesikpo Asutan Local Government Area of Akwa Ibom State.
- ii. identify the sustainable agricultural practices used by crop farmers in the study area.
- iii. assess the farmers' knowledge level on sustainable agricultural practices in the study area.
- iv. determine the extent of use of sustainable agricultural practices by farmers in the study area.

The following hypotheses were tested:

- i. There is no significant relationship between the personal characteristics of the farmers and use of sustainable agricultural practices.
- ii. There is no significant relationship between farmers' knowledge level on sustainable agricultural practices and use of sustainable agricultural practices

METHODOLOGY

The study was carried out in Ibesikpo Asutan Local Government Area of Akwa Ibom State. The local government area is located within the fresh water swamp forest zone, characterized by low level land and shallow depressions and has a total land mass of about 149.49 square kilometres (Udofia, 2007). The people are generally homogenous and speak Ibibio language. Ibesikpo Asutan Local Government Area is blessed with mineral deposits including crude oil, clay and limestone. The major livelihood activities of the people are farming, trading and processing of agricultural products. The population of the study included all crop farmers in the study area. The study adopted a multi-stage sampling technique to select 120 respondents for the study. The first stage was a stratified sampling procedure where the 79 villages that make up the local government area were divided into four groups consisting of about 20 villages each. Two villages were randomly selected from each of the four groups making a total of 8 villages. The study then adopted a proportional sampling procedure to select 15 respondents from each of the 8 villages, making a total of 120 respondents. Structured questionnaires were used for data collection. Data were analysed using frequencies, percentages, means and ranks. Also, Chi-square and Spearman Rho Rank Correlation were used to test the hypotheses.

RESULTS AND DISCUSSION

Personal Characteristics of Crop Farmers

Table 1 shows that 61.70% of the respondents were 50 years of age and below, while those above 50 years accounted for the remaining 38.30%. The mean age was 47.77. This age distribution has positive implication on the availability and quality of farm labour in the area. It also affects the extent to which sustainable agricultural practices are utilised, as many of the practices are labour intensive. This collaborates an earlier finding by Akinbile and Odebode (2007) who noted that age has a direct bearing on the availability of farm labour.

Table 1 also shows that 35.00% of the respondents were males, while 65.00% were females, indicating that majority of the farmers in the study area are females. This conforms to the findings of Udofia (2007) who observed that there is a dominance of females in farming activities in Akwa Ibom State.

According to Table 1, 60.00% of the respondents were married, while singles, divorced and widowed accounted for 40.00%. This shows the importance placed on marriage in the study area. Soyebó, Farinde and Adetayo (2005) also noted that agriculture is very much practiced by married people to make ends meet and cater for their family needs. Table 1 also shows that only 16.67% of the respondents had no formal education, while 83.33% had one level of formal education or the other. This agrees with the findings of Adesoji and Farinde (2006) who reported that most crop farmers in Rivers State are literate. The high literacy rate observed among the farmers is expected to influence their utilisation of sustainable agricultural practices.

Christians accounted for 97.50% of the respondents, while 2.50% were members of African Traditional Religion. Also, 45.83% of respondents had household sizes of not more than 1-5 persons, 53.33% had household sizes ranging from 6 -10 persons, while only 0.83% of the respondents had more than ten persons in their households. This may be due to the high percentage of farmers in the study area who are married and the desire for large households. The large household sizes could translate into increased availability of family labour and may positively result in improved utilisation of some of the labour intensive sustainable agricultural practices.

Table 1: Distribution of Respondents by Personal Characteristics

Age(years)	Frequency	Percentage	Mean
≤ 20	2	1.70	
21-30	5	4.17	
31-40	27	22.50	
41-50	40	33.33	44.77
51-60	38	31.70	
61 & above	8	6.70	
Sex			
Male	42	35.00	
Female	78	65.00	
Marital Status			
Single	18	15.00	
Married	72	60.00	
Divorced	6	5.00	
Widowed	24	20.00	
Educational Status			
Informal	20	16.67	
Primary	42	35.00	
Secondary	38	31.67	
Tertiary	20	16.67	
Religion			
Christianity	117	97.50	
Islam	0	0.00	
African Traditional Religion	3	2.50	

Household Size		
1-5 person(s)	55	45.83
6-10 persons	64	53.33
>10 persons	1	0.83

Source: Field survey, 2014

Sustainable Agricultural Practices Used by Crop Farmers

Table 2 shows that 95.83% of the respondents indicated that they use mixed cropping and apply organic manure as sustainable agricultural practices. The use of mixed cropping may be attributed to the advantage of planting and reaping multiple crops from the same piece of land simultaneously. This is in consonant with the findings of Awoyinka (2009) who noted that most farmers in South-west Nigeria practice mixed cropping. Also, cover cropping and mulching were indicated by 77.50% and 81.67% of the respondents respectively as sustainable agricultural practices used in the area. However, Alley Cropping, Contour Cropping and Irrigation were indicated by only 38.33%, 36.67% and 33.33% of the respondents respectively as sustainable agricultural practices utilised in the area. The non-use of the sustainable agricultural practices could be as a result of the ignorance of the farmers of the efficacy of these practices as sustainable agricultural strategies. Observation reveals that every farmer applied at least one sustainable agricultural practice or the other. This implies that farmers wish to maintain the fertility of their farms by using these practices.

Table 2: Sustainable Agricultural Practices Used by Farmers in the Study Area

Sustainable Agricultural Practices	Frequency	Percentage (%)
Mixed Cropping	115	95.83
Cover Cropping	93	77.50
Organic Manure Application	115	95.83
Mulching	98	81.67
Use of improved varieties of crops	78	65.00
Integrated pest management	52	43.33
Minimum Tillage	86	71.67
Crop Rotation	80	66.67
Alley Cropping	46	38.33
Bush Fallowing	82	68.33
Inter Cropping	81	67.50
Contour Cropping	44	36.67
Irrigation	40	33.33

Source: Field Survey, 2014

Farmers' Knowledge of Sustainable Agricultural Practices

According to Table 3, 98.33% of the respondents know that mulching helps to conserve soil moisture. Also, 97.50% of the respondents have fair knowledge that use of organic manure helps to increase the nutrient content of the soil. In addition, 93.33% of the respondents know that continuous cropping does not improve the quality of the soil. These results indicate that most farmers in the area are knowledgeable of the various practices that can help to conserve the soil. The finding is in agreement with the observation of Akinbile and Odebo (2002) who reported that majority of the farmers have high knowledge of sustainable agricultural practices. However, 49.17% of the respondents do not know that alley cropping is beneficial

to the soil. Also, 30.00% of the respondents are ignorant of the fact that integrated pest management can increase agricultural production. The farmers are also knowledgeable of those practices that are detrimental to sustainable use of the soil for agricultural production.

Table 3: Respondents' Knowledge Level on Sustainable Agricultural Practices

Questions	Yes		NO	
	Freq	(%)	Freq	(%)
Does mulching help to conserve soil moisture?	118	98.33	2	1.67
Can the use of organic manure help to increase the nutrient content of the soil?	117	97.50	3	2.50
Is continuous bush burning good for the soil?	13	10.83	107	89.17
Does mulching promote growth of weeds?	35	29.17	85	70.83
Can integrated pest management help to increase agricultural production?	84	70.00	36	30.00
Does continuous cropping help to improve the quality of the soil?	8	6.67	112	93.33
Does cover cropping provide any benefit to the soil?	24	20.00	96	80.00
Can excessive tillage of the soil destroy the soil structure?	97	80.83	23	19.17
Does mixed cropping increase crop yield?	83	69.17	37	30.83
Can crop rotation help to prevent disease build up in the soil?	91	75.83	29	24.17
Is it true that bush fallowing does not restore the fertility of the soil?	21	17.50	99	82.50
Does minimum tillage of the soil minimize soil erosion?	107	89.17	13	10.83
Is it true that alley cropping does not provide any benefit to the soil?	59	49.17	61	50.83

Source: Field Survey, 2014

Extent of Use of Sustainable Agricultural Practices

The results as presented in Table 4 show that mixed cropping and organic manure application were the most used sustainable agricultural practices with mean utilisation indexes of 1.89 and 1.85 and ranked 1st and 2nd respectively. Mulching ranked 3rd most used sustainable agricultural practice with mean utilisation index of 1.38. This is in agreement with the findings of Onasanya (2007) who reported that most crop farmers use mulching as sustainable agricultural practice to conserve the soil. However, alley cropping, contour cropping and irrigation with mean utilisation indexes of 0.76, 0.68 and 0.32 respectively were rarely used by the respondents. The low utilisation of contour cropping and alley cropping could be attributed to the low knowledge of the respondents on these strategies as sustainable agricultural practices.

Table 4: Extent of Use of Sustainable Agricultural Practices

Sustainable Agricultural Practices	Utilisation (%)			Mean	Rank
	Never	Rarely	Often		
Mixed cropping	2.50	5.83	91.67	1.89	1 st

Cover cropping	5.00	39.17	55.83	1.51	3 rd
Organic manure application	0.83	13.33	85.83	1.85	2 nd
Mulching	4.17	53.33	42.50	1.38	5 th
Use of improved varieties of crops	15.00	50.00	35.00	1.20	8 th
Integrated pest management	31.67	55.83	12.50	0.81	10 th
Minimum tillage	6.67	45.83	47.50	1.41	4 th
Crop rotation	15.00	38.33	46.67	1.32	6 th
Alley cropping	49.17	25.83	25.00	0.76	11 th
Bush fallowing	27.50	31.67	40.83	1.13	9 th
Inter cropping	13.33	42.50	44.17	1.31	7 th
Contour cropping	55.00	21.67	23.33	0.68	12 th
Irrigation	58.33	39.17	2.50	0.32	13 th

Source: Field Survey, 2014

Index of Utilisation of Sustainable Agricultural Practices

According to Table 5, 68.33% of the respondents had utilisation index of less than 1.5. This indicates that utilisation of sustainable agricultural practices by farmers in the study area is low. However, 31.67% of the respondents had high utilisation of the practices with an index of equal to or above 1.5. The extent of utilisation of sustainable agricultural practices in the area could be said to be low, indicating that agricultural production in the area is likely to be unsustainable. According to Barlas, Damicanos, Kasimis and Skuras (2001) farmers fail to adopt sustainable agricultural practices because they are either unable or unwilling to adopt.

Table 5: Index of Utilization of Sustainable Agricultural Practices

Indicator	Utilization index	Frequency	Percentage
Low	< 1.5	82	68.33
High	≥ 1.5	38	31.67

Result of Tested Hypotheses

H₀₁: There is no significant relationship between the personal characteristics of crop farmers and use of sustainable agricultural practices.

Table 6 shows that there is a significant relationship between household size ($r^2 = 0.342$, $p < 0.05$), educational status of the respondents ($\chi^2 = 4.325$, $p < 0.05$) and use of sustainable agricultural practices. This means that the larger the household size of the respondents, the higher the extent of use of sustainable agricultural practices. The table also indicates that there is no significant relationship between the respondents' age ($r^2 = -0.090$, $p > 0.05$), sex ($\chi^2 = 0.184$, $p > 0.05$), marital status ($\chi^2 = 2.562$, $p > 0.05$) and use of sustainable agricultural practices. This means that the age, sex and marital status do not influence the extent of use of sustainable agricultural practices in the area.

Table 6: Relationship between Personal Characteristics of the Respondents and Use of Sustainable Agricultural Practices

Variable	r^2	p	Remark
Age	-0.090	0.327	Not significant
Household size	0.342	<0.001	Significant

Variable	χ^2 value	df	cc	p	Remark
Educational status	4.325	1	0.187	0.038	Significant
Marital status	2.562	3	0.145	0.464	Not significant
Sex	0.184	3	0.039	0.980	Not significant

Ho₂: Relationship between farmers' knowledge level and use of sustainable agricultural practices.

Table 7 reveals that there is a significant and positive relationship between knowledge level of the respondents and use of sustainable agricultural practices ($r^2 = 0.154$, $p < 0.05$). This implies a direct relationship between the two variables and shows that the higher the knowledge level of the respondents on sustainable agricultural practices, the higher the extent to which they use sustainable agricultural practices.

Table 7: Relationship between Farmers' Knowledge and Use of Sustainable Agricultural Practices

Variable	r^2	p	Remark
Knowledge level	0.154	0.004	Significant

CONCLUSION AND RECOMMENDATION

Most crop farmers in Ibesikpo Asutan Local Government Area are married and with formal education. Major sustainable agricultural practices used in the area include mixed cropping and organic manure application. Farmers in the area are knowledgeable of some of the various sustainable agricultural practices. Generally, extent of utilisation of sustainable agricultural practices in the area is low with more than two-thirds of the respondents having utilisation index below average. There are significant relationships between household size, educational status, knowledge level of the farmers and use of sustainable agricultural practices. It is recommended that policies and programmes of the government be directed at increasing utilisation of sustainable agricultural practices. Moreover, extension and farmers' organisations should work towards increasing farmers' knowledge on the importance and use of sustainable agricultural practices.

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