



ASSESSMENT OF RURAL FARMERS' PERCEIVED EFFECT OF SOIL EROSION ON FARMING ACTIVITIES IN IKEDURU LOCAL GOVERNMENT AREA OF IMO STATE, NIGERIA

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ABSTRACT

The study assessed rural farmers' perceived effect of soil erosion on farming activities in Ikeduru local government area of Imo State, Nigeria. Multi-stage sampling technique was used to select 120 rural farmers. Data collection was through structured questionnaire and analyzed using descriptive statistics such as mean and percentage. Findings reveal that excessive rainfall (= 4.13), lack of good drainage system (= 3.95), large scale cutting of forest (= 3.75), deforestation (= 3.68) among others were the mean responses of farmers on the perceived causes of soil erosion. The study also revealed that ditches made by soil erosion in the area is so deep and horrifying (= 3.97), the level of erosion in the area has gone beyond individual control (= 3.78) and the level of soil erosion in the area is high (= 3.65) were the mean responses of farmers on level of soil erosion. Furthermore, land degradation (= 3.93), reduced crop yields (= 3.85), low food production (= 3.85), general decrease in soil fertility (= 3.80) among others were perceived effects of soil erosion on farming activities. From the findings, it was concluded that there were perceived negative effects of soil erosion on farming activities. The study recommended that government should provide assistance in the areas of repairs of existing erosion sites, establishment of soil erosion research centers, and provision of proper climate data especially on rainfall and forest regeneration to help reduce and control the perceived negative effects of soil erosion on farming activities in the study area.

Keywords: Perception, Effect, Soil, Erosion, Rural, Farming, Activities

INTRODUCTION

Soil erosion is a significant environmental issue in Nigeria's agricultural regions. Concerning land use and management, climate, topography, social and economic conditions, human related activities like overgrazing, intensive farming, soil mismanagement, deforestation, cultivation of steep slopes and urbanization influence and accelerate soil erosion hazards (Yusuf et al., 2022).

Soil erosion has destroyed more than 80% of the world's currently farmed land base, which comprises over 1.5 billion hectares (Kimaro, 2018). According to Bakker (2017), about 60 percent of the agricultural lands that underwent human induced deterioration are affected by soil erosion. Soil erosion is one of the most important forms of soil degradation that threatens sustainable agricultural production in developing countries in particular as the majority of the rural people depend on agriculture as their source of livelihood (Tesfahunegn et al., 2021). According to Ufot Iren and Chikere-Njoku (2016), Southeastern soils in Nigeria are low in organic matter content, base status and water storage capacity with high susceptibility to accelerated erosion and land degradation. There are also major erosion sites located in Imo State, Ikeduru local government area inclusive. This is basically as a result of anthropogenic interference by human activities, geological formation of the soil and the variations in slope/topography of the zone (Okorafor et al., 2017). Yusuf et al. (2022) noted that farming activities are usually affected by soil erosion which ensures that farmers play a significant part in environmental protection. Alemu et al. (2019) also noted that farmers' perception of soil erosion is a key social factor that plays a significant role in their decision making on land management practices for controlling soil losses which in turn influences the selection and continued use of soil conservation practices. It is thus expected that soil erosion may exert some effects on farming activities in the study area, hence the need to provide empirical information on rural

farmers' perceived effect of soil erosion on farming activities in the study area.

MATERIALS AND METHODS

The study was carried out in Ikeduru Local Government Area of Imo State, Nigeria. Ikeduru Local Government area is located in the western part of Imo State. It covers a total area of 179 square kilometres with an estimated population of 199,316 persons (National Population Commission, 2006).

Multistage random sampling procedure was adopted for the study. In the first stage, twelve (12) communities were randomly selected out of the local government area for the study. The second stage involved the random selection of ten (10) respondents from each of the selected communities in the first stage. This gave a total of ninety (120) respondents for the study. Data collection was through structured questionnaire and analyzed using descriptive statistics such as mean and percentage.

Perceived causes of soil erosion in the study area were realized using Likert scale. A mean of 3.00 and above was regarded as a perceived cause of soil erosion, while a mean less than 3.00 was regarded otherwise. Level of soil erosion was also realized using Likert scale. A mean of 3.00 and above was regarded as a high level of soil erosion, while a mean less than 3.00 was regarded otherwise. Perceived effect of soil erosion on farming activities was realized using Likert scale. A mean of 3.00 and above was regarded as a perceived effect of soil erosion, while a mean less than 3.00 was regarded otherwise.

Rural farmers' perceived causes of soil erosion in the study area

The result in Table 1 shows that excessive rainfall (= 4.13), lack of good drainage system (= 3.95), large scale cutting of forest (= 3.75), deforestation (= 3.68), absence of tangible erosion control measures by government at various levels (=

3.67), underlying geology nature of the soil (= 3.50), constant tillage of soil during planting season (= 3.49) practices by residents in the area that encourage run-off (= 3.40), grading of farm areas by government using graders (= 3.33) and constant movement of heavy machines across the farmland areas (= 3.15) were the mean responses of farmers on the perceived causes of soil erosion in the study area. This implies that the perceived causes of soil erosion in the study area are excessive rainfall, large scale cutting of forest, underlying geology nature of the soil, deforestation, practices by residents in the area that encourage run-off, lack of good

drainage system, absence of tangible erosion control measures by government at various levels, grading of farm area by government using graders, constant tillage of soil during planting season and constant movement of heavy machines across farmlands. This finding is in conformity with those of Tesfahunegn (2019) and Nigussie, Tsunekawa, Haregeweyn, Adgo, Nohmi and Tsubo (2017) who reported that the major causes of soil erosion perceived by most rural farmers were over-cultivation, deforestation, over grazing and heavy rainfall within a short period of time.

Table 1: Mean responses of farmers on the perceived causes of soil erosion in the study area

S/N	Perceived causes of soil erosion	Mean
1	Excessive rainfall	4.13*
2	Large scale cutting of forests	3.75*
3	Underlying geology nature of the soil	3.50*
4	Deforestation	3.68*
5	Practices by residents in the area that encourage run-off	3.40*
6	Lack of good drainage systems	3.95*
7	Absence of tangible erosion control measures by governments at various levels	3.67*
8	Grading of farm area by government using graders	3.33*
9	Constant movement of Fulani herdsmen and their cattle across the farmland areas	3.08*
10	Constant tillage of soil during planting season	3.49*
11	Constant movement of heavy machines across the farmland areas	3.15*
Grand mean score		3.56*

Source: Field survey data, 2017

Key: * indicates ≥ 3.0 .

Level of soil erosion in the study area

The result in Table 2 reveals that the ditches made by soil erosion in the area is so deep and horrifying (= 3.97), the level of erosion in the area has gone beyond individual control (= 3.78), the level of soil erosion in the area is high (= 3.65) and the level of erosion in the area has gone beyond the control of the farming community (= 3.58) were the mean responses of farmers on the level of soil erosion in the study area. The

grand mean score of the mean responses of farmers on the level of soil erosion in the study area is 3.48 which are greater than the bench mark mean score of 3.00, implying that the level of soil erosion in the study area is high. This finding is in agreement with that of Nnamdi (2022) who reported a high level of gully erosion in the rural and urban settlements of Upper Imo River Basin, Southeast Nigeria.

Table 2: Mean responses of farmers on the level of soil erosion in the study area

S/N	Level of soil erosion	Mean
1	The ditches made by soil erosion in the area is so deep and horrifying	3.97*
2	The level of erosion in the area has gone beyond individual control	3.78*
3	The level of soil erosion in the area is high	3.65*
4	The level of soil erosion in the area is moderate	2.88
5	The level of soil erosion in the area is low	2.98
6	The level of erosion in the area has gone beyond the control of the farming community	3.58*
7	Only government can control the soil erosion in our farmland area considering the level at which erosion is presently in the area	3.53*
Grand mean score		3.48*

Source: Field survey data, 2017

Key: * indicates ≥ 3.0 .

Perceived effects of soil erosion on farming activities in the study area

The result in Table 3 shows that land degradation (= 3.93), reduced crop yields (= 3.85), low food production (= 3.85), general decrease in soil fertility (= 3.80), farmers going long distances before they can see good farmlands to farm on (= 3.77), washing away of crops and topsoil nutrients needed by crops for growth (= 3.73), complete destruction of farmland area by erosion (= 3.72), diminution of cultivable land as a result of the occurrence and expansion of gullies (=3.65) and changes in the topography and hydrology of affected areas, and disruption of roads (= 3.57) were the perceived effects of

soil erosion on farming activities in the study area. This implies that soil erosion exerted effects such as reduction in crop yields, decrease in soil fertility, land degradation, diminution of cultivable land, displacement of population due to loss of residential houses, loss of farm crops, changed topography and hydrology of affected areas and washing away of crops and topsoil nutrients needed by crops for growth in the study area. This finding is similar to those of Nwaogu et al. (2017) who reported that the declining productivity in agricultural yield, loss of cultivable arable farmland and vegetation cover loss were primary effects of gully erosion on farming in some parts of Southeast Nigeria.

Table 3: Mean responses of farmers on the perceived effects of soil erosion on farming activities in the study area

S/N	Perceived effects of soil erosion	Mean
1	It reduces crop yields	3.85*
2	General decrease in soil fertility as a result of the action of sheet and/or wind erosion	3.80*
3	Land degradation	3.93*
4	Diminution of cultivable lands as a result of the occurrence and expansion of gullies	3.65*
5	Displacement of population following loss of residential houses and farm crops	3.35*
6	Changes in the topography and hydrology of affected areas, and disruption of roads	3.57*
7	Washing away of crops and topsoil nutrients needed by crops for growth	3.73*
8	Complete destruction of farmland areas by erosion	3.72*
9	It has resulted to desert encroachment in the area	3.63*
10	There are few lands available now for farming and those available are costly.	3.58*
11	Farmers have to go long distances before they can see a good farmland to farm on.	3.77*
12	Cost of food in the area is so expensive due to low production caused by soil erosion.	3.85*
	Grand mean score	3.70*

Source: Field survey data, 2017

Key: * indicates ≥ 3.0 .

CONCLUSION

The study concluded that soil erosion exerted perceived negative effects on farming activities in the study area such as reduction in crop yields, decrease in soil fertility, land degradation, diminution of cultivable land, loss of farm crops, changed topography and hydrology of affected areas and washing away of crops and topsoil nutrients needed by crops for growth. The study further concluded that the level of soil erosion in the study area is high with excessive rainfall, underlying geology nature of the soil, deforestation, lack of good drainage system, grading of farm area by government using graders, constant tillage of soil during planting season and constant movement of heavy machines across farmlands as the major perceived causes of soil erosion. The study recommends that government should provide assistance in the areas of repairs of existing erosion sites, establishment of soil erosion research centers, provision of proper climate data especially on rainfall and forest regeneration to help reduce and control the perceived negative effects of soil erosion, reduced human activities such as the constant use of heavy farm machines, bush burning, over grazing, constant tillage of soils during planting season and deforestation that were discovered to be some of the perceived causes of soil erosion in the study area.

Extension agents should also educate rural farmers through the use of sensitization campaigns, workshops and seminars on the negative effects of soil erosion on farming activities as well as the use of appropriate soil conservation measures such as contour and strip cropping techniques on undulating farmlands, crop rotation practices, manuring and use of organic fertilizers to sustain nutrient levels of soils and the use of mulches to encourage decomposition and organic matter content replenishment.

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