

Perception of Desertification by Peasant Farmers and Pastoralists in Babura North-West, Jigawa State, Nigeria.

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Abstract

Desertification is a long known most pressing environmental problem in the northern parts of Nigeria. The visible sign of this phenomenon is the gradual shift in vegetation from grasses, bushes and occasional tress, to grass and bushes and in the final stages, expansive areas of desert-like sand. The study explores farmer-pastoralist perceptions on desertification, causes and conflict, as well as adaptation and mitigation measures to curbe the menace. In-depth interview was used in data collection and grounded theory method was used in analyzing the data following steps of interactive deductive coding process which reduces the data to codes, formation of associations between codes and developed themes as final category. Bush burning, overgrazing, natural occurrence and deforestation are among the perceived causes of desertification in the area. Land degradation, low yield, rain scarcity and low grasses cover were among the impacts of desertification. However, some of the adaptation and mitigation measures include government intervention to check desertification, afforestation and prayer.

Keywords: Desertification Impacts, Farmers, Pastoralists Engagement, Perceptions, Land degradation, Capacity building.

Introduction

Over one billion people living in Arid and Semi-arid environment and over more than 40% of the earth surface Saarinen (1996). However, the rural people ultimately depend on the use of natural resources for livelihood Stringer et al.(2009). Therefore, it is well recognize the land is prone to desertification. It is accompanied by a reduction in the natural potential of the land and depletion in surface and ground-water resources. But, above all it has negative repercussions on the living conditions and the economic development of the people affected by it. These desertification masses cover over one third of the world's land area. These dry lands are extremely vulnerable to over-exploitation and inappropriate land use Kassas *et al.* (1991). Poverty, political instability, deforestation, overgrazing, and bad irrigation practices can all undermine the land's fertility. Over 250 million people are directly affected by desertification. In addition, some one thousand million (or one billion) people in over one hundred countries are at risk. These people include many of the world's poorest, most marginalized, and politically weak citizens. (The United Nations Convention to Combat Desertification: In William (2011).

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Desertification is, first and foremost, the outcome of resource management failure Kelly and Hulme (1993). Its anthropogenic processes include over cultivation, overgrazing, deforestation, and poor irrigation practices (UNEP, 1992). These processes are the result of excessive pressures on resource ecosystems, which are fueled by local forces such as increases in human numbers and the escalation of their needs, poverty, land shortages and landlessness, civil strife, wars, and poorly conceived national policies that put a premium on export production as opposed to increased food-crop production for local consumption. They may also be exacerbated by external forces, such as the state of the global economy, commodity prices, the debt burden, the brain drain, and terms of trade, and protectionism and import barriers in developed countries which make alleviation of poverty more difficult for exporting countries and which may cause them to accelerate rates of natural resource exploitation by preventing diversification.

The last few decades have been characterized by an emerging public consciousness in regard to environmental issues such as desertification. Therefore, one of the most important aspects to analysed when studying desertification is the one of perceptions. More so, Rubin et al(2005) say people interact on the basis of meaning they assign to the world around them. Individuals respond to each other in terms of their perceptions.

Material and Methods

The Study Area

The study area is located on longitude $9^{\circ} 00' 54.90''$ E, and latitude of $12^{\circ} 46' 21.22''$ N. It has a total area of about (992km²) and 208,101 population as of 2006 census.



Figure 1: The Study Area
Source: Adapted and modified from Maphill, 2011.

The rainy period usually begins May and ends in September. The study area is semi-arid with erratic rainfall of about 500mm per annum and mostly occurring with June to September. Characterized by long dry season and short wet season Abaje *et al*(2012a&b) The annual temperature ranges from 17^c to 42^c falling as low as 15^c during December-January harmattan period.

The study area consist of mostly unconsolidated sediments which are predominantly sandy with little capacity to retain moisture, appeared in light brown colour with coarse texture low soil nutrients and organic matter content. However, since the soil developed from unconsolidated materials, it is now transforming into desert and will soon be merged with Sahara desert if care is not taken.

The vegetation has been completely modified as a result of several decades of human occupation featuring bush burning, deforestation, hunting as well as intensive grazing.

Agriculture formed the dominant land use about 70% of the land area is put to agriculture through rainfall. Production of crops is at subsistence level with some cash crops such as groundnut, water melon and sesame.

Methods

The study employs qualitative research method to explore participant's experience and knowledge in in-depth and details, rather than measuring or counting the frequency of particular experience within a population. One of the strength of using qualitative method is that, the data generated focuses on perceptive responses, contextual meanings and topic important to the participants Creswell(1994). The study uses interview for the participants (Farmers and pastoralists) to express their perceptions and experiences on desertification and how they value changes if any in their own words.

Interview Guide

An interview guide is a list of questions or topics to be explored in an interview. The guide ensures that the same basic information is covered in each interview, but also allows a researcher to further pursue topics brought up by participants. Rubin and Rubin(2005).The interviewees were given a chance to express their views pertaining desertification. A set of interview questions were organized and translate the questions in Hausa language to the participants for easy understanding, responses to such questions according to the experience in regard to such questions, while recording of voice was taking place using a cell phone recording system.

Methods and Procedures

In-depth interview conducted with fifteen community members. The study used descriptive The study used a descriptive design methods. Other parts of the questionnaire used open ended questions. The study was based on the previous researches conducted on the topic of desertification. The questionnaire items were design to assess the perceptions of farmers and pastoralists on desertification as well as its causes, impacts and management. The interview sessions were recorded.

The population of study consists of all farmers in the study area. A sample of fifteen farmers was selected for thorough interview. Purposive sampling was used to selected the age-old and most experienced farmers for the interview. Interview transcripts were analyzed using interactive deductive coding process Rubin and Rubin(2005). Coding is a tool that reduces the data and allows the researcher to analytically categorize the data into themes Sarantakos(1998). Descriptive statistical procedures sub-program of the statistical package for the Social Sciences was used in analyzing and summarizing the data in this study Norusis(1987)

Finding and Discussions

Perceived causes on desertification.

Perceptions and knowledge on the causes of desertification was not new to farmers due to experience in farming as well as indigenous ecological knowledge of the immediate environment. Farmers perceive desertification as a serious problem which occurs naturally or through human activities by deforestation or in combination of the two.

The following quotation support the above argument

“Sincere speaking with my little knowledge desertification is from god but we people contribute in terms of cutting down of trees and the scarcity of rainfall that is affecting us”(interviewee 12 a local farmer).

Figure 1 indicates that farmers were aware on the causes of desertification in the area of study by observing at the natural environment that decreased in vegetation cover and animal population. Excessive overgrazing which affects the species diversity and bush burning which kills important fauna in the soil and destroy soil structure as well as decreased in plants yield and decreased in soil fertility and productivity.

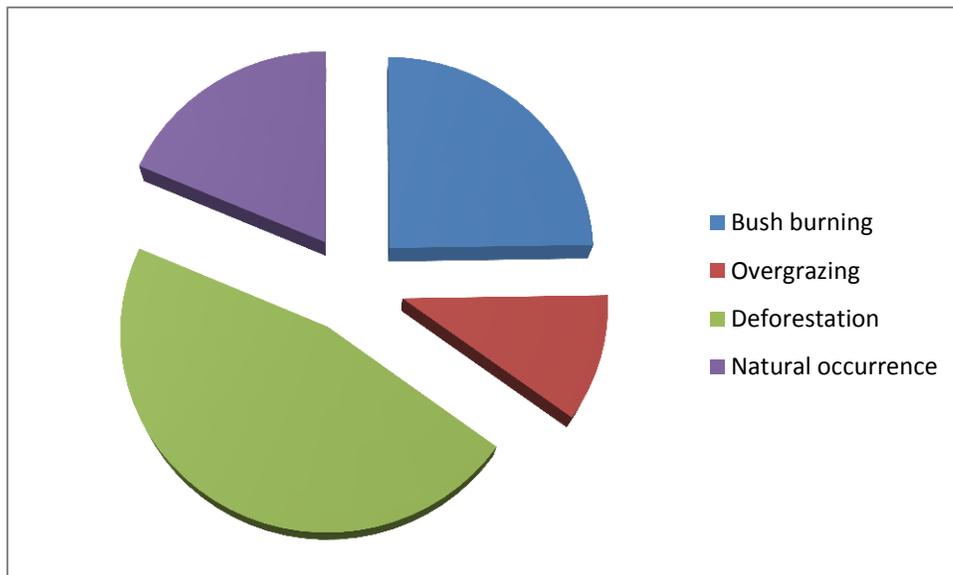


Fig. 1.Perceived Causes of Desertification in the Study Area
Source: Field Survey, 2012.

Desertification is often caused by a combination of the natural factors and anthropogenic factors such as overgrazing, deforestation, bush burning.

“This is truth bush burning and deforestation are the leading factors of the present days problem leading to destruction grasses and making land poor for crop production” (Interviewee 6 local farmer).

“Firstly we do not get high yield when it comes. In a farm where you expecting six bundles of millet you would get two or one and even to some extent failure do occur in that farming activities and even though we are using our hands to participate and we also hire labour, but we still do get failure talk less of profit” (interviewee 5 local farmer).

Causes and Management of conflicts Caused by Desertification

There is consensus that the conflicts between farmers and pastoralists in area was as a result disagreement between them where the herders point accusing finger to farmers by expansion of arable land and blocking of cattle route passage. In situation where there is no grazing land for herders they tend to enter farms feed their animals and destroy the crops consequently results in conflicts outbreak between the two parties.

“Reasons are between farmers and pastoralists, for example, where there is no grazing lands that where the pastoralists get into farms and eat up the crops that is where the conflict arises. However, when moving (pastoralist) farmers blocked paths by planting crops that is where our cattle get into their farms, that is where the conflicts began (interviewee 1 pastoralist)”

Pastoralism is a traditional way of life; it is a form of natural resources use and management that comprises of a variety of movement ranging from pure nomadism characterized by year round camel breeding and long distance to a seasonal migration or movement over a long distance. Some pastoralist combined seasonal farming with livestock rearing, known as agro-pastoralist. Historically there has always been tension along pastoral corridors over land and grazing rights between nomads and farmers, and then conflicts flare up.

“Pastoralists have to take control of their animals while farmers they have to be patience because of the mutual relationship between them. Farmers cannot do without pastoralists. That is why when there is conflict our elders intervene and solve the dispute, that is why conflict is getting declining now” (interviewee 1 pastoralist).

Mechanism and solution for more efficient and sustainable actions include the reactivation of support programs for the benefit of transhumance and setting joint committees, empowerment and capacity building of local structures to resolve agro-pastoral conflicts promote and encourage sustainable dialogue between farmers and pastoralist through established committees.

Impacts of Desertification

The effect of desertification in each manner as degradation of rain-fed farmlands is often manifested as soil erosion, loss of organic matter, depletion of nutrients, crust formation, extensive inversion of weeds. Figure 2, discuss the impacts of desertification as low yield and grasses, land degradation in rangeland bioproductivity, inversion of non-palatable species as well as rain scarcity.

“of course it leads to loss in livestock when it covers a place (Desertification) when there is no grasses in the farms and this leads to animal starvation due to the lack of enough feed. However, where there are rivers, oasis when it comes they will dry up. Before they find grass (pastoralists) they have to move a great distance and as such the result is animal starvation” (interviewee 5 local farmer).

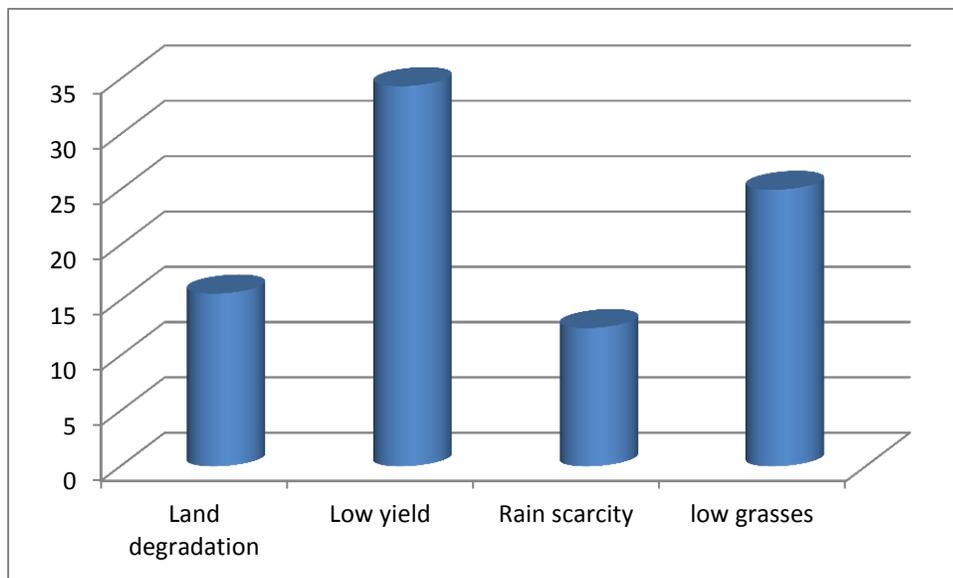


Fig. 2. Impacts of Desertification

Autonomous Desertification Adaptation and Mitigation Measures

Natural resources policy is a major alternative in checking desertification. Therefore government should set up natural resources regulatory bodies to check the wise use of the resources.

“As I told you is government that has the power on everything. When government impose rules and order governing indiscriminant cutting down of trees and bush burning, especially small trees, I believe this will help in checking desertification(Interviewee 12 local farmer)

Conclusion

Generally, based on the research conducted it was conclude that farmers and pastoralists were aware on the causes of desertification such as bush burning, deforestation and its negative impacts which reduces crop yield, loss of soil fertility and productivity and poor species diversity. The herders and farmers suggest that to over come the impacts of desertification there is need for government policies governing the wise use of natural resources which will ultimately check desertification.

Recommendations

1. Adoption of natural regeneration and development of communal nursery for raising seedlings to check desert encroachment.
2. Provision of laws governing provision and demarcation of grazing reserves and points of watering to check the frequency of conflict occurrences.
3. Encouraging farmers and pastoralists to formulate association for dispute and dialogue management.
4. Reduction of people vulnerability by increasing the availability of alternative livelihood and strengthening their resilience.
5. Supporting science driving agriculture as the way to enable farmers to take advantage of up-to-date development and best practices which work elsewhere such as irrigation.
6. Erosion control to check the effect of wind by planting trees to check, protect and fix the soil and prohibit livestock from grazing to protect plantation areas.
7. Down-top approach in checking desertification should be encouraged the resource users and local stakeholders should be carried along in decision making.

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