

Original Research Article

**ASSESSMENT OF THE USE OF SOIL IMPROVEMENT MANAGEMENT
PRACTICES AMONG ARABLE FARMERS IN EGBEDORE LOCAL
GOVERNMENT AREA OSUN STATE, NIGERIA.**

Abstract

The study assessed the use of soil improvement practices among arable crop farmers in Egbedore Local Government Area of Osun State, Nigeria. Primary data were collected from one hundred and twenty farmers randomly from six communities through the use of structured interview schedule. Data were analysed using descriptive statistics and correlation analysis. The results show that most of the farmers were between the ages of 21 and 60 years with mean age of 43.5. The large household size of respondents indicates that farmers depended more on family members for labour. The soil improvement practices which were mainly used by the respondents were: bush fallowing, mixed cropping, mulching, animal droppings and application of NPK fertilizer. The use of compost, superphosphates were not common among the arable crop farmers in the study area. Majority (72.5%) of the respondents preferred using planting systems as soil improvement practices. The result of the correlation analysis shows that there was significant relationship between respondents' farming experience, level of education and the use of soil improvement practices at $P \leq 0.05$ and $P \leq 0.01$ respectively. The numbers of soil improvement practices used was determined by the years of formal education and years of farming experience. There was a significant relationship between the level of skill and knowledge of respondents in any soil improvement practice ($r = 0.772$; $P \leq 0.01$). This implies that the use of any of the soil improvement practice is determined by the level of knowledge and skill of the farmer on that practice. It was recommended that farmers should be trained in skills and knowledge of different planting systems, preparation of organic practices and proper use of both organic and inorganic fertilizers.

Key Words: Assessment, Improvement, Practices, Arable, Farmers

Introduction

Agriculture plays a major role in the sustenance and existence of man. Food is first and most important necessity of life of the basic needs of man. All animals, including man, depend mainly on plant products for the nutrients necessary for their growth and

development. There has been an increase in human and animal population, the persistent situation which increases the demand for arable crops on a daily basis. With this development, there is a serious competition for arable crops like maize, cassava, yam etc between man and livestock. Thus, there is the need to increase food production in order to meet the demands of teeming population.

In addition, food produced by cultivating the same piece of land is exposed to gradual decrease in yield. It has been established by Evans (2005), Conor (2006) and of Environment Canterbury (2009) that when a piece of land is cultivated continually for a few consecutive years, the soil gradually loses its fertility and so the yield decrease. Evans (2002), asserted that non-replacement of nutrients continually removed from the soil by the crop oxidation of organic matter and erosion reduces crop yields. This yields decrease consequently leads to reduction in the total food available for consumption.

So, many measures have been taken by the Nigerian government and farmers to improve the quality of the soil. Chude (2009) submitted that in the past 40 years several technologies to improve the productivity capacity of Nigerian soil have been devised. These include importation of inorganic fertilizers by the government, use of agro-forestry practice, mulching, use of compost, organic manure, mixed farming, mixed cropping among others. Each of these technologies has merits and demerits which account for disparity in the use of soil improvement practices. Inorganic fertilizer may increase yield of crops faster than other practices because it releases nutrients to soil faster, but it is not readily available and farmers at times do not know the right quantity for the type of soil available for specific crop production. The farmers may even not know the right time to apply these fertilizers. Organic manures are said to be slow in releasing nutrients but preferred to other practices because

61 famers believed that it is more health friendly. However there is a constraint as to how to
62 prepare these various types of organic manures

63 Based on the foregoing, there is the need to assess the soil improvement practices
64 used by farmers in Egbedore Local Government Area of Osun State. The choice of the Local
65 Government was informed by farming being the predominant occupation in the area.

66 **Objectives of the study**

67 The main objective of the study is to assess the soil improvement practices used by farmers
68 in Egbedore Local Government Area of Osun State, Nigeria.

69 The specific objectives are to:

- 70 ➤ identify the type of soil improvement practices used by arable crop farmers in the
71 study area;
- 72 ➤ identify the soil improvement practices preferred by arable crop farmers in the area
73 and;
- 74 ➤ determine factors influencing the choice of soil improvement practices in the study
75 area

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78 **Hypothesis**

79 ➤ There is no significant relationship between farmer's socio-economic characteristics
80 and the use of soil improvement practices

81 ➤ There is no significant relationship between knowledge and skill of arable crop
82 farmers and their use of soil improvement practices

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84 **Methodology**

85 The study was conducted in Egbedore Local Government Area of Osun State,
86 Nigeria. Egbedore Local Government Area of Osun State which was the study area is
87 situated to the West by Ejigbo Local Government Area, to the South by Ede North Local
88 Government Area and to the East by Irepodun Local Government Area. The Local
89 Government Area (LGA) has an estimated population of 4,137,627 (NPC 2006). The
90 inhabitants of this area are mainly Yorubas. Other ethnic groups are Tivs, Ibos, few Hausas
91 but the Yorubas who are indigenes of the Local Government Area engaged primarily in
92 arable crop production. They grow wide range of crops such as maize, cassava, yam, melons,
93 soybeans, and cocoyam. Some parts of the local government area also grow cocoa, kolanut,
94 banana and some inhabitants also engage in other activities such as trading, carpentry,
95 bricklaying e.t.c.

96 The target population for the study was small scale farmers. Farmers in all the community in
97 the LGA grow arable crops where in six communities were randomly selected and twenty
98 farmers were randomly selected from each of the communities selected. The communities
99 selected for the study are Ikotun, Ojo, Iwoye, Aro, Alaasan and Awo. A total of 120 farmers
100 were selected for the interview. A well structured interview schedule was used to collect data

for the study. Data were analyzed using descriptive techniques such as frequency counts, percentages, mean and standard deviation. Correlation analysis was used to make inferential deductions from the hypotheses set for the study.

Results and Discussion

Socio economic characteristics of farmers

Age: Most (74.2%) of the farmers were between ages 21 and 60 years with mean age of 43.5 and standard deviation of 15.7. This shows that the majority of the arable crop farmers in the study area were in their active and productive ages.

Household size: About 31.6 percent had between 2 and 5 household members while 36.7 percent had between 6 and 10 household members with mean household size of 7.4 with standard deviation of 4.6. Analysis shows that the large family size (6 and above) indicates that farmers depended more on family members to provide labour for them on their farms.

Educational Status: Majority (77.5%) of the respondents were literate with only about 22.5 percent of them who had no formal education. The mean of the number of years of education of respondents was 9.41. This corresponded with the mean years of formal education of arable farmers in Osun State stated as 9 years by Adesoji and Farinde (2006). The standard deviation was 5.32 which contradicted the one stated as 0.76 by Adesoji and Farinde (2006).

Farming experience: From the results in table1 also, 33.3 percent of the respondents had farming experience of between 11 and 20 years. The level of farming experience cannot be overlooked since same influences the rate of adoption of farming practices including the use of soil improvement practices.

The mean number of years of farming experience was 23.4 and standard deviation of 16.4. This shows that majority of the respondents had over 10 years of farming experience.

Income: About 32.5 percent made between ₦100, 000 and ₦200, 000 per annum while 20.0 percent had between ₦200, 000 and ₦300, 000 per annum. Only 20.8 percent had over ₦300, 000. The mean income was ₦53, 202 and standard deviation of ₦100.451. This implies that majority of the respondents made less than ₦100.00 per annum from arable farming.

Types of soil improvement practices: Results in Table II show that all the respondents (100.0%) knew about bush fallowing as a practice to improve soil fertility, but 85 percent made use of the approach. Mixed farming, mixed cropping and intercropping were well known planting practices among these planting systems. Among the organic practices, majority (97.5%) made use of mulching to improve nutrients. Majority (98.3%) knew about chemical fertilizer NPK while 93.3% percent of the respondents made use of it. These results indicate that practices mainly used by the respondents were bush fallowing, mixed cropping, mulching, animal droppings, NPK. The use of compost, superphosphates were not common among arable crop farmers in the study area.

Preferred soil improvement practices: Results in Table III show that majority (72.5%) of the respondents preferred using planting systems as agro-forestry, shifting cultivation, intercropping and crop rotation as soil improvement practices. About 14.2 percent preferred the use of organic practice (i.e. use of animal and plant materials) while 13.3 percent preferred the use of inorganic soil improvement practice.

Results of correlation analysis

Results of Correction analysis: The result in Table IV shows that there was a significant relationship between the years of farming experience, the years of formal education and the

use of soil improvement practices at $p \leq 0.05$ and $p \leq 0.01$ respectively. This means that the number of year of formal education and the year of farming experience of the respondents determined their choice of soil improvement practices.

The results in Table V also indicate that there was a significant relationship between the level of skill and knowledge of respondents in any soil improvement practice and the use of the soil improvement practice ($r = 0.772$; $P \leq 0.01$). This implies that the use of any of the soil improvement practices is determined by the level of knowledge and skill of the farmers on that practice.

Conclusion

Majority (74.2%) of the arable crop farmers were still in their active ages and were able to read and write. The most preferred soil improvement practice in the study area was different planting systems such as bush fallowing, crop rotation, mixed farming, mixed cropping and the numbers of soil improvement practices used were determined by the years of formal education and years of farming experience.

The users of agro-forestry complained that the government often claims the trees planted and that had discouraged them from using the practice, the arable crop farmers also complained of unavailability of enough animal droppings of farmland. They also complained that fertilizers were relatively expensive and unavailable when needed.

Recommendations:

It was recommended that arable crop farmers should be trained in acquiring skills and knowledge of different planting systems, preparation of organic practices and proper use of both organic and inorganic fertilizers. This will enable arable crop farmers to use any of the

soil improvement practices in such a way that the soil fertility will be sustained, without adversely affecting the environment or human health.

The government should also ensure an adequate supply of inorganic fertilizers at a subsidized rate as most of the times; these types of fertilizers do not get to the target people i.e. the farmers as at when due.

TABLE 1

Distribution of respondents based on socio-economic characteristics (N= 120)

Variables	Frequency	Percentage	
Age			
<20	12	10.0	Mean=43.5
21-40	47	39.2	SD= 15.7
41-60	42	35.0	
61-80	19	15.8	
>80			
Household			
1	7	5.8	Mean=7.4
2-5	38	31.6	SD=4.6
6-10	44	36.7	
11-15	23	19.2	
16-20	45	4.2	
>20	3	2.5	
Years of education			
0	27	22.5	Mean = 9.41
1 _6	28	23.3	SD = 5.32
7-12	49	40.8	
13-16	10	8.3	
>16	6	5.0	
Farm experience			
1 _10	32	26.7	Mean = 23.4
11-20	40	33.3	SD= 16.4

206	21-30	20	16.6	
207	31-40	16	13.3	
208	41-50	05	4.2	
209	51-60	5	4.2	
210	>60	2	1.7	
211	Income from Arable farming			
212	1 –100,000	32	26.7	Mean = 53,202 SD= 100,451
213	100,001-200,000	39	32.5	
214	200,001 –300,000	24	20.0	
215	300,001-400,000	18	15.0	
216	400,001 –500,000	07	5.8	

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218 **Sources: Field Survey, 2013**
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224 **Table II**

225 **Distribution of respondents by the use of soil improvement practices (N= 120)**

226	Soil improvement practice*	Known		Use	
		Frequency	Percentage	Frequency	Percentage
228	Planting systems				
229	Shifting cultivation or cropping	120	100.0	102 8	5.0
230	Mixed farming	120	100.0	75 6	2.5
231	Mixed cropping	120	100.0	120	100.0
232	Intercropping	118	98.3	91	75.8
233	Crop rotation	101	84.2	46	38.3
234	Organic practices				
235	Green manure	101	84.2	81	67.5
236	Mulching	120	100.0	117	97.5
237	Animal droppings	120	100.0	103	85.8

238	Compost	05	4.2	3	2.5
239	Inorganic Manure				
240	NPK fertilizers	118	98.3	112	93.3
241	Ammonium Sulphate	42	35.0	36	30.0
242	Urea	36	30.0	28	23.3
243	Superphosphates	4	3.3	02	1.7

244 **Sources: Field Survey, 2013**

245 **Multiple responses**

246

247 **Table III**

248 **Distribution of respondents based on preferred soil improvement practices (N= 120)**

249	Improvement planting soil	Frequency	percentage
250	Preference		
251			
252	Planting systems	87	72.5
253	Organic	17	14.2
254	Inorganic	16	13.3

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256 **Source: Field Survey, 2013**

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TABLE IV

263 **Correlation analysis results of relationship between some socio-economic characteristics**

264 **of respondents and the use of soil improvement practices**

265	Variables	r value	p value
266	Age	0.142	0.072
267	Household size	0.153	0.063
268	Years of formal education	0.223**	0.006
269	Income	0.123*	0.135
270	Years of farming experience	0.175*	0.033

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272 **Sources: Field Survey, 2013**

273 Sig at $P \leq 0.5$

274 Sig at $P \leq 0.01$

275

Table V

Correlation analysis results of relationship between knowledge and skill level and use of any soil improvement practices

Variable	Correlation Co-efficient (r)	P value
Agro-forestry	0.848**	0.00
Shifting cultivation	0.780**	0.00
Inter cropping	0.859**	0.00
Crop rotation	0.818**	0.00
Green Manure	0.710**	0.00
Mulching	0.686**	0.00
Compost	0.867**	0.00
Fertilizer	0.694**	0.00
Manure	0.779**	0.00
Total skill	0.772**	0.00

at $P < 0.01$

Sources: Field Survey, 2013

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