Assessment of farmers' perceptions of land degradation and management practices in Edaga Hibret Tabia

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Abstract

The ability of the globe to supply the rising demand for food and other environmental services continues to be seriously threatened by land degradation. The major objective of this study is to assess farmers' perceptions of land degradation and management practices. The study employed both primary and secondary sources to obtain accurate information that was essential to carrying out and fulfilling the research's goals. Descriptive research was used to carry out this study because this kind of research aims to describe the nature and status of a certain issue by performing an in-depth examination through the collecting of all relevant data regarding the subject matter under consideration. Purposive sampling, which is non-probability sampling, and the simple random sampling method, which is probability sampling, were the sample methods employed in this study. Data analysis using both descriptive and inferential statistical methods with SPSS V 20, the data analysis procedure got under way. The results of the chi-square test show a favorable correlation between awareness of the causes of land degradation and various age groups. Farmers in write the exact figure are more knowledgeable of land management techniques than those in Illiterate and Adult literacy (can read & write), according to a substantial connection.

Key terms: land degradation, land management, and Edaga Hibret

Background of the study

The ability of the globe to supply the rising demand for food and other environmental services continues to be seriously threatened by land degradation. The combination of changes in the biological, chemical, and physical characteristics of the soil, water, and plants makes it complicated (NRC, 1994). Daniel (1988; cited in Aklilu, 2001) explains the process of land

degradation as "soil degradation through water erosion and loss of vegetation cover leading to reduced productivity of the land in densely populated or exploitatively used regions."

Particularly, land degradation in the majority of poor countries resulted in agricultural output that was much below what was required for a household to live (Abalu, 1997). For instance, the productivity of some places in Africa has dropped by 50% as a result of soil erosion and desertification (KEBEDE, Y. et al., 2018). Due to past soil erosion, Africa may have seen yield declines of 2 to 40%, with a mean loss of 8.2% across the continent (Lal, 1995).

It is estimated that 40% of all agricultural land has been lost due to degradation, with agricultural land in developing countries accounting for the majority of this loss. Approximately 47% of Africa's total land area is too dry for rain-fed agriculture, 16% of the continent's total land area has no substantial fertility limits, and the other 37% is prone to soil degradation, according to A. Dejene and colleagues' estimates from 2004.

Land degradation, which manifests as soil erosion, soil nutrient depletion, and soil moisture stress, is frequently Ethiopia's worst issue. In recent years, environmental degradation has been one of Ethiopia's most challenging issues (Hurni, 1993). The problem has been particularly serious in the country's highlands. Ethiopia loses 1.5 to 2 billion tons of top soil annually due to erosion, which is worth between $1 and $2 billion. The major objective of this study is to assess farmers' perceptions of land degradation and management practices.

RESEARCH METHODOLOGY
Description of the study area

Map of study area
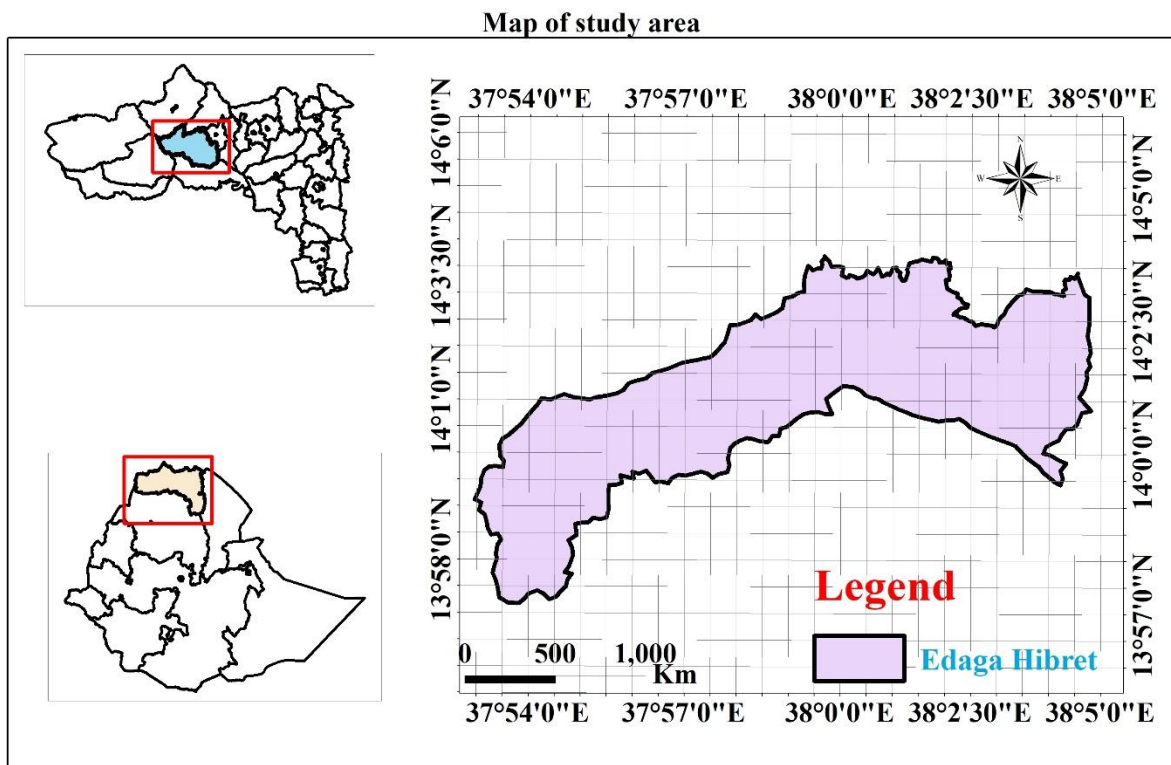
Sources and methods of Data collection

The study employed both primary and secondary sources to obtain accurate information that was essential to carrying out and fulfilling the research's goals. To put it briefly, both qualitative and quantitative data helped the study accomplish its goal.

Research Design

A descriptive survey was employed as the research strategy for this study. Descriptive research was used to carry out this study because this kind of research aims to describe the nature and status of a certain issue by performing an in-depth examination through the collecting of all relevant data regarding the subject matter under consideration. Similar to this, by gathering data using various ways, the researcher has presented the current situation regarding the farmers' perspectives of land degradation and land management practices. Because it is a study in which multiple parts of a population are sampled at a particular point in time, the researcher utilized a cross-sectional design.

Sample size

One of the crucial components of a study that results in acceptable procedures is a sample. Purposive sampling, which is non-probability sampling, and the simple random sampling method, which is probability sampling, were the sample methods employed in this study.

Data analysis

After all primary and secondary data had been gathered and organized uniformly for analysis using both descriptive and inferential statistical methods with SPSS V 20, the data analysis procedure got under way.

Result and discussion

Table 1. Causes of land degradation and age of the head of household

Variables			Age categories		X^2	Df	P-Value
			18-49	>= 50			
Soil erosion	Aware	%	84.67	15.33	0.000	0	1.000
Deforestation	Aware	%	84.67	15.33	0.000	0	1.000
Overgrazing	Aware	%	84.67	3.65	100.068	1	.000
	Not aware	%	0	11.68			
Poor farming practices	Aware	%	81.75	0	111.112	1	.000
	Not aware	%	2.92	15.33			
Over population	Aware	%	73.72	0	69.583	1	.000
	Not aware	%	10.95	15.33			
Over cultivation	Aware	%	70.80	0	60.144	1	.000
	Not aware	%	13.87	15.33			

Rugged topography	Aware	%	70.07	0	58.072	1	.000
	Not aware	%	14.60	15.33			
Lack of fertilizers	Aware	%	62.77	0	41.823	1	.000
	Not aware	%	21.90	15.33			
Planting eucalyptus tree	Aware	%	38.69	0	15.649	1	.000
	Not aware	%	45.99	15.33			
Absence of crop rotation	Aware	%	35.04	0	13.376	1	.000
	Not aware	%	49.64	15.33			

The results of the chi-square test show a favorable correlation between awareness of the causes of land degradation and various age groups. A strong correlation indicates that younger farmers are more aware of the factors contributing to land degradation than their more experienced peers. The research found a strong correlation between age groups and knowledge of the factors contributing to land degradation. x2(1) equals (100.068, 111.112, 69.583, 60.144, 58.072, 41.823, 15.649, and 13.376, with a 0.05 significance level) were overgrazing, poor farming practices, overpopulation, over cultivation, rugged topography, lack of fertilizers, planting eucalyptus trees, and absence of crop rotation, respectively. Since the x^2 value is greater than the critical value, 5.99 farmers were aware of causes of land degradation in direct association with the age category of farmers; that's how one outcome and another outcome were significantly associated with each other at Df = 1, p< 0.05. In addition to that, the study was cross-checked via the structured interview questionnaire, and more than half of the respondents said that the causes of land degradation in the study area were overgrazing, poor farming practices, overpopulation, over cultivation, rugged topography, lack of fertilizers, planting eucalyptus trees, absence of crop rotation, and But planting eucalyptus trees and the absence of crop rotation as causes of land degradation are indicated by old-age farmers at a higher percentage than their younger counterparts. According to this (Blaikie and Brookfield, 1987), which calls for understanding the role of land managers and their close ties to the land, understanding the connections and interactions among land users, the land, and the larger society, as well as how this is influenced by the external market and economic factors, Culver (1986) came to the conclusion that younger farmers were more likely to perceive that land degradation was a problem, that conservation measures are profitable, and that land degradation was a major issue. The research of Bultena et al. (1983), which found that younger farmers were more likely to employ conservation tillage than older ones, was used to support this conclusion.

Table 2. Consequences of land degradation and Educational qualification

Variables	Educational Attachments		
	X^2	Df	P-value
Difficulty for farming	9.162	2	.010
Loss in livestock productivity	19.993	2	.000
Desertification	50.070	2	.000

Drought & famine	59.691	2	.000
Landlessness	130.669	2	.062
Migration	123.399	2	.076
Poverty & economic backwardness	110.264	2	.086

The chi-square analysis shows that there is a positive correlation between educational attainment and knowledge of the effects of land degradation in the research region, as shown in table 2 above. Write the exact figure who are farmers have a better awareness of the effects of land degradation. The chi square test for migration is 123.399 and the p-value is 0.076; the chi square test for landlessness is 130.669; and the chi square test for poverty and economic backwardness is 110.264 and the p-value is 0.086. This suggests that there is a negligible correlation between farmers who attend write the exact figure and those who do not. In fact, a higher literacy level among farmers could have caused differences among farmers in understanding the problem on their land and had a positive effect on the reduction of land degradation in general. From this, one can easily assess that the agricultural sector, especially farming, is dominated by literate farmers in this area. Based on this fact, the educational attainment of the farmers was examined to determine whether it had a significant impact on understanding the consequences of land degradation. Therefore, according to the majority report, there was a significant association between educational qualifications and awareness of the consequences of land degradation. $x^2(2) = p< 0.05$ since the x^2 value is greater than the critical value farmers were aware of the consequences of land degradation's direct association with educational qualification of farmers; that's how one outcome and another outcome were significantly associated with each other at df = 2, p < 0.05. Accordingly, it's important to know how literate farmers are in order to understand how they see the state of the environment today. On the general knowledge of the negative impacts of environmental degradation, the education level of farmers has a significant impact (Shibru, 2003).

Table 3. Land Management Practices and Educational qualification

Practices	Educational attachments		
	X^2	Df	P-value
Terracing	8.009	2	.018
Crop rotation	11.587	2	.003
Making water ways	13.520	2	.001
Mulching	14.867	2	.001
Tree planting	16.264	2	.000
Rotational grazing	16.982	2	.000
Contour plowing	77.729	2	.120
Fallowing	95.995	2	.230

The results of the chi-square test table 3 show a favorable correlation between various educational backgrounds and knowledge of land management techniques. Farmers in write the exact figure are more knowledgeable of land management techniques than those in Illiterate and Adult literacy (can read & write), according to a substantial connection. Moreover, the educational qualification of write the exact figure of farmers seems to indicate better awareness than that of Illiterate and

Adult literacy (can read & write) farmers in indicating awareness of land management practices; the P-value is 0.000. Regarding contour plowing and fallowing, there is a lack of awareness of land management practices and a way too insignificant relationship between them. In accordance with this, the capacity to create community pressure groups or include pre-existing local groups is necessary for the effective execution of afforestation and reforestation initiatives. It is necessary to be able to enlist the knowledge, enthusiasm, and support of rural people for projects like establishing nurseries in rural areas, planting and safeguarding multifunctional trees along highways, on farms, and around residences, etc. (Postel and Heise, 1988, cited in Aklilu, 2001). Shibru (2003) also supports this conclusion, which is significant at a 95% confidence level: education empowers farmers to combat land deterioration utilizing a variety of soil conservation measures. In reality, changes in general soil conservation techniques might have resulted from farmers with greater literacy levels.

Table 4. Attitude towards agricultural land management

Variables	Mean	SD
Growing two or more crops in the same piece of land can reduce land degradation problem	2.98	.147
Quick growing crops are soil conserving crops	2.93	.376
Covering the surface with grass or crop residue reduce soil loss.	2.89	.396
It is not necessary to use composting since farmers still use fertilizers to replenish the soil	1.20	.608
Terracing helps us to reduce run-off and rate of erosion	2.74	.633
Crop rotation maintains soil fertility	2.69	.681
It is important to use animal dung and crop residue as fuel rather than using it as compost	1.67	.916
Contour plowing is important in sloppy area because it reduce the rate of soil erosion	2.09	.882
Plowing sloppy area reduces soil erosion problem	2.87	.467

As illustrated in the above table, the study respondents, growing two or more crops on the same piece of land can reduce land degradation problems. With a mean of 2.98 and Std. Deviation of 0.147, Quick-growing crops are soil-conserving crops with a mean value of 2.93 and Std. Deviation of 0. 376, covering the surface with grass or crop residue reduces soil loss with a mean of 2.89 and Std. Deviation of 0.396. Terracing helps us reduce run-off and the rate of erosion, with a mean of 2.74 and Std. Deviation of 0.633, Crop rotation maintains soil fertility with a mean of 2.69 and Std. Deviation of 0.681, Contour plowing is important in sloppy areas because it reduces the rate of soil erosion. With a mean of 2.09 and Std. Deviation of 0.882, plowing sloppy areas reduces soil erosion problems by a mean of 2.87 and Std. Deviation of 0.467. However, small numbers of the respondents indicate It is not necessary to use composting since farmers still use fertilizers to replenish the soil, with a mean of 1.20 and Std. Deviation of 0.608, and that it is important to use animal dung and crop residue as fuel rather than compost, with a mean of 1.67 and Std. Deviation of 0.916 was below the average of the Attitude towards Agricultural Land Management. According to this (Lynne et al., 1988), starvation, drought, decreased production, and poverty were the results of land degradation. Prior to the food-for-work schemes, farmers mostly built drainage ditches, soil stone bunds, check dams, and waterways as well as other types

of rivers and check dams. In addition, farmers engaged in crop rotation, mulching, and fallowing (Okoba 2005).

Conclusions

The study employed both primary and secondary sources to obtain accurate information that was essential to carrying out and fulfilling the research's goals. To put it briefly, both qualitative and quantitative data helped the study accomplish its goal.

The research found a strong correlation between age groups and knowledge of the factors contributing to land degradation. x2(1) equals (100.068, 111.112, 69.583, 60.144, 58.072, 41.823, 15.649, and 13.376, with a 0.05 significance level) were overgrazing, poor farming practices, overpopulation, over cultivation, rugged topography, lack of fertilizers, planting eucalyptus trees, and absence of crop rotation, respectively.

The chi-square analysis shows that there is a positive correlation between educational attainment and knowledge of the effects of land degradation in the research region.

The educational qualification of write the exact figure of farmers seems to indicate better awareness than that of Illiterate and Adult literacy (can read & write) farmers in indicating awareness of land management practices; the P-value is 0.000. Regarding contour plowing and fallowing, there is a lack of awareness of land management practices and a way too insignificant relationship between them.

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