Global Journal of Agricultural Research
Vol.4, No.1, pp.18-25, March 2016
Published by European Centre for Research Training and Development UK (www.eajournals.org)

INVESTIGATION OF LEVEL OF ARABLE CROP FARMERS AWARENESS OF SOIL DEGRADATION IN IMO STATE

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ABSTRACT: *Soil degradation has remained one of the most devastating environmental problems in Imo State. This study investigates the level of farmers' awareness of soil degradation in Imo State. Data were collected using a structured and validated questionnaire from 342 randomly selected arable crop farmers. Data analyses were carried out using both descriptive and inferential statistical tools such as mean scores and rank order, frequency counts and percentages. Results shows that the majority of the arable crop farmers (70.50%) were females, married (81.29%), had up to secondary education (49.42%) and of average age of 56.80years. over three quarters of the people (80.70%) were members of different social organizations, with farming as their major occupation (62.00%). The result also indicated that almost all the farmers (95.9%) were aware of soil degradation more than half (56.4%) of the respondents have noticed it for a long time and they generally accepted that loss or change in vegetative cover and soil nutrient 2.70% is being observed to a great extent. 35.7% of the respondents classified the area covered by soil degradation in their farms as moderately serious. The study recommends among others that technologies which can help the arable crop farmers ameliorate the effect of soil degradation should be made available to them by the state government since the level of awareness is very high.*

KEYWORDS: Awareness, Arable Crop Farmers, Soil Degradation, Imo State Nigeria.

INTRODUCTION

Environmental degradation is a term used to describe a situation in which part of the natural environment is damaged. Environmental degradation is not a new thing, it has been happening all over the world for centuries. The problem is that it is now happening at a much faster rate, therefore, not leaving enough time for the environment to recover and regenerate (Osabuomen and Okoedo-Okojie, 2011). Environmental degradation is a serious threat to the lives of people, animals and plants.

Soil degradation is the decline in quality and quantity of soil. From creation, the earth was designed with the capacity to sustain man without losing its original qualities. Odiette (1993) opined that the soil naturally replenishes itself when used "properly". Man's activities in his quest to conquer the earth have caused vital damages to this natural balance. There is increasing concerns about "worn-out-soils" resulting from continuous cropping to feed the over increasing world population. Today a growing understanding of the ecological damage inflicted by poor land management practices is generating new interests in sustainable agriculture in which soil nutrients cycling plays a central role (Foster, 2000).

According to Brabant (2010), soil degradation is a broad term that can be applied differently across a wide range of scenarios. He opined that there are four main ways of looking at soil degradation and its impact on the environment around it. These are;

ISSN 2053-5805(Print), ISSN 2053-5813(Online)

- A temporary or permanent decline in the productive capacity of the land. This can be seen through loss of biomass, loss of actual productivity or in potential productivity or loss or change in vegetative cover and soil nutrient.

- Action in the lands capacity to provide resources for human livelihoods. This can be measured from a baseline of past land use.

- Loss of biodiversity: A loss of range of species or ecosystem complexity as a decline in the environmental quality.

- Shifting ecological risk: Increased vulnerability of the environment or people to destruction or crisis. This is measured through a baseline in the form of pre-existing risk of crisis or destruction.

Many people especially in the developing countries including Nigeria depend on land cultivation and the exploitation of other natural resources for their living. Soil degradation is a complex problem considering that it affects the basic resources from which the rural people derive their livelihood. Soil degradation in most cases leads to loss of farmlands, decrease in soil fertility, collapsing of buildings and destruction of utility installations all of which affects the livelihood of people in various degrees.

Soil degradation has further deepened the devastating effect of poverty that is ravaging most rural areas in Imo State. It has also increased the cost and time spent in moving farm produce to nearby markets and consequently contributed in making agriculture unattractive especially to young people. Efforts to network rural communities in Imo State and connect them to both urban and rural markets for easy transportation of agricultural produce and inputs are being seriously undermined by soil degradation as most roads have been cut off completely. Despite all these problems, the arable crop farmers in the state seem not to behave as if they are aware of the presence of soil degradation or if yes, the level of awareness might be too low since they still adopt those farming practices which causes soil degradation, hence it becomes necessary to analyze the level of awareness of soil degradation by arable crop farmers in the state.

Soil degradation seriously affects land resources in many tropical, subtropical and dry land regions of the world, with severe impacts on much of the world's population whose livelihood depends on agriculture and land as well as on urban and rural food security. The magnitude of these trends is inducing changes in global systems and cycles that underpin the functioning of ecosystems and represent major environmental threats. Such changes include logging and degradation and extensive use of chemicals.

Johnson and Lewi (2007) opined that the process of land degradation include soil and water erosion, soil compaction, decline in soil biodiversity, organic matter and fertility, salinity and other physical and chemical alterations due to poor drainage and misuse of soils.

MATERIALS AND METHODS

The study was carried out in Imo State, Nigeria. Multi-stage sampling technique was used for the selection of sample. The first stage was the purposive selection of the three agricultural zones in the state; the reason was to ensure proper representation of the state. The second

ISSN 2053-5805(Print), ISSN 2053-5813(Online)

stage was the purposive selection of three blocks each from the three agricultural zones of the state. The third stage involved the random sampling of two circles from each of the nine blocks, giving a total of 18 circles. The fourth stage was the random sampling of two sub-circles each from the 18 circles to give a total of 36 sub-circles. Finally, ten (10) arable crop farmers were randomly sampled from the 36 sub-circles giving a total of 360 arable crop farmers. However, only 342 questionnaires were properly completed and retrieved for data analysis. Data collected was analyzed using descriptive and inferential statistical techniques and a 3-point Likert – type scale.

RESULT AND DISCUSSION

Socio-economic characteristics of respondents

The socio-economic characteristics studied include age, sex, marital status, household size, level of education, membership of social organization and farming experience. (Table 1) The highest number of respondents (70.5%) were females. The dominant of female in this study could stem from the fact that arable crops are mostly produced by women in the study area. This is in line with the findings of other researchers on socio-economic characteristics in the study area Nwaru (2004), Nwaiwu (2009) and Iweke (1989) who opined that women are responsible for most of the arable crop production in their study area.

The highest number of respondents falls within the age bracket of 53-62years (35.38%) while the mean age is 56.80years. This shows that the respondents comprised mainly of the elderly farmers in the sampled communities. Almost all (81.29%) of the respondent farmers are married with average household size of 5.40 persons. However, the implication of maintaining a moderate household size in the study area is that it is likely to reduce pressure on the already overstressed land of the area, since population pressure is one of the driving forces of soil degradation.

The result of the educational level shows that 23.10% and 49.42% of the farmers spent between 1-6years and 7-12years in school respectively. It also shows that the mean number of years spent in school is 9.79years. The result shows that on the average, the respondents had little above basic education, which is 9years. The implication is that, the respondents were likely to be engaged in non-farming livelihood since education enhances ones ability to either secure paid employment or set up and manage own business, so they may not be interested in noticing whether the soil is degraded or not.

Majority of the respondents (62.00%) had farming as their major occupation with over three-quarter of them (80.70%) belonging to social organization. The implication is that information regarding soil degradation and its management can easily be diffused to the people. On the average, the respondents had 22years of farming experience. This indicates that majority of the respondents had longtime farming experience and could have over the years experienced change in the farm productivity as a result of devastating effect of soil degradation.

ISSN 2053-5805(Print), ISSN 2053-5813(Online)

Table 1: Socio-Economic Characteristics of Respondents (Mean 342)

Socio-Economic Variables	Frequency	Percentage (%)
SEX		
Male	101	29.50
Female	241	70.50
AGE (Years)		
33-42	37	10.52
43-52	84	24.56
53-62	121	35.38
63-72	66	19.30
73-82	34	9.94
Total Mean	56.80	
MARITAL STATUS		
Married	278	81.29
Single	6	1.75
Widowed	39	11.40
Divorced	19	5.56
HOUSEHOLD SIZE (No. of persons)		
2-5	196	57.31
6-9	135	39.47
10-13	11	3.22
Total Mean	5.40	
EDUCATIONAL LEVEL (In Years)		
0	39	11.40
1-6	79	23.10
7-12	169	49.42
13 and above	55	16.08
Total mean	9.79	
MAJOR OCCUPATION		
Farming	212	62.00
Non-farming	130	38.00
FARMING EXPERIENCE (Year)		
1-10	18	5.30
11-20	169	49.40
21-30	123	35.90
31-40	32	9.40
Total Mean	22	
MEMBERSHIP OF SOCIAL ORGANIZATION		
Member	276	80.70
Non-member	66	19.30

Source: Field Survey, 2015

State of Awareness of Soil-Degradation

The state of awareness is an indication of the level of consciousness of the people on the problem under investigation. The result in Table 2 shows that 95.9% of the respondents were

ISSN 2053-5805(Print), ISSN 2053-5813(Online)

aware of the existence of soil degradation in the area. By this result, it means that the awareness of soil degradation among the people is very high. The reason for the high rate of awareness may be due to presence of gullies in most part of the state (Odilli, 2010; Umahi, 2011 and Jimoh, 2011).

Table 2: Distribution of Respondents according to Awareness of Soil Degradation

Awareness	Frequency	Percentage (%)
Aware	328	95.90
Not aware	14	4.10
Total	342	100.00

Source: Field Survey, 2015

Duration of Awareness of Soil Degradation

Table 3 shows that more than half of the respondents (56.40%) have noticed soil degradation for a longtime (11-20years). Relatively high numbers of the respondents (29.30%) have been aware of soil degradation for a very long time (above 20 years) while only 14.30% have noticed it recently (below 10years). This findings is in line, with the study of Osabuomen and Okoedo-Okojie (2011) who opined that soil degradation is not a new thing but has been happening all over for decades.

Table 3: Distribution of Respondents by Duration of Awareness of Soil Degradation

Duration of Time (Years)	Frequency	Percentage (%)
Recently (10years and below)	49	14.30
Long time (11-20)	193	56.40
Very long time (20yrs and above)	100	29.30
Total	342	100.00

Source: Field Survey, 2015

Extent of Observation of Soil Degradation

It is pertinent to note that certain changes in the farm and plant due to increasing incidence of soil degradation are mostly location specific. Using a discriminating index of ≥2.0 for acceptance and <2.0 for rejection. The result in Table 4 illustrates the various observations of the respondent farmers on their farms and plants cultivated in the area. They include loss or change in vegetative cover and soil nutrients (X = 2.70), flooding (X = 2.68), poor drainage (X = 2.65) and temporary or permanent decline in the productive capacity of the land (X = 2.56) were all accepted as having being observed to a great extent by the respondents. Loss of range of species or ecosystem (X = 1.86) was not observed by the respondent farmer as degradation.

This implies that the extent of observation of soil degradation as perceived by the farmers range from climate factors, geologic factors to human factors. The result is in line with the findings of Johnson and Lewi (2007); Eswaren *et al.*, (2001) and Zia *et al.*, (2005) who were of the view that the extent of observation of soil degradation range from climate factors to human factors. However, the grand man of 2.37 implies that the respondents observed all the degradation attributes to a great extent.

ISSN 2053-5805(Print), ISSN 2053-5813(Online)

Table 4: Distribution of Respondents by their extent of Observation of Soil Degradation

Observed soil degradation	Great extent	Moderate extent	Low extent	Total	Mean	Remark
Temporary of permanent increase in the productive capacity of the land	237 (69.3)	60 (17.5)	45 (13.2)	342	2.56	Accept
Loss or change in vegetative cover and soil nutrient	240 (70.2)	82 (23.9)	20 (5.9)	342	2.70	Accept
Increased vulnerability of the land	102 (29.8)	140 (40.9)	100 (29.3)	342	2.00	Accept
Poor drainage	222 (64.9)	98 (28.6)	22 (6.5)	342	2.65	Accept
Flooding	233 (88.1)	79 (23.1)	30 (8.8)	342	2.65	Accept
Loss of range of species or ecosystem	94 (27.5)	108 (31.5)	140 (4.9)	342	1.86	Rejected
Total	**1128**	**567**	**357**	**2052**	**2.37**	**Accept**

Source: Field Survey, 2015

Numbers in parenthesis are the percentages;
Maximum scorer = 3
Minimum score = 1
Accept = ≥2.0,Reject <2.0
Source: Field Survey, 2015

Classification of Area Covered by Soil Degradation in the Study Area

Data in Table 5 shows the distribution of the respondents based on how they classified the areas covered by soil degradation in their farms. 35.7% of the respondents classified the degradation as moderately serious, 31.9% perceived it as being very serious; while 26.6% and 5.8% saw it as being serious and not serious respectively. The moderately serious and very serious classification of areas covered by soil degradation is an indication that this problem has not been accorded the necessary attention it deserves both by the farmers and the government.

Table 5: Distribution of Respondents based on classification of area covered by soil degradation

Classification	Frequency	Percentage (%)
Very serious	109	31.9
Moderately serious	122	35.7
Serious	91	26.6
Not serious	20	5.8
Total	342	100.00

Source: Field Survey, 2015

ISSN 2053-5805(Print), ISSN 2053-5813(Online)

CONCLUSION AND RECOMMENDATION

Soil degradation has reached a disaster stage in Imo State. The consequences especially the negative impacts on arable crop farmers are enormous. Within the limits of statistical reliability, it would be safe to conclude that arable crop farmers in the study area are fully aware of the existence of soil degradation and also to a great extent.

The study recommends that technologies which can help the arable crop farmers ameliorate the effect of soil degradation should be made available to them by the state government since the level of awareness is very high, they will willingly adopt it fast. Secondly, regulating measures should be put in place to regulate use of some practices such as pesticides application which are detrimental to crops, increase vulnerability and causes soil degradation.

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