EFFECT OF SOIL EROSION ON PRODUCTION OF ARABLE CROP FARMERS IN AKWA – IBOM STATE, NIGERIA

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Abstract
The study was conducted in Etim Ekpo and Eket in Akwa Ibom State. Multi-stage and simple sampling procedure ware used to select 120 respondents for the study. Data were collected using structured questionnaire. The data were analyzed using descriptive statistics and multiple regression analysis. The result revealed mean age of 45 years and mean duration of membership of cooperative was 3 years, farming experience was 11 years and annual income was ₦120,011.The result of the study showed that the highest mean perceived cause of soil erosion was excessive rainfall ($\bar{x}$= 3.35). The result showed that the arable crop farmers were experiencing the effects through low crop yield and severe flooding. The result showed that erosion coping strategies used by the farmers were mulching (3.56) and crop rotation containing legume ($\bar{x}$ = 3.43). The major constraints to use of erosion coping strategies by arable crop farmers were economic handicap ($\bar{x}$ = 2.38) and complexity of knowledge of the coping strategies ($\bar{x}$ =2.26). The level of use of erosion coping strategies revealed that crop rotation containing legumes was the most frequently used with mean ($\bar{x}$ = 2.42). The regression analysis showed that the coefficients of cassava cuttings, labour, soil type and fertilizers had negative and significant effect on the production by arable crop farmers at 5% level of probability. The study therefore recommends that the farmers should encourage mulching, tree planting and better land use practices in order to ensure high crop yield and boost their farm incomes.
Key words; Effects, Soil Erosion, Yield Production Arable Crop Farmers.

Introduction

The soil is the organic and inorganic materials on the earth's surface as result of interaction between atmospheric agents and biological activity in the underlying hard rock which provides a physical medium for plants growth (Coulombo, 2018). Soil plays essential roles in agricultural production because it physically supports crop and animal growth. The sustainability of crops productivity depends on the quality of the soil. Although lands are fixed assets and homogenous which guarantee food security and improves households financial status. (Anjichi *et al*,2020), Soil erosion is one of the major challenges that fight against human existence and removal of the upper layer of the soil and it is in this upper layer (Ugwu, 2019) almost all the soil nutrients that support crop productivity are concentrated. (Trout and Neibling 2018).

Soil erosion reduces soil fertility and productivity, erosion lowers agricultural productivity (Toy *et al*, 2018). Soil erosion is a major serious environmental problem globally. Over 80% of the current environmental degradation of the agricultural land is caused by erosion (Mohammed, 2019). Jing *et al* (2019), lamented that soil erosion is a serious environmental, economic social and productivity loss. However, erosion causes soil degradation, threatens the stability and health of the society in global and sustainable development of rural areas.

Wang *et al* (2018) asserted that a vast area of farm land has been lost to menace of gully erosion which leads to decrease in agricultural productivity and extreme food insecurity. In Nigeria soil erosion has resulted in loss of vegetation leading to falling of trees (Abdulfataiet *al*, 2019). Erosion has resulted in separation of adjacent villages and towns leading to collapse of bridges linking them together. Erosion menace has negative effects on facilities such as roads, schools, hospitals and water supplies shared by affected neighboring communities making them inaccessible to each other. Erosion menace has devastating effects ranging from high transportation cost of farm produce, loss of agricultural products and traders cut off from their normal day-to-day business (Wang, *et al* 2018). Erosion menace brings untold hardships to inhabitants of various rural communities in Akwa Ibom State if allowed to continue and unchecked will lead to food insecurity. In AkwaI bom State, almost all the communities are affected by one form of erosion or the other.

Ume *et al*(2019) lamented that there are over two hundred and one (201) gully erosion sites in AkwaI bom State, which has affected the agricultural productivity in a variety of ways including loss of arable lands, yield of crops such as cassava, maize and yam and loss of residential homes and loss of income. Okoraforet *al* (2020) affirmed that the economic loss of erosion is very hard to quantify but huge sum of money are spent each year repairing

damages caused by it. Akinbile*et al* (2018) noted that soil erosion affects livelihoods of rural households, loss of lives, properties and agricultural output. Pidiwiring (2018) emphasized that soil erosion results in multiplicity of social and economic losses whose effects are multi-dimensional.

In Eket Area alone, soil erosion has alarming and devastating effects ranging from how crop yields loss of lives and property estimated at millions of Naira (Pidiwirmy, 2018).In order to assess perceived effect of soil erosion on production of arable crop farmers in the study area. In the event of challenges of erosion menace the farmers tend to look for ways of reducing effect of erosion menace on their livelihood. Some of the farmers embrace coping strategies that could minimize the effect of erosion on them in order to meet their needs. The erosion menace adaptation is the appropriate adjustment to the erosion menace especially to these arable crop farmers to enhance resilience to its effect (Olusola, *et al* 2019). The various strategies adopted to reduce the effect of erosion menace on these crops and livelihood include; crop rotation containing legume, mulching, organic manuring etc. (Williams, 2019).

In AkwaIbom State, erosion menace tend to affect soil water resources, and health of farmers and these are critical for arable crop production which serve as means of livelihood especially small scale farmers who rely on local system that are sensitive to erosion menace. In the event of these farmers look help less as these are having direct effect on their livelihood through reduction in crop yield, productivity and low income. In their study in Agbani Agricultural Zone of Enugu State Nigeria. Ebe, *et* . (2021) observed that farmers adapted the strategies of use of crop rotation containing legume, organic manuring restricted intensive grazing, planting of trees and diversification into non-farming income activities.

Worried by these menace of soil erosion, it becomes necessary to undertake this study hence to assess the effects of erosion on the production of arable crop farmers in Akwa Ibom State, Nigeria. The specific objectives were to:

- ✓ describe the socio-economic characteristics of arable crop farmers in the study area.
- ✓ identify the perceived causes of soil erosion on the production of arable crop farmers in Akwa Ibom State.
- ✓ assess perceived effect of soil erosion on arable crop farmers.
- ✓ Examine the various soil erosion coping strategies by arable crop farmers in the study area.
- ✓ identify the constraints to use of erosion coping strategies by arable farmers, and
- ✓ ascertain the level of use of erosion coping strategies by arable crop farmers in the study area.

METHODOLOGY

The study locations of Abak, Oruk, , Anua Offot, Ika and Ikot Oku Idoo lie between latitudes 4^0 32'N and 5^0 33'N and longitude 7^0 51'E and 8^0 25'E (NEWMAP, 2017). Land inheritance is the primary tenure system practiced and the farm lands are undulating with tropical climate of high temperature of humid rainfall zone dominated by annual rainfall of 2500 – 3000mm. These areas share a common gully erosion sites. The main arable crops grown in the area are maize, cassava, yam, okra, melon and vegetables (Akwa Ibom Ministry of Agriculture, 2022).

Sampling procedure was used in selection of respondents, house listing of all buildings at farm sites around gully erosion sites was carried out. This provided the sampling frame from which the respondents were selected for the study. Questionnaire was used to conduct personal interviews with 120 respondents which formed the sample size. Descriptive statistics (mean, frequencies and standard deviations) and multiple regression analysis were used to analyze the data collected.

Measurement of variables

In socio-economic characteristics of arable crop farmers in the study area, frequency distribution, percentages and means were used to analyze the data. The perceived causes of soil erosion in the study area, data were operationalized by asking the farmers to indicate ten (10) item statements which were measured on a 4-point likert-type of scale of strongly agreed = 4, agree = 3, disagree = 2 and strongly disagreed = 1. Respondents mean scores were computed for each of the cause's statements by adding the weights of 4, 3, 2, 1. A midpoint was obtained, thus, 4 + 3 + 2 + 1 = $^{10}/_{4}$= 2.5. Mean scores greater than or equal to 2.5 implied serious cause and otherwise not serious cause. The perceived effect of soil erosion on production of arable crop farmers in the study area. Ten (10) effect statements were measured on 4-point likert-type scale of strongly agree = 4, agree =3, disagree = 2 and strongly disagree = 1. Respondents mean score were computed for each effect statement by adding the weights of 4, 3, 2, 1. A midpoint was obtained thus 4 + 3 + 2 + 1 = $^{10}/_{4}$= 2.5. Mean scores greater than or equal to 2.5 implied effect and otherwise not effect.

In order to realized soil erosion coping strategies by arable crop farmers, ten (10) item statements on coping strategies were measured on a 4-point likert-type of scale of strongly agree = 4, agree = 3, disagree = 2 and strongly disagree = 1. Respondents mean scores were computed for each copping strategies by adding the weights of 4, 3, 2, 1. A midpoint was obtained thus 4 + 3 + 2 + 1 = $^{10}/_{4}$= 2.5. Mean scores greater than or equal to 2.5 implied used coping strategies and otherwise not used coping strategies. The constraints to use of erosion coping strategies by arable crop farmers in the study area, 10

item constraint statement was used to solicit information from respondents. A 3-point likert-type scale of very serious = 3, serious = 2 and not serious = 1. Respondents mean scores were computed for each constraints statement by adding the weights of 3, 2, 1. A midpoint was obtained thus 3 + 2 + 1 = $^6/_2$ = 2.0. Mean scores greater than or equal to 2.0 implied serious constraints and otherwise not constraints.The level of use of erosion coping strategies by arable crop farmers were asked serious to indicate whether they use erosion coping strategies. Using a 3-point likert-type scale of always = 3, occasionally = 2 and never = 1. Respondents mean score were computed for each use statement by adding the weights of 3, 2, 1. A midpoint was obtained thus 3 + 2 + 1 = $^6/_3$ = 2.0. Mean score greater than or equal to 2.0 implied level of use of coping strategies and otherwise non-use of coping strategies. The mean was categorized using the following decision rule:

1.00– 1.50 (low)
1.51 – 1.99 (moderate)
2.00 and above (high)

Model Specification

Multiple regression analysis was used in determining the effects of soil erosion on arable crop production in the study area. The regression was run using SPSS package to determine the effect of the independent variables on the dependent variable. The t-test was used also to form a test of significance of the explanatory variables at the alpha level of 5%.

Erosion (effect) = independent variable
Output = dependent variable
The model is implicitly specified thus;

$Y_1 = f(x_1, x_2, x_3, x_4, x_6 - - - x_n + ei)$

Where
Y_1 = output in kg
X_1 = cassava cuttings in numbers
X_2 = labor in Naira (₦)
X_3 = fertilizer in (kg)
X_4 = eroded soils in dummy (eroded = 1 otherwise = 0)
ei = error term assumed to be normally distributed

The components of independent variables such as cassava cuttings, labour, fertilizer and eroded soil.
The model could be explicitly specified thus;

$Y_1 = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + ei$

Where x_1– $x_4$are as defined above
$b_1 – b_4$ are parameters to be determined
b_0 = constant term
ei = error term

RESULTS AND DISCUSSION

Table 1: Distribution of Respondents by socio-economic characteristics

Variables	Frequency	Percentage	Parameter (ẋ)
Gender			
Male	55	45.8	
Female	65	54.2	
Age			
21 – 30	7	5.8	$\bar{x}$ = 45.2
31 – 40	1.2	10.0	
41 – 50	63	52.5	
51 – 60	30	25.0	
60 and above	8	6.7	
Marital status			
Single	27	22.5	
Married	63	52.5	
Divorced	9	7.5	
Widowed	21	17.5	
Educational status			
No formal education	15	12.5	
FSLC	35	29.2	
Sen. Sec. cert.	50	41.7	
NCE/ONIS	15	12.5	
HND/BSC	5	4.2	
Membership period (years)			
< 1	5	4.2	
1 – 3	40	38.3	
4 – 6	62	51.2	x = 3.4
7 – 10	13	10.8	
Farm experience (years)			
< 5	21	17.5	
6 – 10	20	16.7	

11 – 15	69	57.5	
16 – 20	10	8.3	x = 11.4
Annual income ₦			
≤ 10,000	6	5.0	
11,000 – 50,000	12	10.0	
51,000 – 100,000	42	35.0	ẋ = 126.011
101, 000 – 150,000	38	31.7	
151,000 – 200,000	22	18.3	
201,000 and above	0	0.0	

Source: Field survey, 2022.

Table 1:Respondents Socio-economic characteristics in table 1 shows the gender, age, marital status, education status, duration of membership of farmers, farm experience and annual income of respondents. The result revealed that 45.8% were males while 54.2% were females. This implies that female folk were more engaged in arable crop farming than males in the study area. Majority of the respondents fell within the age group of 41 – 50 years with highest percentage of 52.5%. This was followed by 51 – 60 age bracket representing 25.0%. The mean ages was 45 years, this implied that arable crop farmers are still in their productive age and performing their responsibilities of catering for their households. Majority (52.5%) were married, while 22.5% were single. Respondents had educational status of senior secondary certificate representing 41.7%, followed by those 29.2% having first school leaving certificate while 12.5% have no formal education. Majority (51.2%) have been in organizations between 4 – 6 years. The mean year of membership was 3 years. Result also revealed that 57.5% of the respondents had 11 – 15 years of farming experience and their mean farming experience was 11 years implying that farming is a major and dominant occupation in the study area. This finding agreed with Onugu*et al* (2018) that asserted that arable crop farming was the major occupation in Anambra agricultural zones. Result showed that 35.0% of respondents earned between 51,000 – 100,000 while 31.7% earned of respondents between 101,000 – 150,000 per year with average income of ₦126,011. This implies that arable crop farmer in the study area earned low income. This could be as a result of high severity of erosion menace. This finding agree with Njoku and Obinna (2021) that erosion had devastating effects on livelihood of rural households in Imo State.

Table 2: Distribution of Respondents by perceived causes of soil erosion in the study area

Causes of erosion	Strongly agree (4)	Agree (3)	Disagree (2)	Strongly disagree (1)	Total	Mean
Excessive rainfall	72 (60.0)	28 (23.3)	10 (8.3)	10 (8.3)	402	3.35
Excess wind	18 (15.0)	62 (51.7)	30 (25.0)	10 (8.3)	328	2.73
Overgrazing	62 (51.7)	38 (31.7)	15 (12.5)	5 (4.2)	397	3.32
Crop removal	15 (12.5)	39 (32.5)	46 (38.3)	20 (16.7)	289	2.41
Climate change	46 (38.3)	44 (36.7)	16 (13.3)	14 (11.7)	362	3.02
Man-made human	16 (13.3)	34 (28.3)	10 (8.3)	60 (50.0)	246	2.05
Urbanization	42 (35.0)	48 (40.0)	5 (4.2)	25 (20.8)	343	2.86
Deforestation	53 (44.2)	27 (22.5)	8 (6.7)	32 (26.7)	341	2.84
Grand mean 2.82						

Source: field survey, 2022

Data in Table 2 shows that the highest mean score was 3.35 representing excessive rainfall as the highest cause of soil erosion in the study area. This is followed by overgrazing (3.32, climate change (3.02) urbanization (2.86), deforestation (2.84) and excess wind (2.73).

The remaining mean scores (2.41) have crop removal/harvest and man-made human (2.05). This result implied that soil erosion has various causes in the study area. The grand mean cause of soil erosion was 2.8 indicating high cause meaning that the farmers suffer severe erosion menace. This result is in consonance with Njoku and Obinna (2020) that farmers encountered various sources of erosion in Imo State.

Table 3, the distribution of respondents by perceived effect of soil erosion on production by arable crop farmers in the study area is shown in table 3. The results indicate that the highest mean effect was increased transportation cost ($\dot{x}$ = 3.14). This is followed by loss of agricultural products (3.05), deforestation (2.97) threaten health of farmers (2.97), loss of vegetation (2.96), inaccessibility to the farms ($\dot{x}$ = 2.92), loss of natural nutrient and fertilizer ($\dot{x}$ = 3.05), separation of adjacent town (2.81), increased cost of labour (2.63), increased infertile and barren farm lands ($\dot{x}$ = 2.39) and extreme food insecurity (2.27). The grand mean perceived effect score was 2.76 indicating that the farmers had adverse perceived effect of erosion menace in the study area. This result is in consonance with that of Njoku and Mbah (2018) that ezeship tussle only has adverse effects on community development in Imo State.

Result indicate that the use of mulching was mostly used coping strategies while building of dams was ranked second. Other ranking coping strategies include; crop rotation and organic manuring. This finding agreed with Ebe*et al* (2021) that adaptation strategies to flooding strategies in Enugu State.

Table 3: Distribution of Respondents by Perceived effects of soil erosion in AkwaIbom State

Perceived effect of soil Erosion	Strongly Agree	Agree	Disagree	Strongly disagree	Total	Mean ($\dot{x}$)	Rank
Depletion of soil nutrient	52 (43.3)	28 (23.3)	25 (20.8)	15 (12.5)	357	2.97	3rd
Loss of natural nutrient and fertilizer applied	48 (40.0)	34 (28.3)	32 (26.7)	8 (6.7)	366	3.05	2nd
Severe flooding	56 (46.7)	24 (20.0)	21 (17.5)	19 (15.8)	357	2.97	3rd
Extreme food insecurity	28 (23.3)	12 (10.0)	45 (37.5)	35 (29.2)	273	2.27	15th
Loss of vegetation	38 (31.7)	52 (43.3)	18 (15.0)	12 (10.0)	356	2.96	4th
Low crop yield	42 (35.0)	38 (31.7)	16 (13.3)	24 (20.0)	338	2.81	9th
Inaccessibility	57 (47.5)	23 (19.2)	14 (11.7)	26 (21.7)	351	2.92	5th

Loss of organic products	62 (51.7)	28 (23.3)	5 (4.2)	25 (20.8)	367	3.05	2nd
Increase transportation cost	61 (50.8)	29 (24.2)	16 (13.3)	14 (11.7)	377	3.14	1st
Infertile land and barren farm land	27 (22.5)	13 (10.8)	60 (50.0)	20 (16.7)	287	2.34	14th
Grand mean 2.76						46.96	

Source: Field survey, 2022

Data in Table 4 reveals that respondents reported erosion coping strategies. The results shows that use of cover crops/mulching had the highest mean score of (ẋ = 3.56). This is followed by solid building of dams (3.43), reduced building on the water ways (3.46), proper rotation of crops with legume (ẋ = 3.43), use of organic manuring (ẋ = 3.42), planting trees around the farm as wind breaks (3.36), proper land use/tenure system (ẋ = 2.97), good farm calendar (3.18), strip copping (ẋ = 2.33), construction of embankment (x = 1.83) and the grand mean was 2.9 indicating that the respondents accepted the investigated statements as erosion strategies. Results of this finding agreed with Njoku and Ugboaja (2021) that flooding coping strategies reduces loss due to high occurrence of flooding in Imo State.

Table 4: Distribution of respondents by erosion coping strategies

Erosion copping strategies	Strongly agree (4)	Agree (3)	Disagree (2)	Stronglydisagree (1)	Total	Mean	Ranking
Use of good rotation of crop containing legumes	70 (28)	30 (90)	20 (40)	0 (0)	410	3.42	4th
Application of organic manuring	75 (300)	25 (75)	15 (30)	5 (5)	410	3.42	4th
Planting of tree wind breaks	65 (260)	35 (105)	18 (36)	2 (2)	403	3.36	6th
Use of cover crops/mulching	90 (360)	15 (45)	7 (14)	8 (8)	427	3.56	1st
Land tenure and land use proper and good	12 (48)	98 (294)	4 (8)	6 (6)	356	2.97	8th
Building of dams	85 (340)	15 (45)	12 (24)	8 (8)	417	3.48	2nd
Avoid farming on water ways	75 (300)	30 (90)	10 (20)	5 (5)	415	3.46	3rd
Use of good farm calendar	55 (220)	42 (126)	13 (26)	10 (10)	382	3.18	7th
Strip cropping	30 (120)	30 (90)	10 (20)	5 (5)	280	2.33	10th
Building of embankment	12 (48)	18 (54)	28 (56)	62 (62)	220	1.83	11th
Grand mean 2.99						38.91	

Source: field survey, 2022.

Table 5, distribution of respondents by perceived constraints to use of erosion coping strategies by arable crop farmers is presented in Table 5. Result shows that the highest mean constraint was economic handicap (ẋ = 2.38). This is followed by lack of knowledge of coping strategies (2.26), complexity of coping strategies (ẋ = 2.12), high cost of coping strategies (2.08), illiteracy (2.06), climate change (2.05) while the minor constraints were as follows: tradition (1.56), conservatism (1.65), land tenure system (1.93) and type of soil (1.99). This implies that farmers have serious constraints in the use of erosion coping strategies in the study area. This finding is in line with the finding of Njokuand Chibundu(2022) that poultry farmers encounter serious constraints in the use of improved poultry technologies in Imo State.

Result further showed that the standard deviations were closely packed and small. This indicate the uniformly and reliability of the result. This result agreed with

Njoku and Chibundu(2022) who explained that the smaller the standard deviation the higher the degree of reliability of the estimates.

Table 5: Distribution of respondents by perceived constraints to use of erosion coping strategies

Constraints to use of coping strategies	Very serious	Serious	Not serious	Total	Mean	Standard deviation
Economic handicap	65 (54.2)	35 (29.2)	20 (16.7)	285	2.38	0.6198
Tradition and culture	15 (12.5)	37 (30.8)	68 (56.7)	187	1.56	0.4103
Conservation	18 (15.0)	42 (35.0)	60 (50.0)	198	1.65	0.4345
Illiteracy/ignorance	41 (34.2)	45 (37.5)	34 (28.3)	247	2.06	0.6957
Land tenure system	28 (23.3)	55 (45.8)	37 (30.8)	231	1.93	0.4993
High cost of coping strategies	48 (40.0)	33 (27.5)	39 (32.5)	249	2.08	0.6354
Complexity of method	49 (40.8)	36 (30.0)	35 (29.2)	254	2.12	0.4655
Nature of soil	40 (33.3)	39 (32.5)	41 (34.2)	239	1.99	0.4883
Texran of the land	51 (42.5)	32 (26.7)	37 (30.8)	254	2.12	0.6196
Lack of knowledge of highly improved strategies	48 (40.0)	55 (45.8)	17 (14.2)	271	2.26	0.6857
Grand mean 2.04						

Source: field survey, 2022

The distribution of respondents by level of use of erosion coping strategies is shown in Table 6. The result indicate that rotation of crop containing legumes had the highest mean utilization of 2.42. This is followed by application of organic manure (2.40), building of terrace (2.19) and embankment ($\dot{x}$ = 1.96). The remaining crop planting (1.92), embarked ($\dot{x}$ = 1.79), use of farm calendar ($\dot{x}$ = 1.65), digging of water channels ($\dot{x}$ = 1.52), use of wind breaks (1.52) and use of cover crops ($\dot{x}$ = 1.46). The grand mean use was 1.88, implying that farmers had low use of erosion coping strategies. This finding disagreed with Nwaobiala and Anyanwu (2018) that cassava farmers had high utilization of production technologies in Imo State. The result shows that the standard deviations were closely packed and small. This implies that high conformity and reliability of the result. The finding agreed with Toy, *et al* (2019) that explained that the smaller the standard deviation the higher the degree of reliability of the estimate.

Table 6: Distribution of Respondents by level of use of erosion coping strategies

Utilization strategies	Always	Occasionally	Never	Total	Mean x	Standard deviation
Rotation of crops containing legumes	45 (135)	40 (120)	35 (35)	290	2.42	0.4958
Application organic manuring	60 (180)	48 (96)	12 (12)	288	2.40	0.6196
Construction of wind breaks	12 (36)	38 (76)	70 (70)	182	1.52	0.4998
Building of terrace	25 (75)	30 (90)	65 (65)	263	2.19	0.3978
Use of cover crops	15 (45)	25 (50)	80 (80)	175	1.46	0.2528
Strip planting	45 (135)	20 (40)	35 (35)	258	1.98	0.4328
Digging of channels/water ways	12 (36)	38 (76)	70 (70)	182	1.52	0.5109
Proper use of farm calendar	18 (54)	42 (84)	60 (60)	198	1.65	0.4845
Building of embankment	20 (60)	55 (110)	45 (45)	215	1.79	0.4737
Soil enrichment	25 (75)	65 (130)	30 (30)	235	1.96	0.6957
Grand mean (x) 1.88						

Source: field survey, 2022.

Table 7: Regression Estimates (effect of erosion menace on production/output of arable farmers

Variables	Coefficient estimates	E – value	P – value
Constant	-20823.94	-1.607	0.108
X_1labour	59329.26	-2.655	0.008
X_2 cassava cutting/maize seed	26291.56	1.106	0.054
X_3 fertilizer	-41579.49	1.937	0.055
X_4labour	-44996.33	2.058	0.041
R^2	0.061		
R^2 – adjusted	0.050		
F – value	5.498		
	sig.@0.001/1%		

Source: Field Survey, 2022.

The result of the multiple regression analysis of effects of soil erosion on production/income/output of arable farmers in the study area were summarized in the Table 7 revealed that all the independent variables investigated had negative and significant effect on arable farmers production/output/income. The coefficient of kg 59327.261 for cassava cutting suggests that one unit increase in severity will result in more loss in output/yield. The coefficient of 26291.56 ton for cassava cutting indicate that one unit ton decrease in output of arable farmers. The coefficients of farm land (41579.49), labour (-44996.33) indicate a decrease in output with increase intensity of erosion. It also revealed that the coefficient of multiple determinations was less than 3 percent the f – ratio of 5.50 was significant at 18 probabilities. This implied the independent variables had substantial negative influence on the dependent variable.

CONCLUSION AND RECOMMENDATIONS

The result of the study showed that there was perceived effects of soil erosion on production by farmers in the study area. The farmers indicated that there was testifies of high transportation cost, loss of agricultural products, depletion of soil nutrients, loss of vegetation, inaccessibility communities, severe flooding and low crop yield. The study showed that farmers employed coping strategies such as crop rotation containing legumes, mulching, building of dams, avoid planting on water ways, organic manuring, planting of trees, proper land use system, proper farm calendar and strip cropping. Result indicates that farmers had various constraints adaptation strategies which included economic handicap, lack of knowledge of using erosion control strategies, tenacity of the land, high cost of coping strategies and illiteracy. From the study it was observed that most farmers were young, experienced members of organizations and had low income. The perceived causes of soil erosion climate change, urbanization and deforestation. The result showed that soil erosion had negative and significant effect on the output of arable farmers.

The study recommends that farmers should avoid frequent cutting of trees and encourage the habit of planting trees. Policies which aim at extending affordable credit facilities to the farmers to enable them have resources to engage on the effective coping measures that tend to be costly.

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