

## Assessment of the utilisation of soil fertility management practices among selected arable crop farmers in Dutse Local Government Area, Jigawa State, Nigeria

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### ABSTRACT

This study was carried out to assess the utilization of soil fertility management practice among selected arable crop farmers in Jigawa state, Nigeria. Multistage sampling procedure was employed to select the respondents for the study; data were collected through the use of questionnaire which was administered to one hundred and twenty (120) respondents. Data collected was analyzed using descriptive (frequencies, percentages, means ranks) and inferential (Chi-square and Pearson Product Moment Correlation) statistics. The mean age of the respondents was 45 years. Majority were male (90.8%), Muslims (98.4%), married (95%), farmers (61.7%), and educated (66.7%). The mean household size, farm size and years of farming experience of the respondents were 12 persons, 5.5 hectare and 25 years, respectively. Utilization of soil fertility management practices was high for fertilizer, conventional tillage, farm yard manuring and crop rotation. Respondents had unfavourable perception (50.8%) to soil fertility management practices with majority (53.3%) of the respondents having low utilization of soil fertility management practices. Respondents' major constraints to utilization of soil fertility management practice were shortage of agricultural land, lack of technical advice from extension workers, shortage of human labour and high cost of management practice. Years of farming experience were significantly related to utilization of soil fertility management practices. The study recommends that proactive measures (such as training and visit) should be taken by extension agents to educate the respondents on the need to engage in appropriate soil fertility management practices.

**Keywords:** Crop production, arable crop, soil fertility management, Jigawa State

### INTRODUCTION

Soil fertility is the intrinsic ability or capability of the soil to provide plant nutrients and water in adequate amount and when required, for good growth and development of the crops. Soil fertility decline (also described as soil productivity

decline) is a deterioration of chemical, physical and biological soil properties and subsequent reduction in providing the crops with adequate nutrients and water (Agboola, 2001). Good soil management practice helps rejuvenates the soil after each cropping season and also keeps the soil in good shape

to support another season, thus, the need for appropriate soil management practices. Soil fertility management practices can be seen as management of the soil to increase the quality and durability of the soil to provide required plant nutrient and water in an attempt to maintain optimum crop productivity (Food and Agricultural Organisation, 2001; and Oladipo, *et al.*, 2017). With constant cultivation of the soil to meet the growing demand for food amidst changes in climate and decrease in the ability of the soil to provide the required nutrient for plants, it becomes imperative that appropriate soil management practices is explored to ensure sustainable agricultural production.

One of the fundamentals of soil fertility management practice, roots from the need to protect and enhance the performance of the soil for profitable production and for preservation of its quality for generation to come. Although every soil fertility management practice has positive and negative impacts on the fertility variables and the behaviour of the soil, the adoption of a specific system depends widely upon the environment, social, economic and technological attainment of the farmer (Yusuf, 1994).

Soils in most part of Nigeria have inherently low fertility and do not receive adequate nutrient replenishment. With Nigeria falling under sub-Saharan African countries with low mineral fertilizer consumption, about 10 kg nutrients (N, P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O)/ha per year, compared to the world average of 90 kg, 60 kg in the Near East and 130 kg/ha per year in Asia” (FAO, 2001). However, with policies adjustment and sustained implementation of agricultural programmes like (Agricultural Transformation Agenda) (ATA) that is championing farmers’ access

to agricultural inputs, appreciable changes are expected to manifest.

Mitigating soil management problems requires concerted efforts by farmers, development partners and government, but the nature of agriculture in the country has been a major impediment to its development. Nigerian agriculture is characterized by mainly resource—poor farmers and majority of these farmers live in the rural area and operate at subsistence level with land holding average of less than five hectares (Asogwa, *et al.*, 2014). This scenario plays out well in northern Nigeria, where there is low rainfall, very sparse vegetation, desert encroachment, loosed soil, and wind erosion all of which in essence, translate to poor soil organic matter constituent. These characterisations of the environment underscore the need for the utilisation of best soil fertility management practices.

Farming in northern Nigeria is characterized by small and fragmented plots using simple implements with little investment and depending largely on self and family labour (Yusuf, 1994). Management of soil fertility under this arrangement is largely traditional and involves using fallow system, bush burning, and incorporation of crop residues left on the farm lands. In recent time, some of these methods are no longer feasible as it does not support soil fertility improvement. In order to chart any new cause of action on soil fertility management practices with a view of enshrining the best management practices possible to improve and stabilize the productivity of the soils in the study area, it is imperative to determine if farmers utilize soil fertility management practices? What are their perceptions of soil fertility management practices? What are the challenges faced in adopting soil fertility management practices? Another key

question that readily comes to mind among others is what socioeconomic relationship exists with level of utilization of soil fertility management practices. It is against this backdrop that it is pertinent to assess the utilisation of soil fertility management practices among selected arable crop farmers in Jigawa state, Nigeria. Specifically, the study tends to describe the socioeconomic characteristics of the respondents, identify the soil fertility management practices available to the respondents, explore farmers perceptions on soil fertility management practices, determine respondents' level of use of soil fertility management practice, determine the relationship between respondents' socioeconomic characteristics and level of utilization of soil fertility management practices, and identify the challenges faced by the respondents in adopting the soil management practices.

## METHODOLOGY

### Study Area

The study area is Jigawa state, Nigeria. Jigawa State is situated in North-Western, Nigeria, between Latitudes 11.00 °N to 13.0°N and Longitudes 8.0°E to 10.15°E with an estimated total population of 5,828,163 million (National Population Commission, 2016). Jigawa state shares an international border with Republic of Niger, and lie within the Sudan Savannah with little Guinea Savannah area in the southern part. It has 27 local government councils, with

**Table 1.** Distribution of communities, sampling frame and sample size of the study area

Communities	Sampling frame	Sample size (20%)
Fanisau	125	25
Karnaya	250	50
Kwarin makera	225	45
<b>Total</b>	<b>600</b>	<b>120</b>

Source: Field survey, 2017

Dutse as the state capital. Dutse has an estimated population of 335,600; Dutse experiences two seasons i.e. wet and dry seasons. The wet season is between June to October (4-5 months) with August having the highest amount of rainfall (262mm). The average temperature is 30°C with May being the hottest. Dutse enjoys a vast fertile arable land to which almost all tropical crops could adapt, thus constituting one of the highly prized natural resource. Its vegetation zone is also made up of vast grazing lands suitable for livestock production (Citypopulation, 2016).

### Population

The target population of this research were arable crop farmers in Dutse Local Government Area, Jigawa State, Nigeria. Multi-stage sampling procedure was used for the study; the first stage is the purposive selection of three communities (Fanisau, karnaya, and kwarin makera) because of the predominance of millet and sorghum farmers in the study area. The second stage involved the generation of a list of arable crop farmers from the selected villagers through snowball sampling technique. The third stage involves a simple random sampling of a representative proportion to give a total of 120 respondents that was used for the study. Structured interview schedule was used to elicit information from the respondents. The breakdown for the selection of arable crop farmers for this study is presented in Table 1.

### Measurement of variables

The soil fertility management adopted by the respondents were measured by asking the respondents to select yes for adopted and no for non-adopted, and scores of 2 and 1 where assigned for Yes and No respectively. The mean score was used to rank in order of priority the soil fertility management practice most adopted by the respondents. The respondents' perception of the soil fertility management practice was measured using five point Likert type scale of Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD), with scores of 5, 4, 3, 2, and 1 assigned respectively. An index score of the perception of the soil fertility management practice was computed and used to categorize their perception as either favourable or unfavourable. The level of utilization of soil fertility management practices was measured as Always use, Rarely use and Never use, with scores of 3, 2, and 1 assigned respectively. An index score of the level of utilization of soil fertility management was computed and used to categorize their level of utilization as either high or low. The respondents constraints to the adoption of soil fertility management practice was measured using three point scale of Not a constraint, minor constraints and major constraints with scores of 1, 2, and 3 respectively. A weighted score was obtained for each constraint option and used to identify the major constraint bedevilling the adoption of soil fertility management practice in the study area.

### Data analysis

Data generated were analysed using descriptive statistics (frequency count, percentage and means) and inferential statistics (Chi square and Pearson Product Moment Correlation).

### Model specification

Pearson Product Moment Correlation

$$r = \frac{N \sum x_i y_i - (\sum x_i)(\sum y_i)}{\sqrt{\{N \sum x_i^2 - (\sum x_i)^2\} \{N \sum y_i^2 - (\sum y_i)^2\}}}$$

Where:

r = the correlation coefficient

N = total number of respondents

$\sum x_i y_i$  = sum of the products of paired (level of utilisation and socioeconomic) scores

$\sum y_i$  = the sum of level of utilization scores

$x_i$  =  $i$ th socioeconomics characteristics (age ( $x_1$ ), household size ( $x_2$ ), years of farming experience ( $x_3$ ) and farm size ( $x_4$ ))

$\sum x_i$  = the sum of the  $i$ th socioeconomics characteristics scores

$\sum x_i^2$  = sum of squared  $i$ th socioeconomics scores

$\sum y_i^2$  = sum of squared level of utilization scores

Chi Square

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{[O_{ij} - E_{ij}]^2}{E_{ij}}$$

Where

$\chi^2$  = the test statistic that asymptotically approaches a chi-square distribution

$O_{ij}$  = the observed frequency of the  $i$ th row and the  $j$ th column

$E_{ij}$  = the expected (theoretical) frequency of the  $i$ th row and  $j$ th column

r = the number of rows in the contingency table

c = the number of column in the contingency table

## RESULTS

### Socio economics characteristics

Results in Table 2 revealed that majority (90.8%) of the respondents were males, suggesting male dominance in arable crop production in the study area. The mean age of the respondents is 45 years. Majority (98.4%) of the respondents were Muslims, with some (33.3%) not having formal education. However, about 60% of the

respondents had one form of formal education of another.

Marital status distribution of respondents shows that majority (95%), of the respondents are married. Table 2 also shows that some (33.3%) of the respondents had a household size of between 0-5 members, with mean household size of 12 members. The result further showed that majority

(52.5%) of the respondents had  $\geq 21$  years of farming experience, with 25 years as the mean years of farming experience.

Some (40%) of the respondents had 3-6 hectare of farm land, with mean farm size of 5.5 hectare. This result also shows that most (61.7%) of the respondents had farming as their major occupation upon which they rely for income.

**Table 2.** Distribution of respondents by their Socio economic characteristics

Variable	Percentage (n=120)	Mean
<b>Sex</b>		
Male	90.8	
Female	9.2	
<b>Age</b>		
$\leq 20$	1.7	45 years
21-35	34.2	
36-50	30.8	
51-65	19.2	
66-80	13.3	
$\geq 81$	0.8	
<b>Religion</b>		
Christian	0.8	
Muslim	98.4	
Traditionalist	0.8	
<b>Education</b>		
No formal education	33.3	
Primary	30.8	
Secondary	26.7	
Tertiary	9.2	
<b>Marital Status</b>		
Single	4.2	
Married	95.0	
Divorced	0.8	
<b>Household Size</b>		
$\leq 5$	33.3	12 persons
6 – 10	25.8	
11 – 15	11.7	
16 – 20	12.5	
$\geq 21$	16.7	
<b>Years of farming experience</b>		
0 – 5	5.8	25 years
6 – 10	14.2	

11 – 15	10	
16 – 20	17.5	
≥ 21	52.5	
<b>Farm Size</b>		
0 – 2	23.3	5.5 hectare
3 – 6	40	
7 – 10	29.2	
11 – 14	6.7	
≥ 15	0.8	
<b>Main occupation</b>		
Farming	61.7	
Trading	25.8	
Civil servant	5.0	
Artisan	7.5	

Source: Field survey, 2017

### Soil fertility management practices available to farmers

Table 3 reveals the soil fertility management practice adopted by the respondents in the study area. The result shows that the use of fertilizer ( $\bar{x}= 1.98$ ) is the highest soil fertility management practice adopted by the respondents in the study area, this was followed by conventional tillage ( $\bar{x}= 1.91$ ),

farm yard manuring ( $\bar{x}=1.91$ ) and crop rotation ( $\bar{x}=1.91$ ) respectively. Others include planting of cover crops ( $\bar{x}= 1.90$ ) and inter cropping ( $\bar{x} = 1.86$ ). However, there was low adoption of mulching ( $\bar{x}=1.26$ ), bedding ( $\bar{x}= 1.3$ ) and use of water hyacinth ( $\bar{x}= 1.47$ ).

**Table 3.** Distribution of respondents based on soil fertility management practice adopted

Management practice	Mean	Rank
Mulching	1.2617	12 <sup>th</sup>
Agro forestry system	1.5250	9 <sup>th</sup>
Conventional tillage	1.9167	2 <sup>nd</sup>
Farm yard manuring	1.9167	2 <sup>nd</sup>
Crop rotation	1.9167	2 <sup>nd</sup>
Inter cropping	1.8667	4 <sup>th</sup>
Bush fallow	1.7667	7 <sup>th</sup>
Use of fertilizer	1.9750	1 <sup>st</sup>
Planting of cover crops	1.9000	3 <sup>rd</sup>
Shifting cultivation	1.8250	5 <sup>th</sup>
Strip planting	1.5333	8 <sup>th</sup>
Bedding	1.3083	11 <sup>th</sup>
Composting	1.7833	6 <sup>th</sup>
Use of water hyacinth	1.4750	10 <sup>th</sup>

Source: Field survey, 2017 \*Mean score ≥ 1.50

**Farmers’ perception of soil fertility management practices**

Tables 4 and 5 revealed the respondents’ perception to soil fertility management practice in the study area. The result shows that respondents’ perception favour statements that soil fertility management practice ‘is very expensive to practice’ ( $\bar{x}$ = 4.83), ‘improves soil quality’ ( $\bar{x}$ =4.7), and ‘helps to reduce soil erosion’ ( $\bar{x}$ = 4.49).

While the statement “mulching reduces evaporation” ( $\bar{x}$  = 2.47) was the least favoured by the respondents’ in the study area. The categorization of the respondents’ level perception in Table 5 shows that on the overall, half of the respondents had unfavourable (50.8%) perception to soil fertility management practices in the study area.

**Table 4.** Distribution of respondent’s perceptions of soil fertility management practices

Perceptions	Mean
It improves the soil quality	4.74
It is very expensive to practice	4.83
It increases the shelf life of the soil	4.26
It helps to reduces soil erosion	4.49
Practice are very tedious	3.45
it requires a lot of labour	3.70
Technical advice from extension worker is not readily available	4.25
It helps in the protection of the plant against drought	4.27
It helps in improvement of soil physical condition	4.26
Practices are complex	3.44
Practices requires a lot of time input	4.30
Mulching reduces evaporation	2.47

Source: Field survey, 2017

\*Mean score  $\geq$  3.0 suggests favourable response

**Table 5.** Categorization of respondent’s level of perception of soil fertility management practices

Level of perception	Scores	Frequency	Percentage %	Mean
Unfavourable	33-47	61	50.8	48.02 $\pm$ 4.89
Favourable	48-57	59	49.2	

Source: Field survey, 2017

**Level of use of soil fertility management practices**

Result in Table 6 shows that the use of fertilizer ( $\bar{x}$ =2.884), crop rotation ( $\bar{x}$ =2.827), and conventional tillage ( $\bar{x}$  =2.809) were the highest soil fertility management practices utilized by the respondents in the study area.

Use of mulching ( $\bar{x}$ =1.352), use of water hyacinth ( $\bar{x}$ =1.392) and bedding ( $\bar{x}$ =1.591) were the least utilized soil fertility management practices by respondents. On the overall, the categorisation of the level of use of soil fertility management practices on Table 7 shows that majority of the

respondents (53.3%) had low usage of soil fertility management practices.

**Table 6.** Distribution of respondents by their level of use of soil fertility management practice

S/no	Management practice	Always use	Rarely use	Never use	Weighted Mean
1	Use of water hyacinth	21.7	25.8	52.5	1.692
2	Mulching	9.2	16.6	74.2	1.350
3	Agric forestry system	36.7	53.3	10	2.267
4	Conventional tillage	81.7	17.5	0.8	2.809
5	Farm yard manuring	82.5	12.5	5	2.775
6	Crop rotation	86.7	9.1	4.2	2.825
7	Inter cropping	85	10	5	2.800
8	Bush fallow	30.8	41.2	28	2.028
9	Use of fertilizer	89.2	10	0.8	2.884
10	Planting of cover crops	77.5	20.8	1.7	2.758
11	Shifting cultivation	60.8	26.7	12.5	2.483
12	Strip planting	44.2	27.5	28.3	2.159
13	Bedding	18.3	22.5	59.2	1.591
14	Composting	61.7	23.3	15	2.467

Source: Field survey, 2017

\*Mean score  $\geq 2.0$  suggests high level of use

**Table 7.** Categorization of respondent's level of use of soil fertility management practice

Level of utilization	Scores	Percentage %	Mean
Low	25-31	53.3	32.85 $\pm$ 2.8
High	32- 39	46.7	

Source: Field survey, 2017

#### **Relationship between socioeconomic characteristics of respondents and level of utilisation of soil fertility management practices**

Table 8 shows the summary of Pearson correlation and Chi-square analysis establishing relationship between selected socio-economic characteristics of the respondents and level of use of soil fertility management practice. The result revealed

that years of farming experience ( $r=0.290$ ;  $p=0.001$ ) was significant related to level of utilization of soil fertility management practice, while age ( $r=0.228$ ;  $P< 0.12$ ), household size ( $r=0.81$ ,  $p=0.382$ ), and size of farm ( $r=0.97$ ;  $P<0.293$ ) had no significant relationship with level of utilization of soil fertility management practice. The result of the chi-square analysis revealed that there is no significant relationship between religion



( $\chi^2 = 2.001$ ,  $p = 0.368$ ), educational status ( $\chi^2 = 3.292$ ,  $p = 0.349$ ) marital status ( $\chi^2 = 1.167$ ,  $p = 0.558$ ), main occupation ( $\chi^2 = 6.768$ ,  $p = 0.453$ ), sex ( $\chi^2 = 0.670$ ,  $p = 0.796$ ) and level of utilization of soil fertility management practice.

**Table 8.** PPMC and Chi-square analysis showing relationship between selected socio-economic characteristics of respondents and level of utilization of soil fertility management practice

Variables	df	r	$\chi^2$ -value	P-values	Decision
Age		0.228		0.12	NS
Sex	1		0.670	0.796	NS
Religion	2		2.001	0.368	NS
Household size		0.81		0.382	NS
Education status	3		3.292	0.349	NS
Marital status	2		1.167	0.558	NS
Years of farming experience		0.290*		0.001	S
Size of farm		0.97		0.293	NS

\*Correlation is significant at the 0.05% level,  $\chi^2$ =Chi square coefficient, df=degree of freedom, p-value= probability level of significance,  $p \leq 0.05$ =significant, S = significant, NS = Not significant

**Constraints faced by respondents in adopting soil fertility management practice**

Table 9 shows that “shortage of agricultural land” ( $\bar{x} = 2.7$ ) is ranked as the highest constraint, followed by “lack of technical advice from extension worker” ( $\bar{x} = 2.63$ ),

and “shortage of human labour” ( $\bar{x} = 2.57$ ), while “tediousness of the practice” ( $\bar{x} = 1.72$ ) and “inability to access practices” ( $\bar{x} = 1.81$ ) were the least constraints of respondents.

**Table 9.** Distribution of respondents constraints faced in adopting soil fertility management practice

Constraints	Mean	Rank
Shortage of agricultural land	2.7000	1 <sup>st</sup>
High cost of management practice	2.5667	4 <sup>th</sup>
Shortage of human labour	2.5750	3 <sup>rd</sup>
Problem of transportation of fertility inputs	2.1250	8 <sup>th</sup>
Non ownership of land	2.5500	5 <sup>th</sup>
Lack of knowledge of soil management practice	2.3000	7 <sup>th</sup>
Inability to access practices	1.8167	9 <sup>th</sup>
Lack of necessary inputs	2.3167	6 <sup>th</sup>
Lack of technical advice from extension worker	2.6833	2 <sup>nd</sup>
Very tedious practices	1.7250	10 <sup>th</sup>

Source: Field survey, 2017

\*Mean score  $\geq 2.0$  level of severeness

## DISCUSSION

The result on sex suggest that arable crop production in the study area is to a large extent related to gender differences, this perhaps could be a reflection of the fact that resources such as land and inputs are owned and easily accessible by the male. This trend may not be unconnected with the fact that religion and tradition places restricted roles to women in the study area. The result obtained is in line with the findings of Amanze, *et al.* (2012) who also found that men are more involved in arable crop production farming than women.

The age of the respondents implies that arable crop farmers in the study area are in their productive age, as such their relatively young age may influence their passion for the application of increased productivity practices like soil fertility management practices. The result on age is in line with the findings of Toluwase and Apata (2013)

who posited that farmers within this age are in their productive age and are passionate about increased productivity.

The fairly high literacy level among the respondents in this study coupled with the fact that majority (66.7%) of them are still young, serves as important requisite to not only take up new ideas easily but also enhance their understanding of the importance of soil fertility management practice, its implication when lacking and also its comparative advantage.

The result on the marital status implies that majority of the respondents have family and by extension, shoulder the responsibility of feeding their households; this may compel them to seek out options like soil fertility management practices for increasing productivity. This assertion is in line with findings of Daudu, Oladipo, and Kayode, (2017) who suggest that marriage commits individual to directly engage in productive

activities such as farming to raise enough crop produce for domestic use and for sale to meet other cash needs.

The result on the household size implies that respondents had large household size. In traditional agrarian society, large household sizes constitute family labour; this assertion agrees with the findings of Bharadwaj (2015) who posited that large family size suggests availability of more labour for farm work.

The result of farming experience suggests that the respondents are highly experienced, and would have embraced some form of soil fertility management practices in effort to increase their productivity. This assertion is in line with the submission of Daudu *et al.* (2017), who reported that years of farming experience may be crucial in farmers' involvement in soil fertility management practice.

Many of the respondents had relatively small farm sizes and have farming as the major occupation as such there may be need for them to embrace practices like soil fertility management practices that will optimize land use, for improved productivity. The result agrees with the findings of John, Francis and Johnson (2017), who posited that farming is the major occupation of the majority of the people in rural setting.

Findings of the soil fertility management practices adopted by the respondents suggest that the respondents utilize many of the soil fertility management practices to maintain the fertility of their soil, so as to increase productivity. However, the use of mulching and bedding is not popular among respondents. This calls for more enlightenment on the need to engage in

divers' soil fertility management practices. Though practicing some form of soil fertility management practice, the respondents had unfavourable perception about soil fertility management practice. Thus, suggesting that though some form of soil fertility management practice is been adopted in the study area, they have unfavourable perception to its ability to improve soil fertility in the study area. This result gives credence to the result in Table 7, as due to unfavourable perception of soil fertility management practice, majority of the respondents had low utilization of soil fertility management practice in the study area. As such, the level of usage of soil fertility management practice is low among respondents in the study area. This according to Ande, *et al.* (2017) can be as a result of their lack of awareness on the importance of the use of appropriate soil fertility management practices, hence it is imperative to educate the farmers on the importance of use of soil fertility management practices, so as to improve their production and income.

The result of the test of relationship between respondents' socioeconomic characteristics and their level of utilization of soil fertility management practice showed that only years of farming experience was significantly related to the level of utilization of soil fertility management practices at 5% level. This result implies that farmers' level of utilization of soil fertility management practices is positively associated with years of experience in farming. It can therefore, be deduced that farmers with many years of farming experience utilize more soil fertility management practice than farmers with few years of farming experience. This supports the findings of Daudu *et al.*, (2017), who found that farmers with more years of farming experience tend to adopt more soil

fertility management practice than those with few years of experience.

The result on constraints faced by the respondents showed that despite the number of farmland size of the respondents, they still see shortage of agricultural land as a constraint; this may be as a result of urbanization, land tenure system, land fragmentation and also population growth. Also the findings show lack of technical advice from extension workers as the second highest constraint; this may be due to low extension worker to farmer's ratio in the study area. This is in line with the finding of Corbeels *et al.* (2006) who opined that there is shortage of extension personnel that can reach out to farmers. This also corroborates the work of Ande, et al. (2017), who noted that shortage of labour, high labour intensive of the adoption of appropriate soil fertility management practice are some of the challenges bedevilling the adoption of appropriate soil fertility management practices by farmers.

## CONCLUSION

The study therefore, concludes that soil fertility management practices were available; however, respondents' perception to soil fertility management practices was

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unfavourable, and the level of utilization of soil fertility management practices was low. Shortage of agricultural land, lack of technical advice from extension workers, shortage of human labour and high cost of soil fertility management practice were respondents' major constraints to practicing conservative soil management technique. In view of the findings of the research and the objectives upon which the research was carried out, the following recommendations were made.

1. That proactive measure (such as training and visit of farmers) be taken to by extension agents to educate the respondents on the need to engage in appropriate soil fertility management practices.
2. A review of the land tenure system policy that will ease access to agricultural land by the farmers should also be considered.
3. Respondents should be encouraged to develop positive attitude towards soil fertility management practices as well as its utilization.
4. Respondents' should also be sensitized on the inherent benefits in the utilisation of soil fertility management practices so as to up their utilisation.

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