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Determination and Evaluation of Factors Associated with Sustainable Land Management (SLM) Practices by Farmers in Osun State, Nigeria

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Abstract The study identified the sustainable land management practices being used by farmers in Osun State. The analysis determined the factors associated with the use of the land management practices and the best of the practices being used. Multistage sampling technique was used to select 256 farmers from eight Local Government Areas (LGAs) of the State. Eight different enterprise farmers were selected from the LGAs and four farmers were purposively selected from each enterprise. Data collected were described with frequency, mean and standard deviation while factor and regression analyses were used to make inferences for the study. The results revealed that the mean age of the farmers was 48.0±10.3, majority was married and about 60% were male. The mean household size was 6.6±2.8 and majority was able to read and write. The study identified 35 sustainable land management practices which were known to the farmers, out of which 28 were being practiced. Seven factors associated with the use of sustainable land management practices are: farming experience, economic, educational, accessibility to inputs, personal and family characteristics as well as soil fertility status. These factors were statistically significant ($P < .05$) to the use of soil management practices. We concluded that the level of awareness and use of sustainable land management practices in the state was still below the expected standard.

Keywords: determination, evaluation, land management, farmers.

Introduction

Agriculture is the mainstay of Nigerian economy, as its contributions to the Gross Domestic Product (GDP) cannot be under-estimated. For example, agriculture contributed 38% to Nigerian GDP in 2016 (Central Bank of Nigeria Reports, 2016). It represents strategic assets to the overall well-being of the nation's economy and still remains the primary source of food, clothing and foreign exchange earnings in the country. Suffice to note is the fact that land still remains the primary resource in any agricultural productivity. According to Fabiyi (1990), a typical villager recognizes land as the major resources for livelihood. In Nigeria (especially the rural areas), where the majority of the people directly depends on agriculture as a major source of livelihood, land degradation, resulting from unsustainable land management practices is a threat to the environment and to the livelihood of rural inhabitants. It has negative impacts on the state and management of the natural resources (Muge and Dianne 2011). Hence, regardless of interventions or initiatives by the government to support rural livelihood and also boost agricultural productivity, over-exploitation and degradation of land will lead to reduced availability of natural resources (Global Environment Facility, (GEF), 2010). Sustainable land management can be described as the foundation of a sustainable agriculture, and a strategic component of sustainable development and poverty alleviation. Farmers have their livelihood and options for economic development directly linked to the quality of the land and available resources. Sustainable Land Management (SLM) practices therefore seek to harmonize the complimentary goals of providing environmental, economic and social opportunities for the benefits of the present and future generations, while maintaining and enhancing the quality of the land (soil, water and air) resources (Smyth and Dumanski 1993).

The uptake of Sustainable Land Management (SLM) practices among land users in Nigeria is being challenged. These include unfavourable enabling environment, specifically fragmented institutions, poor knowledge and low awareness (GEF, 2010). In order to address the afore-mentioned challenges, the Third National Fadama Development Project (Fadama III) was seen as the best opportunity for

mainstreaming the Sustainable Land Management (SLM) of the Global Environment Facility (GEF), so as to secure long-term sector goals (GEF, 2010). The World Bank (2010) gave a list of the sustainable land management (SLM) technologies to Fadama III in Nigeria which were introduced by Fadama III and co-financed by (GEF) to the beneficiaries. These include woodlots, orchards and plantations for cash crops, shelter belts or wind breaks by planting of trees, traditional/updated mixed cropping systems, planting pits, mulch production and application, manuring, agroforestry, flood control measures, forest improvement or enrichment, river bank protection/ planting (buffer), filter strip/ community nursery, reclamation/ rehabilitation of degraded land (tree planting), forest / groove protection and management among others. From the technologies, SLM practices were fashioned out and developed.

Over the last few decades, the Federal Government of Nigeria (FGN), private and public institutions have been making efforts in confronting the extreme poverty and food insecurity in the country. This has been through introduction of various developmental projects, especially in the agricultural sector, such as the River Basin Development Authorities (RBDAS), the Operation Feed the Nation (OFN), The Green Revolution Programme, New Partnership for African Development (NEPAD), National Economic Empowerment Development Strategy (NEEDS) (Iwuchukwu and Igbokwe, 2013). The most recent of the interventions in the agricultural sector being the Third National Fadama Development Project (Fadama III) which focused on the transfer of financial and technical resources to the target beneficiaries (Federal Ministry of Agriculture and Water Resources (FMAWR), 2009). However, despite the various interventions or initiatives to support agricultural development programmes, over-exploitation and degradation of land has been seen to be the limiting factors; reducing the availability of the national resources (land), leading to jeopardized food security and persistent poverty. Based on the sector work carried out as part of the preparation of the 1990 World Bank report towards the development of an environmental Action Plan for Nigeria (World Bank, 2005), land degradation has been seen as the country's most serious environmental problem. The three aspects to the problem identified were: soil degradation, affecting 50 million people with annual impact in excess of $3 billion, water contamination, affecting 40 million people and costing more than $1 billion to correct, deforestation, affecting 50 million people with a loss of sustainable production from forest resources worth $750 million annually (World Bank, 2005). Many sustainable land management (SLM) practices have been seen to have positive cost-benefit ratios in agro-ecologies throughout Sub-Saharan Africa, and even in Nigeria (World Bank, 2005).

However, several researchers have studied Sustainable Land Management Practices and Technologies among Farmers in Nigeria and outside. For Instance, Simon *et al.* (2013) investigated the determinants of Sustainable Agricultural Land Management Practices among arable crop farmers in Northern part of Taraba State, Nigeria. Oyekale (2012) also investigated the fuzzy indicators of SLM and its correlates in Osun State, Nigeria. Orisakwe and Agomuo (2011) also studied the adoption of improved Agroforestry Technologies among contact farmers in Imo State, Nigeria, while Ademola and Olujide (2014) investigated the challenges in the adoption of soil conservation practices among arable crop farmers in Oyo State, Nigeria. Also Herrich (2000) and Carter (2002) studied soil quality as an indicator of SLM in Canada. However, there still exist dearth of information on the evaluation of the programme, hence this study. The study therefore sought to find out the SLM practices been in use by the farmers and determine factors influencing the use of the SLM practices.

Hypothesis

There is no significant relationship between factors influencing the use of SLM and the use of SLM practices.

Theoretical background

The theoretical background to this study was based on the review of one of the adoption decision theories, by Albreach *et al.* (1987). which is the Theory of Behaviour Modification. It states that behaviour is seen as resulting from the psychological field of inhibiting and driving forces. Inhibiting forces are the forces that are negatively influencing behaviour change. Based on this study, the envisaged behaviour change is the adoption and use of sustainable land management practices among the beneficiaries in Fadama III project. Rogers (2003) opined that adoption is seen as the first or minimal level of behavioural utilization and Hoffmann (2005) reported that new product and new methods and ideas follows adoption. The inhibiting forces in this context can be the following: lack or inadequate input, limited knowledge, negative attitude and poor awareness. Ndah *et al.* (2010) further explained the theory by saying; the driving forces are the conducive forces for behaviour modification. These forces include increased awareness and knowledge, technical support, provision of input subsidy, creation of enabling environment and increased extension agents' contacts. When there is an interaction of both the inhibiting (negative) forces and the driving forces, there is a resulting disturbance of former equilibrium. This is the phase 1, regarded as the phase of problem perception. Phase 2 is a shift to new equilibrium, regarded to as the stages of implementation. This then gives rise to the third phase, which is the stabilization of modified behavior (phase 3). This is the stage of solution to the problem (the adoption and use of SLM practices).

Methodology

Study area

This study was carried out in Osun State, Nigeria. The state was selected due to the introduction of SLM practices to the beneficiaries of Fadama III. It is located in the Southwestern region of the country and lies within coordinates 7°30′N,

4º30′E. It shares boundary with Ondo State to the East, Oyo State to the West, Kwara State to the North and Ogun State to the South. It has an average annual rainfall of 1125mm in the derived savannah to 1475mm in the rain forest belt. The vegetation allows for agricultural production which provides an enabling environment for the inhabitants' major occupations, which are agricultural activities. Based on the last population census figure of 2006, Osun State has a population of 3,423,535. The predominant ethnic groups are Yorubas. The state is made up of thirty Local Government Areas (LGAs) out of which 20 are participating in Fadama III project. The State is divided into three agricultural zones by the Osun State Agricultural Development Programme (OSSADEP). These are: Osogbo zone, with 13 LGAs, with 10 LGAs participating in Fadama project;Ife-Ijesa zone, with 10 LGAs and six LGAs are participating and Iwo zone, with seven LGAs with four LGAs participating.

Data collection and analysis

Multistage sampling technique was adopted in the sample selection. A random selection of the eight LGAs for the study was made from the participating LGAs. Next was a purposive selection of eight Fadama Users Groups (FUGs), based on the types of their enterprise or economic interest. Finally, a systematic selection of four registered respondents per FUG was done, making a total of 256 respondents. This amount to 40 percent of the total fadama beneficiaries. Structured Interview Schedule was used for data collection which was done between April and May, 2015. Descriptive statistics was used to summarize the data while Factor Analysis was used to isolate factors associated with the use of the SLM practices among the respondents in the study area. Multiple Ordinary Least Square regression analysis was used to determine the magnitude of each of the factors influencing the use of the SLM practices.

Measurement of Variables

The dependent variable was "adoption and use of the introduced practices". To operationalized this, respondents were asked to indicate from the list, how many of the introduced SLM practices that they had 'never adopted', 'adopted but dis-continued', 'rarely practiced', 'sometimes practiced' and 'always practiced' on a 5-point Likert type scale of 0,1,2,3 and 4 respectively. There were 35 introduced practices which brings the maximum score to 140 and minimum of zero. This will result in an index score called adoption score as used by Canuel *et al.* (2014) and Sharif *et al.* (2013). Adoption score is the addition of the responses on the Likert type scale. The independent variables, mostly demographic and socio-economic characteristics like age, marital status, religion, farming experience among others were scored directly as said by the respondents. The mean was measured on each of the SLM practices adopted and used based on the ascribed scores. The mean should vary from zero to four. From the mean of each SLM practice, the weighted mean was calculated on each group on – farm SLM practice, crop management –related SLM, pasture, rangeland and livestock management related SLM practices, agro-forestry management- related SLM practices etc.

Results and Discussions.

The results in Table 1 show that 3.1 percent of the respondents were less than 30 years of age, 18.8 percent were aged between 30-39 years, 34 percent were between 40 – 49 years, 28.1 percent were between 50-59 years, while 16.0 percent were aged 60 years and above. The mean age of the respondents was 48.02 years with standard deviation of 10.30. This is an indication that majority of the respondents are farmers that were still within their productive years. This is in line with Toluwase and Apata (2013). Regarding sex, the results in Table 1 revealed that more than half of the respondents (60.9%) were male while only 39.1 percent were female. This result agrees with Balogun *et al.* (2013) who also found male dominance in Fadama III of Kwara State. This is an indication that there was a dominance of men participating in Fadama III Project in the study area than women. This might be due to the fact that agriculture in developing nations like Nigeria is tydious and mostly practiced by men. Majority (84.8%) of the respondents in the study area were married, with about 11 percent single. Married members of the community are seen as being responsible citizen (Jibowo, 1999). Thus they were expected to be more responsible in their group. The mean household size was 6±3. The fairly large family size would be helpful as family labour (Adikwu, 2014). This agrees with the findings of Adamu *et al.* (2013) which gave an average household size of Fadama II farmers in the Osun State as 7±2. Majority (77.1%) of the farmers were literate (addition of all with formal education). This agrees with the findings of Simon *et al.* (2013) where majority (70%) of the respondents was literate. About 35 and 30 percent had tertiary and secondary education, respectively.

Variables	Frequency	Percentage	Mean	S.d
Age			48.0	10.30
<30	8	3.1		
30-39	48	18.8		
40-49	87	34.0		
50-59	72	28.1		
>60	41	16.0		
Sex				
Male	156	60.9		
Female	100	39.1		
Marital status				
Single	27	10.6		
Married	217	84.8		
Separated	3	1.2		
Divorced	1	0.4		
Widowed	8	3.1		
Household size			6.59	2.85
<6	94	36.7		
6-9	120	46.9		
>10	42	16.4		
Level of education				
Non-formal	33	12.9		
Adult education	9	3.5		
Primary education	44	17.2		
Secondary education	78	30.5		
Tertiary education	92	35.9		

Table 1: Distribution of respondents by personal and socio-economic characteristics.
Source: Field survey, 2015.

SLM practices introduced to and adopted by the beneficiaries.

SLM practices introduced to the beneficiaries were categorized as crop management-related under which are: ridge/ridge tying and mulching, updated mixed cropping and minimum till. Others include, cover cropping, planting pits, intercropping, crop rotation, liming, integrated pest management and composting. Livestock management-related practices include; integrated – crop livestock, manure management, grazing management and grazing reserves. Forest management-related include; shelter belts/ wind breaks, alley cropping, vegetative barrier, establishment of woodlots, improved fallow and orchards. Water conservation-related practices are; tube wells, earth dams, micro dams, small scale irrigation and contour ridging. Alternative SLM practices include; tree nursery establishment, improved grass cutter, improved snail rearing, apiculture and mushroom. Off-farm SLM practices include; flood control measures, river bank protection and stock routes.

All the 256 respondents were introduced to the practices, but not all of them adopted and continued to use the practices. Results in Table 2 was used to show the percentage distribution of respondents that adopted and always use the practices. It was found that seven of the 35 practices introduced to the respondents were not adopted at all. The practices are; contour ploughing, micro dam, contour ridging, improved grasscutter, improved snail rearing, mushroom cultivation and stock routes. This implies that these practices did not meet the felt needs of the respondents or that the practices might be too difficult or expensive for them to afford. The mean of each of the SLM practice was calculated, the mean of mulching was found to be 3.1 and the highest in the group crop management- related SLM practices. Based on the scoring, it implies that this SLM practice is sometimes practiced by the beneficiaries of fadama III. Crop rotation has a mean score of 2.1. This is very close to 2 which implies rarely practiced. This means majority of the beneficiaries were not practicing crop rotation as an SLM practice. Inter-cropping has a mean score of 2.4 which also is closer to 2 which implies that inter-cropping is also rarely been practiced as an SLM practice. Liming has a mean score of 1.0, this implies that the beneficiaries adopted the practice but discontinued to practice it as an SLM. Apart from the practice that was never adopted, planting pit has the least mean of 0.08. This is very close to 0 and it is more or less not adopted and practiced. Those that have adopted and practicing it would be

very minimal. The weighted mean of crop management – related SLM practices was 1.49. This implies that this SLM practice was rarely practiced by the beneficiaries of fadama III in the study area. Forest management – related SLM practices has a weighted mean score of 1.67 and was ranked best followed by the Livestock management – related SLM practice with weighted mean score of 0.58. Alternative SLM practices has the least weighted mean score of 0.06. This implies that the practices were almost not adopted by the respondents. Apiculture under the Alternative SLM practices has a mean score of 0.2, which is almost 0 that implies that the practice was never adopted. Under the Off farm SLM practices, flood control measure has the highest mean score of 0.8. This implies that respondents would want to control flood on their farm land. This is very close to the mean score of small earth dam, 0.7 under the Water conservation – related SLM practice.

Variables	Frequency	Percentage	Mean	Rank
Crop Management-Related				
Mulching	106	41.8	3.1	
Crop rotation	65	25.4	2.1	
Inter-cropping	69	27.0	2.4	
Composting	25	9.8	0.8	
Liming	42	16.4	1.0	
Cover cropping	25	9.8	0.8	
Contour ploughing	00	0.0	0.0	
Ridge/ ridge tying	43	16.8	1.2	
Minimum till	70	27.3	2.4	
Updated mixed cropping	54	21.1	1.8	
Integrated pest management	21	8.2	0.7	
Planting pits	4	1.6	0.08	
Weighted mean			**1.49**	**2nd**
Livestock Management-Related				
Integrated crop-livestock	28	10.9	1.8	
Manure management	8	3.1	0.2	
Grazing management	8	3.1	0.2	
Grazing reserves	4	1.6	0.1	
Weighted mean			**0.58**	**3rd**
Forest Management-Related				
Shelter belts/ wind breaks	256	82.8	3.4	
Establishment of woodlots	43	16.8	1.8	
Alley cropping	37	14.5	1.4	
Vegetative barrier	100	39.1	2.8	
Orchards	5	2.0	0.2	
Improved fallow	10	3.9	0.4	
Weighted mean			**1.67**	**1st**
Water Conservation-Related				
Small scale irrigation	5	2.0	0.2	
Small earth dams	46	18.0	0.7	
Micro dams	0	0	0	
Tube wells	11	4.3	0.3	
Contour ridging	0	0	0	
Weighted mean			**0.24**	**5th**
Alternative SLM Practices				
Tree nursery establishment	3	1.2	0.1	
Apiculture	6	2.3	0.2	
Improved grass cutter	0	0	0	
Improved snail rearing	0	0	0	
Mushroom cultivation	0	0	0	
Weighted mean			**0.06**	**6th**
Off Farm SLM Practices				
River bank protection	10	3.9	0.4	
Flood control measures	21	8.2	0.8	
Stock routes	0	0	0	
Weighted mean			**0.4**	**4th**

Table 2: Distribution of respondents based on their adoption and use of the introduced SLM practices.
Source: Field survey, 2015.

Results of Factor Analysis

Results show the outcome of the varimax rotation of the variables included in the Factor Analysis and the principal components subsequently extracted. Inter-correlation between the independent variables yielded seven factors which accounted for a total of 71.93 per cent variation of the dependent variable. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy of 0.522 with a Chi-square value of 114.3 (35) $p \leq 0.01$ was obtained. The factors were named as farming experience; economic; educational; access to inputs; personal characteristics; family characteristics; and soil fertility status factors.

Factor one: 'Farming experience' factor

Variables that loaded very high on factor one included: household size (L = 0.462), types of crop grown (L = 0.599), nativity (L = 0.357) and years of farming experience (L = 0.724). The variable with the highest loading was used to name this factor. The explanation is that; the longer the number of years an individual has spent on farming practices, the more receptive such a person will be towards any newly introduced ideas that can boost his/ her productivity.

Factor two: 'Economic' factor

Variables with high load which contributed to naming of this factor were religion of the respondents (L=0.432), types of arable crop grown (L=0.435), monthly income from agriculture (L= 0.436) and monthly income from other sources (L= 0.406). The variable with the highest loading was used to name this factor. The explanation of this factor is that; the economic standard of an individual farmer/beneficiary will influence his/her adoption and use of introduced idea or innovation.

Factor three: 'Educational' factor

Variables with high load which contributed to naming of this factor were sex of the respondents (L= -0.386) and number of years spent in education (L= 0.592). The explanation of this factor is that: - the higher the educational status of the farmers or land owners, the higher their chances of being receptive and also of having a better grasp of ideas introduced to them on Sustainable Land Management Practices.

Factor four: 'Accessibility to inputs' factor

Variables with high load which contributed to naming of this factor were ethnicity of the respondents (L= 0.364) and frequency of input support (L= -0.414). The explanation of this factor is that: - the more farmers have access to farm inputs; especially the ones needed in the application of sustainable land management practices, the higher the tendency that they adopt the recommended SLM practices introduced to them.

Factor five: 'Personal characteristics' factor

Variables with high load which contributed to naming of this factor were sex of the respondents (L= 0.337), religion (L= 0.320), household size (L = -0.392) and level of education (L = 0.328). Gender is very significant in assigning of roles and responsibilities among a particular population. The relationship between sex of respondents and level of adoption of SLM practices suggests that adoption of SLM practices among farmers may be gender-specific. There are so many farm practices that are gender-specific e.g. men tend to be more involved in production while women engage more in processing and marketing of the produce. Also, in terms of provision of inputs, incentives and machineries for SLM practices, gender consideration should be given attention. The higher the educational status of the farmers or land owners, the more their chances of being receptive and of having a better grasp of ideas introduced to them on SLM practices. Literate farmer is also more exposed to new ideas within and around him and may adopt earlier and faster than non-literate farmer.

Factor Six: 'Family characteristics' factor

Variables with high load which contributed to naming of this factor were marital status of the respondents (L= 0.406) and number of years spent in the community (L= 0.343). The explanation of this factor is that: - the marital status of an individual may influence how he/she adopts the introduced SLM practices. Information about innovations or ideas spread easily among members of the same family than with just an individual. Also, older members of a community are likely to adopt practices that can help preserve their environment than those that are just sojourners or non-indigenes.

Factor Seven: 'Soil fertility status' factor

Variables with high load which contributed to naming of this factor were ethnicity (L= -0.388), frequency of input support (L= 0.359), soil fertility (L= -0.669) and training on SLM benefits (L= 0.511). Part of the benefits of SLM practices is to improve land productivity, as well as combat soil degradation challenges in our environment. However, the fertility status of a particular soil will not only influence the adoption of SLM practices but will also determine the type of SLM practice that a farmer/ land owner adopts.

Factors	Name	Eigen value
I	Farming experience	5.572
II	Economic factor	3.241
III	Educational factor	2.488
IV	Accessibility to inputs	1.876
V	Personal characteristics	1.697
VI	Family characteristics	1.295
VII	Soil fertility status	1.096

Table 3: Factor names and Eigen values.
Source: Derived from the result of factor analysis, 2015.

Evaluation of the factors

The coefficients of each of the factor were regressed against the dependent variable, adoption and use of the SLM practices. The results show that all the factors pulled together were statistically significant at $p < 0.05$ with F (ANOVA) value of 2.12. The R was 0.750 which showed a high correlation of the factors with the dependent variable. The R2 value was 0.563 which signified that 56.3 percent of the variance of the dependent variable was explained by the variance of the seven factors. The coefficients of three of the seven factors were negative in direction. This simply signified that the factors would be moving in the opposite direction of the dependent variable. The factors are: - accessibility to input, personal characteristics and family characteristics. These factors would not allow respondents to adopt and use the SLM practices. This might be right because respondents might not be able to adopt the practices even when inputs are available because some other factors to adopt might not be available. Respondent might divert the resource to use SLM practices to other ventures. Personal characteristics might take an individual away from farming when it has tremendously improved as a result might not be talking of adoption of the SLM practices again. This is similar to the family characteristics. When the family members are rich enough, it may take the respondent farmer away from farming enterprise. The four factors with positive coefficients, farming experience, economic and educational factors as well as soil fertility status. These factors would be moving in the same direction with the dependent variable. For example, experienced farmers would want to use the SLM to improve his/her farm products. Also an increase in the experience of a farmer by one unit would increase the adoption of SLM practices by 0.272 units. Also if the economic factor should be increased by one unit, adoption of the SLM practices would be increased by 0.410 units. In case of the negative factors, like accessibility to inputs. If this factor should be increased by one unit, the adoption of the SLM practice would decrease by 0.245 units. One could say in practice that when the accessibility to input inreases, one would expect the adoption to increase. But some farmers would continue to practice their old methods since they could have access to the necessary inputs. When both the personal characteristics and family characteristics should increase by one unit each, adoption of SLM practices would decrease by 0.188 and 0.348, respectively. Educational factor has a positive coefficient, which implies that when education factor should increase by one unit, adoption of SLM practices would increase by 0.211 units. This corresponds with Famuyiwa, Olaniyi and Adesoji's (2017) position that education and adoption are positively correlated.

	Coefficient(B)	beta (b)	p- values
Constant	29.735	-	0.001
Farming experience	16.820	0.272	0.026
Economic factor	26.420	0.410	0.000
Educational factor	17.073	0.211	0.018
Accessibility to inputs	-20.169	-0.245	0.003
Personal characteristics	-19.197	-0.188	0.0480
Family characteristics	-27.060	-0.348	0.032
Soil fertility status	26.364	0.487	0.090

$R = 0.750$; $R^2 = 0.563$; Adjusted $R^2 = 0.181$; $F = 2.12$; $p = .0002$

Table 4: Results of evaluation of the factors by regression analysis.

Conclusion and recommendations

We that out of the 35 SLM practices introduced to the Fadama III beneficiaries, 29 (82.8%) were adopted and used. However, the weighted and mean scores were very low indicating a very low level of adoption. This implies that even when SLM were adopted the practice was either adopted and discontinued or rarely practiced. The practice of the SLM was still poor in the study area. The beneficiaries were not practicing the SLM as expected. In addition, seven factors were determined to influence adoption and the use of the factors, but three of them, availability of inputs, personal characteristics and family characteristics might work against adoption and use of the SLM practices. It is therefore recommended that the seven factors be critically examined when planning programmes on adoption and the use of sustainable Land Management practices in Nigeria. The policy makers should be aware that the level of practice of the SLM was still very poor in the study area. In order to save guide the environment, policy should be formulated that will enforce land users (farmers) to adopt and practice the SLM technologies.

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Determinação e avaliação de fatores associados com práticas de gerenciamento sustentável da terra por agricultores do estado de Osun, Nigéria

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Resumo Este estudo identificou práticas de gestão ambiental utilizados por agricultores no estado de Osun, Nigéria, determinando os fatores associados com as melhores práticas utilizadas. A técnica de amostragem multi-estágio foi utilizada para selecionar 256 agricultores de oito Áreas Governamentais Locais (AGLs) do estado. Oito diferentes empresas agrícolas foram selecionadas nas AGLs e, também, quatro agricultores formam selecionados de cada empresa. Os dados coletados foram descritos com base na frequência, média e desvio padrão, enquanto as análises de regressão e de fatores foram utilizadas para realizar inferências neste estudo. Os resultados revelaram que o grupo de agricultores era majoritariamente formado por homens (60%) que tinham, em média, 48.0±10.3 anos de idade. O tamanho médio dos domicílios era de 6.6±2.8 e a maior parte dos residentes não eram capazes de ler e escrever. O estudo identificou 35 práticas de gerenciamento sustentável da terra conhecidas pelos agricultores, sendo que 28 destas 35 práticas eram efetivamente utilizadas. Sete fatores associados com o uso sustentável da terra são: experiência, acesso à recursos econômicos, acesso à recursos educacionais, acesso à insumos, características pessoais, características familiares e status de fertilidade do solo. Os fatores estimados são estatisticamente significantes ($p < 0,05$), demostrando que os níveis de consciência e de uso de práticas de gerenciamento sustentável no estado estão abaixo dos padrões esperados.

Palavras-Chave: determinação, avaliação, gerenciamento da terra, agricultores.

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