Soil Conservation Practices among Vegetable Farmers in Etche Local Government Area, Rivers State, Nigeria

Elenwa, C. O. *Elenwo, C. E. and Ebin, I.
Department of Agricultural Extension and Rural Development, Rivers State University, Port Harcourt, Nigeria.
*Department of Crop and Soil Science, Rivers State University, Port Harcourt, Nigeria.

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ABSTRACT

Soil conservation requires that organic matter be returned to the soil on a continual basis. The study examined soil conservation practices among vegetable farmers in Etche Local Government Area of Rivers State, Nigeria with the specific aim to: describe the socioeconomic characteristics of the vegetable famers in the area: identify the types of vegetables grown; ascertain the types of soil conservation practices available and adopted for the production of vegetables, examine the benefits of soil conservation practices to vegetable farmer and identify the constraints to the use of soil conservation practices in vegetable production in the study area. Data were collected with the use of questionnaire and 106 respondents were selected from six communities using the purposive sampling method. The data were presented and analysed using frequency, percentage, mean score and correlation analysis. The study revealed that majority (52.8%) were female, were married, (53.8%) and 47.2% had SSCE. The mean age was 31.8 years; household size mean was 4.9 while the mean years of farming experience was 7 years. The type of vegetables grown were; Pepper (87.7%) Okra (84.9%), Maize (84.0%), fluted pumpkin (73.6%) Cucumber (73.6%), Water melon (72.6%), Garden egg (65.1%), Water leaf (59.4%) among others. The types of soil conservation practices available were; shifting cultivation (82.1%), multi-cropping (72.6%), manure application (66.0%) and crop rotation (56.6%). Benefits of soil conservation practices in were; improved soil structure (70.8%), increased productivity (64.2%) and protect soil from erosion and nutrient loss (58.5%). Major constraints to the use of soil conservation practices in the study area were; lack of information (71.0%), lack of incentives (57.5%), inadequate soil conservation skills (50.0%) and lack of technical knowhow (37.7%). The result from the regression analysis showed that gender (-0.024) , house hold size (-0.135) and marital status (0.020) were significantly negative while age (0.071), educational qualification (0.042) and farming experience(0.067) were positively related to the soil conservation practices among the vegetable farmers in the study area. The study therefore recommends that extension agents should provide vegetable farmers with adequate and timely information and to serve as a source of motivation for the adoption of soil conservation practices.

Keywords: Soil Conservation Practices, Vegetable Farmers, Increased Productivity

INTRODUCTION

Soil is the biologically active, porous medium that has developed in the uppermost layer of earth's crust. It is one of the principal substrata of life on earth, serving as a reservoir of water and nutrients, as a medium for the filtration and breakdown of injurious wastes, and as a participant in the cycling of carbon and other elements through the global ecosystem (Sposito, 2021). Soil evolved through weathering processes driven by biological, climatic, geologic, and topographic influences. Since the rise of agriculture and forestry in the 8th millennium BC, there has also arisen by necessity a practical awareness of soils and their management. In the 18th and 19th centuries the Industrial Revolution brought increasing pressure on soil to produce raw materials demanded by commerce, while the development of quantitative science offered new opportunities for improved soil management and conservation (Sposito, 2021).

Soil conservation is a combination of practices used to protect the soil from degradation, (JCSW, 2022). First and foremost, soil conservation involves treating the soil as a living ecosystem, and recognizing that all the organisms that make the soil their home, play important roles in producing a fertile healthy environment. They are responsible for breaking down organic matter, releasing nutrients, and opening up spaces for the circulation of air and water. Most organisms in the soil depend on dead plant and animal matter for their food and energy. Soil conservation requires that organic matter be returned to the soil on a continual basis. Organic matter is what provides good soil structure and water holding capacity, promotes water infiltration, and protects the soil from erosion and compaction. In addition to preserving soil life and organic matter, the other principles of soil conservation are to; manage surface runoff, protect bare exposed soil surfaces and highly susceptible sites example steep and slopes, and protect downstream water courses from sedimentation and pollution (JCSW, 2022). Soil conservation is an active ongoing process throughout which the practitioner must maintain his/her commitment. The first step is to obtain a good basic knowledge of the land resource. This means knowing where the soil is most permeable and susceptible to groundwater contamination from excess pesticides, or where the land is most susceptible to water erosion because of a combination of slope and soil texture. Without this understanding, it is impossible to plan an appropriate conservation strategy for vegetable farming.

The term vegetable usually refers to the fresh edible portions of certain herbaceous plants. Vegetables are usually classified on the basis of the part of the plant that is used for food. The root vegetables include beets, carrots, radishes, sweet potatoes and turnips. Stem vegetables include asparagus and kohlrabi. Among the edible tubers, or underground stems, are potatoes. The leaf and leafstalk vegetables include Brussels sprouts, cabbage, celery, lettuce, rhubarb, and spinach. Among the bulk of vegetables are garlic, leeks and onions. The head or flower, vegetables include artichokes, broccoli and cauliflower. The fruits commonly considered vegetables by virtue of their use include cucumbers, eggplant, okra, sweet com, squash, peppers, and tomatoes. Seed vegetables are usually legumes, such as peas and beans (Albert and Nne Cosy, 2021). Some of the vegetables grown in Etche Local Government Area include Water leaf, Ugwu (fluted pumpkin), cucumber, okra, lettuce among others.

Soil is the most important resource on which sustainable agriculture and livelihood of the

farmers is based, this makes the proper management of this valuable resource vital to uphold long-term agricultural productivity for farmers. Probably, no less than a quarter of the world population belongs to farm households and most of which are in less developed countries of the world (Ellis, 2000), Nigeria inclusive. Hence, the increased pressure on the available soil for food production most especially among developing nations of the world. FAO (2007) affirmed that the use of soil for agricultural production is one of the strongest influences affecting environmental quality in many developing countries. Specifically, practices like unguided application of agrochemicals, bush burning, deforestation, grazing, continuous tillage and uncontrolled farm mechanization affect the quality of soil and vegetation cover, thereby resulting into soil degradation. Soil degradation and desertification are already severe issues in Sub Saharan Africa, where smaller size and poor farmers follow extractive farming practices. Soil depletion and erosion thus constitute a hazard whose containment is a pre-requisite for national development, particularly in societies that are agriculture based like ours (Iheke and Onyenorah, 2012).

Iheke et al (2012) noted that land degradation will remain an important global issue for the 21st century because of its adverse impact on agronomic productivity, the environment, and its effect on food security and the quality of life. Land degradation can be considered in terms of the loss of actual or potential productivity or utility as a result of natural or anthropic factors; it is the decline in land quality or reduction in its productivity. Thus a need for the conservation of the soil to ensure sustainability of derived benefits and potentials of the soil. More so, rural farmers often aim at maximizing immediate returns from the land regardless of erosion. It has been noted that yields of crops are higher on crop farms with conservation practice than farms without conservation practices in the same, ecological zone (Ibewiro et al., 2000; Albert et al., 2015). However, Albert and Okidim (1998) stated that land owners receive the benefits of soil conservation in the long term. According to him, the maintenance of soil productivity in the long run is a proper social goal of conservation but it is only a minor- economic factor influencing the small- scale farmers. Soil erosion severely threatens the soil resource and the sustainability of agriculture. After decades of research, this problem still persists, despite the fact that adequate technical solutions now exist for most situations.

This brings the question as to why soil conservation is not more rapidly and more generally implemented. Studies show that the implementation of soil conservation measures depends on a multitude of factors but it is also clear that rapid change in agricultural systems only happens when a clear economic incentive is present for the farmer. Conservation measures are often more or less cost-neutral, which explains why they are often less generally adopted than expected. It was against this background that this study assessed the adoption of soil conservation practices among vegetable farmers in the course of their farming activities in the study area. The study specifically sought to:

i. describe the socio-economic characteristics of vegetable farmers in the study area;
ii. identify the types of vegetables grown by vegetable famers;
iii. ascertain the types of soil conservation practices available and adopted by vegetable famers
iv. examine the benefits of soil conservation practices for vegetable production and
v. identify the constraints to the use of soil conservation practices among vegetable famers for vegetable production in the study area.

Hypothesis of the Study

One null hypothesis was sated and tested to guide the stated objectives.

H_{01} Socio-economic characteristics of vegetable crop farmers do not significantly influence

METHODOLOGY

1Study Area

The study was carried out in Etche Local Government Area (LGA) of Rivers State, Nigeria. The headquarters of the LGA is Okehi. Etche LGA is located at the North-Eastern part of Rivers State, Nigeria. It lies within latitude 4045N - 501714 and longitude 6055'E - 7017'E. Etche is a subsistent agrarian ethnic group in Rivers State and is situated within the eastern flank of the Niger Delta Region of Nigeria. The inhabitants engage in farming, palm wine tapping, fishing, logging, hunting, oil and sand mining. Etche has combination of many communities and villages which include; Akwu/Obuor, Eberi, Amaji, Opiro, Chokocho, Igboh, Egwi, Afara, Mba, Igbodo, Ofeh, Ohimogho, ObiohiaUmuogba, UmuajulokeOkehi, Obibi, Odufor, Nihi, Okomoko, Ulakwo, Umuakonu, Umuanyagu, Okoroagu, Obite, Umuoye, Igbo, Umuechem, Ozuzu, Mba, OdagwaandEgbeke. The study area covers about 641.28km2 with some communities including Okehi, Ulakwo, Obite, Obibi, Igbo, Odagwa, east-wards by the Imo river, then Omuma LGA. Umuechem, Ndashi, Igbodo, Ozuzu, Mba and Afara. It is bounded in the north by Imo State, east-wards by the Imo river, then Omuma LGA. While Obio-Akpor and Oyigbo in the south and Ikwerre LGA. is found at the west ward. The Local Government Area had large massive land good for the cultivation of vegetable crops. The traditional occupation of the people of Etche is farming; they produce vegetable crops such as cucumber, maize, fluted pumpkin, okra, among others.

The population of the study constituted all vegetable farmers in Etche Local Government Area of Rivers State, Nigeria. There are 106 registered vegetable farmers in Etche (ADP, 2022). There are 12 communities in Etche local government area out of which 6 communities had registered vegetable farmers. Purposive sampling method was used to select all the registered 106 vegetable farmers in the LGA. Data were collected through primary source. The instrument for data collection was questionnaire and interview schedule. The data collected from the respondents were presented using descriptive statistics such as mean score, tables, percentages and frequency. A three point scale with options: Fully Adopted (FA) (2); Partially Adopted (PA) (1); Not Adopted (NA) (0) was used with a decision rule of 1.00. Variables greater than 1 or equal to 1.00 were considered as great constraints while variables less than 1.00 were considered as less constraint. Regression analysis (simple linear regression) was used to test the hypothesis. The f statistics was used to ascertain the usefulness of the overall model. The regression coefficient (R^2) was used to ascertain the goodness of the fit of the model. If the significant probability value $p< 0.05$ level of significance, reject the null and if the $p>0.05$ accept the null. The model is thus;

$y = bofx_1+ x_2 + x_3 +x_4 +x_5 +x_6 +x_7xe$

y = vegetable crop production; x_1= Sex (female = 0; male = 1);x_2 = Age (years);

x_3 = Marital status (married = 1. Otherwise = 0); x_4 = Household size (persons);

x_5 = Education level (No of years spent); x_6 = Secondary occupation; x_7 = Farming experience (years); e = Stochastic error

RESULTS AND DISCUSSION

Socio-economic characteristics of vegetable farmers

The result in table 1 revealed that more than half (52.8%) of the respondents are female while (47.2%) are male. This may imply that female constitutes greater number of vegetable farmers in the study area. This might be because female are more involved in agricultural activities than their male counterpart in most rural areas of developing countries especially in Nigeria. This study agrees with the findings of Elenwa and Okorie (2019) who reported that females are more than their male counterpart in vegetable farming in Oyigbo local government area in Rivers state. Also, 47.2% are of the age limits of 30-39 years with a mean age was 31.8 years which implies that most of the vegetable farmers in the study area are within their active year of productive life. This is so because it is on record that the mean age of active people in Nigeria are about 45 years (Nifeipiri and Elenwa, 2020). The table also revealed that majority (71.7%) of the respondents are married, while 21.7% and 6.6% are single and divorced respectively. This means that some of the vegetable farmers in the study area are married while others are either single or divorced. This finding agrees with the findings of Elenwa and Emodi (2019) who recorded that majority of the vegetable farmers were married in Omuma Local Government Area. The study also revealed that (47.2%) of the respondents had attained the level of secondary education, 30.2% had primary education, 13.2% had tertiary education while 9.4% had no formal education. Thus the percentage of vegetable farmers who could read and write is high (90.5%). This implies that vegetable farmers are literates and will encourage them to adopt soil conservation practices that will help improve yield and increase output. Furthermore, 53.8% of the respondents belong to household size of 5-8 persons. This result revealed that more of the respondents belong to relatively large household size. Large household is a good source of family labour force when they are judiciously engaged in the farming venture. Also, 63.2% of the respondents had farming experience of between 11-20 years old respectively. This implies that majority (93.4%) of the vegetable farmers in the study area have been involved in the business for about 20 years. This means that most of the respondents are relatively involved in vegetable farming for some years and as a result are well experienced (Nifeipiri et al 2020).

Table 1: Distribution of Socio-economic Characteristics of Vegetable Farmers

Characteristics	Categories	Frequency (N=106)	Percentage (%)	Mean
Gender	Male	50	47.2	
	Female	56	52.8	
Age (Years)	20-29	34	32.1	31.8
	30-39	50	47.2	
	40-49	14	13.2	
	50 and above	8	7.5	

Educational level	No formal	10	9.4	
	Primary	32	30.2	
	Secondary	50	47.2	
	Tertiary	14	12.2	
Marital Status	Married	76	71.7	
	Single	23	21.7	
	Widowed	7	6.6	
Household Size	1-4	49	46.2	4.9
	5-8	57	53.8	
Years of Experience	1-10	67	63.2	7.0
	11-20	32	30.2	
	21-30	3	2.8	
	31 and above	4	3.8	

Source: Field survey.2022 **Multiple Responses**

Types of vegetables grown by vegetable farmers

Fig 1 showed the frequency distribution of vegetables grown by the respondents. The representations revealed that majority (87.7%) of the respondents indicated that they grow pepper, 84.9% of the respondents noted that they cultivate each of okra and maize, 73.6% of the respondents indicated that they grow each of fluted pumpkin and cucumber, 72.6%, 65.1% and 59.4% of the respondents noted that they grow watermelon, garden egg and water leaf respectively, 56.6% of the respondents indicated that they cultivate each of bitter leaf and scent leaf while 43.6%, 36.8%, 32.1%, 24.5% and 23.6% of the respondents noted that they grew lettuce, tomato, cabbage, onion and carrot respectively. This result may imply that different vegetables are grown by the farmers in the study area. This is because vegetable forms important ingredients in the dishes of countries of the world (Elenwa and Ishikaku, 2021). Pepper in a major vegetable spice in most African dishes. It is consumed by humans in several ways. The no-pungent forms are eaten raw as salads while the stronger flavored types (chilies) are popular in all kinds of cookery as a pungent spice. It is also used in seasoning sauces and other dishes. Okra is generally grown in the tropics, particularly in tropical Asia; East, Central and West Africa, as well as the Caribbean. Okra is grown mainly for their tender fruit used as vegetable to thicken sauce and soups. In some areas, young leaves of the plant are also cooked as vegetable. Maize is grown by farmers in the study area because of its numerous health and dietary benefits. They are very important worldwide for both industrial and food purposes.

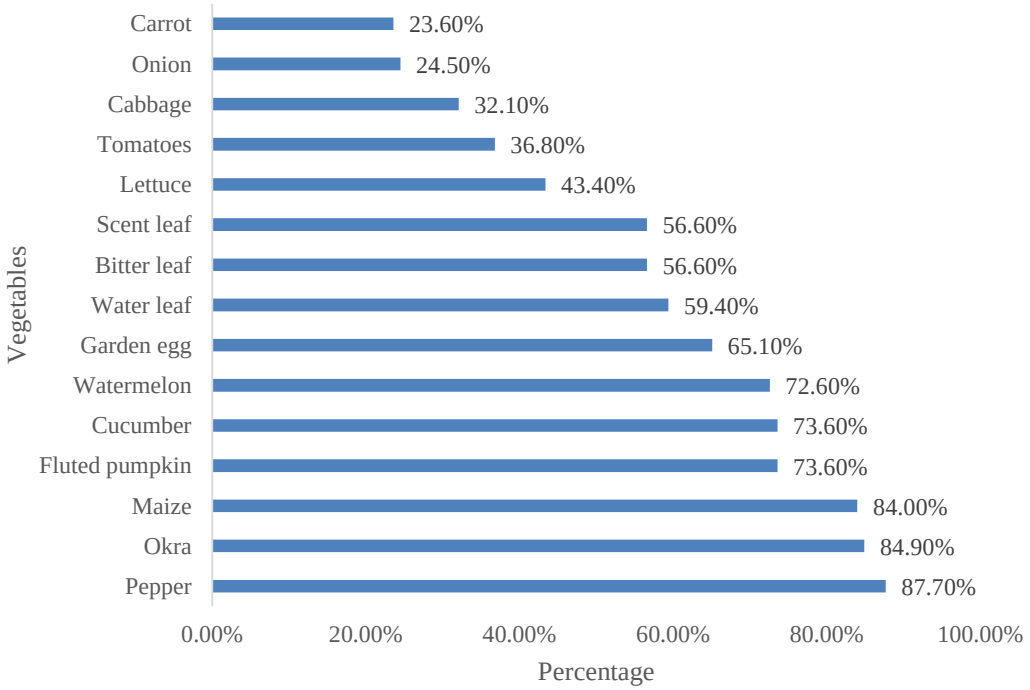

Fig. 1: Bar chart of the Frequency Distribution of Vegetables Grown by Vegetable Farmers

Types of soil conservation practices available in the study area

Table 2 shows the frequency distribution of soil Conservation practices available for the production of vegetables to the respondents. The table revealed that majority (81.1%) of the respondents indicated that they practiced and adopted shifting cultivation as a way to conserve soil. Shifting cultivation is one of the most important and widely used soil conservation strategies among most farmers across the globe. Shifting cultivation is particularly carried out by farmers in most countries of Africa and Asia. It is the pivot around which annual work and ritual cycles revolve and thus an intricate part of their way of life and closely tied to their cultural identity (FAO, 2014). A great number (72.6%) of the respondents indicated that multi-cropping as a soil conservation strategy was available. This may imply that most of the vegetable farmers in the study area cultivate different varieties of vegetable crop on the same piece of land. The table also revealed that most (66.0%) of the respondents indicated that manure use was available as a method of soil conservation. This decision may be because of economic importance attached to manure use. Also, 52.8% of the respondents agreed that the practice of mulching was available. This may be because mulching help to protect the soil from the effects of excess sunlight thereby conserving soil water and preventing the growth of weeds. Furthermore, 48.1%, 45.3% and 26.4% of the respondents indicated that planting pattern, cover cropping and intercropping was available respectively. The rest 9.4% noted that all of the above listed conservation methods were available in the study area. This finding agrees with the study of Elenwa and Emodi, (2019) on conservation practices among arable crop farmers in Omuma Local Government Area where all the practices were available for arable crop farmers' use.

Table 2: Soil Conservation Practices available for Vegetable production

Soil Conservation Practice	Frequency (N=106)	Percentage
Shifting cultivation	86	81.1
Multi-cropping	77	72.6
Manure	70	66.0
Crop rotation	60	56.6
Bush fallowing	57	53.8
Mulching	56	52.8
Planting pattern	51	48.1
Cover cropping	48	45.3
Intercropping	28	26.4
All of the above	10	9.4

Source: Field survey, 2022 Multiple Responses

The level of adoption of soil conservation practices by vegetable farmers

The level of soil conservation practice adoption by vegetable farmers is displayed in table 3. The table revealed that 55.7% of the respondents adopted manure application a as soil conservation practice. This may imply that manure application among vegetable farmers in rural areas have become a common soil management practice. The table also revealed that 44.3% of the respondents agreed that they fully adopted the practice of multi-cropping (X=2.13). This result coincides with the findings of Onyeneke, (2016) who in the study of the effects of livelihood strategies on sustainable land management practices among farmers in Imo State, Nigeria, reported that farmers in Imo State adopted the practice of multi-cropping as a soil management strategy while 37.7%, 33.0% and 31.1% of the respondents indicated that they partially adopted cover cropping, mulching and crop rotation respectively. Bush fallowing (43.4%), planting pattern (50.9%), intercropping (70.8%) and shifting cultivation (36.8%) were not adopted.

Table 3: Level of Soil Conservation Practice Adoption

Adopted Practice	(Frequency (%)) N=106			Mean±SD
	Fully Adopted	Partially Adopted	Not Adopted	
Mulching	21(19.8)	35(33.0)	50(47.2)	1.73±0.78
Bush fallowing	32(30.2)	28(26.4)	46(43.4)	1.87±0.85
Manure application	59(55.7)	3(2.8)	44(41.5)	2.14±0.98
Crop rotation	21(19.8)	33(31.1)	52(49.1)	1.71±0.78
Cover cropping	8(7.5)	40(37.7)	58(54.7)	1.53±0.64
Planting pattern	22(20.8)	30(28.3)	54(50.9)	1.70±0.79
Intercropping	21(19.8)	10(9.4)	75(70.8)	1.49±0.81
Multi-cropping	47(44.3)	26(24.5)	33(31.1)	2.13±0.86
Shifting cultivation	36(34.0)	31(29.2)	39(36.8)	1.97±0.84
Total	267(28.0)	236(24.7)	451(47.3)	1.81±0.85

Source: Field survey, 2022; Criterion Mean = 2.0 Multiple Responses

Benefits of Soil Conservation Practices for Vegetable Production

Table 4 showed the benefits of soil conservation practices. The table revealed that majority

(70.8%) of the respondents indicated that soil conservation practices improved soil structure. Also, 64.2% and 58.5% of the respondents agreed that soil conservation practices increased production and protected the soil from erosion and nutrients loss. Increased productivity is the main essence of soil conservation. The result also revealed that 33.0% and 30.2% of the respondents indicated that soil conservation practices led to soil protection from extreme temperature effect and less water use, while 27.4% and 16.0% of the respondents noted that it enhanced water holding capacity and reduced evaporation respectively. However, 10.4% 0f the respondents said it reduced labour and all of the above listed benefits. This implies that vegetable farmers in the study area derived many benefits as a result of adopting conservation practices. This is because the practice of soil conservation comes with lots of benefits which include maintenance of an adequate amount of organic matter and biological life in the soil. These two components account for 90 to 95 percent of the total soil productivity; increase in the quality and quantity of crop yields over the long term because it keeps topsoil in its place and preserves the long term productivity of the soil. Table 4 showed the benefits of soil conservation practices. The table revealed that majority (70.8%) of the respondents indicated that soil conservation practices improved soil structure. Also, 64.2% and 58.5% of the respondents agreed that soil conservation practices increased production and protected the soil from erosion and nutrients loss. Increased productivity is the main essence of soil conservation. The result also revealed that 33.0% and 30.2% of the respondents indicated that soil conservation practices led to soil protection from extreme temperature effect and less water use, while 27.4% and 16.0% of the respondents noted that it enhanced water holding capacity and reduced evaporation respectively. However, 10.4% 0f the respondents said it reduced labour and all of the above listed benefits. This implies that vegetable farmers in the study area derived many benefits as a result of adopting conservation practices.

Table 4: Benefits of Soil Conservation Practices

Soil Conservation Benefits	Frequency (N=106)	Percentage
Improved soil structure	75	70.8
Increased productivity	68	64.2
Protect soil from erosion and nutrient loss	62	58.5
Protect soil from extreme temperature effect	35	33.0
Less water use	32	30.2
Enhance water holding capacity	29	27.4
Reduce evaporation	17	16.0
Reduced labour	11	10.4
All of the above	11	14.4

Source; Field survey, 2022 Multiple Responses

Constraints to the Use of Soil Conservation Practices among Vegetable Farmers for vegetable Production

Table 5 showed the constraints to the use of soil conservation practices among vegetable farmers in the study area. The table revealed that 71.0%, 57.5%, 50.0% and37.7% of the respondents indicated that they faced the issues of lack of adequate information, lack of incentive inadequate soil conservation skills and lack of technical knowhow constraints to the adoption of soil conservation practices respectively. This implies that more than half of the respondents lack proper information and do not receive the necessary incentives needed for soil conservation practices. Soil conservation involves the application of the right information

and use appropriate incentive to enable its implementation as information is an important tool in farm decision making process. If farmers do not get the right information at the appropriate time, there decisions on certain practices will be affected thereby hindering their general productivity. Incentive is a source of encouragement to the application of certain agronomic practices. If farmers lack incentives, they most of the time lack the courage to use or adopt certain farm management practices. The lack of adequate incentives from the government and other relevant institutions had over limited farm performance thereby making farming experience tedious and difficult. Also, inadequate soil conservation skills had reportedly been a limiting factor to the use and adoption of erosion control practices and soil conservation practices among farmers around the world.

Table 5:Constraints to the Use of Soil Conservation Practices among Vegetable Farmers

Constraints	Frequency (N=106)	Percentage
Lack of information	75	71.0
Lack of incentives	61	57.5
Inadequate soil conversation skills	53	50.0
Lack of technical know how	40	37.7
Population pressure on land	37	34.9
Insufficient farm labour	35	33.0
Cultural barrier	26	24.5
Unfavorable land tenure system	19	17.9
Lack of access roads to land	10	9.4
All of the above	7	6.6

Source; Field survey, 2022 Multiple responses

Ho: Socio-economic characteristics of vegetable farmers do not significantly influence use of soil conservation practices in the study area

Table 6: Regression analysis on the Socio-economic Characteristics of Vegetable farmers and adoption of Soil Conservation Practices

Variables	**Coefficients**	**R^2**	**SEE**
Gender	-0.024	.072	.27745
Age	0.071		
Marital status	-0.020		
Household size	-0.135		
Edu qualifications	0.042		
Farming experience	0.067		
Constant	2.136		

* Significant at 0.05 levels; **, X1: Gender; X2: Age; X3: Marital status; X4: Household

size; X5: Level of Education; X6: Years of experience

Table 6 shows the relationship between Socio-economic characteristics of the farmers and soil conservation practice. The table revealed an R-squared value of .072. This value indicates that the socio-economic characteristics of the respondents accounts for about 72% of the variation in soil conservation practices among the vegetable farmers in the study area, while the remaining 28% of the variation is accounted for by other factors. The table further revealed that marital status, household size, and gender negatively related with farmers' soil conservation practices while age, farming experience and educational qualifications are positively related to the soil conservation practices among the farmers in the study area. The F-value of 1.286 confirms this.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study established that there were soil conservation practices available and some were adopted by vegetable farmers in Etche Local Government Area of Rivers State. The soil conservation practices available were shifting cultivation, multi-cropping, manure use, crop rotation, bush fallowing, mulching, planting pattern, cover cropping and intercropping. However, the study revealed that it was manure use and multi-cropping that were mostly adopted as soil conservation practices among the vegetable farmers in the study area. This is necessary because it improves soil performance thereby boasting productively and consequently increases farmers' income which in turn leads to improved rural livelihood. Based on the findings of the study, was recommended that Extension agents and other relevant institutions/body saddled will information transmission should provide adequate and timely information on soil conservation practices to vegetable farmers.

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