



INDIGENOUS CLIMATE CHANGE MITIGATION AND ADAPTATION STRATEGIES AMONG CROP FARMERS IN LAFIA AREA OF NASARAWA STATE



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Abstract

The study evaluated the indigenous climate change mitigation and adaptation strategies among crop farmers in Lafia Local Government Area of Nasarawa State. Primary data were collected from 52 crop farmers with the aid of a structured questionnaire. Analysis of the data was done using descriptive statistics. The indicators of climate change were unpredictable nature of weather, increased incidence of drought and increased incidence of crop pests/diseases alien to the locality. The indigenous climate change mitigation practices in the locality include; growing of leguminous crops, use of green manure, and maintenance of soil structure by application of organic materials and avoidance of deforestation. The adaptation practices identified in the locality were growing of leguminous crops, use of green manure, and maintenance of soil structure by application of organic materials and avoiding deforestation. Farmers in the research area are quite aware of climate change and as such, have adopted local practices for both mitigation and adaptation. However, there is need for further awareness especially on the causes and major indicators of climate change.

Key words: Mitigation, Adaptation, Indigenous, Crop farmers, leguminous crop

INTRODUCTION

Climate change is perhaps the most serious environmental threat to the fight against hunger, malnutrition and poverty in Nigeria. The rural populations, who produce more than 70% of the food eaten in Nigeria, are disproportionately poor and face malnutrition and disease. Climate change has an extremely deleterious effect on especially the rural community that is both Nigeria's main food producer and as well represents its weakest and most vulnerable segment in terms of climate effects. More so, the rural people are conservative of traditional practices, they are slow in changing their farming practices such as bush burning, deforestation and rain-fed agriculture, and they lack the requisite education, information and training to adapt easily and cope with climate change.

Studies on climate change and agriculture have tended to concentrate on actual and projected impacts as well as farmers' coping/adaptation strategies (Adejuwon,

2006; FAO, 2007; BNRCC, 2008; Apata *et al.*, 2010; SEI, 2008; Ajetomobi *et al.*, 2006; Mendelsohn *et al.*, 2008; Stige *et al.*, 2006; Agoumi, 2003; Thornton *et al.*, 2006). Previous studies did not seem to identify indigenous mitigation and adaptation measures initiated by farmers in combating climate change. This study will attempt to do this by providing answers to the following research questions:

- i) What are the perceived indicators of climate change in the area?
- ii) What are indigenous climate adaptation strategies practiced by crop farmers in the area?
- iii) What are the indigenous climate mitigation strategies practiced by crop farmers in the area?

The broad objective of the study is to analyze the indigenous mitigation and adaptation practices of climate change in the study area. The specific objectives of the study are to identify the indicators of climate change in the study area and to determine the indigenous climate change

adaptation and mitigation strategies among crop farmers.

MATERIALS AND METHODS

The study was conducted in Lafia Local Government Area of Nasarawa State. The population of the area is about 330,712 people (NPC, 2006). Lafia is located between latitude 07° 9’N longitude 07° 9’E, altitude of 181.5m above sea level (NSMI, 2006). The area is bordered by Obi Local Government Area to the South, Nasarawa-Eggon to the North, Doma Local Government to the West and Quan Pan Local Government Area of Plateau State to the East. The main ethnic and language groups are Eggon, Gwandara, Kanuri and Migili.

Lafia Local Government comprises eight (8) districts, namely: Lafia city, Shabu-/Kwandare, Barkin Abdullahi, Agyaragu, Assakio, Akunza, Adogi/Ashige and Arikya. Four districts were purposively

selected based on their proximity to the central study area (Lafia). The four (4) districts are Adogi/Ashige, Shabu/Kwandare, Agyaragu and Akunza. Thirteen (13) crop farmers were randomly selected from each of the four districts to make a sample size of 52 farmers for the study. Primary data were used for the study and were collected with the aid of a structured questionnaire administered to farmers in the study area. Data collected were analyzed using descriptive statistics.

RESULTS AND DISCUSSION

The study identified the changes that farmers in the study area have noticed due to the incident of climate change. The results are presented in Table 1. All the respondents agreed that they have been experiencing an unpredictable weather regime, which they attributed to climate. A good majority of the respondents (90%) also pointed out that the increased incidence of drought that

Table 1: Indicators of Climate Change in Lafia Area of Nasarawa State

Observations	Frequency	Percentage
Increased incidence of rain flood	22	42
Unpredictable nature of weather	52	100
Increased incidence of crop pests/diseases alien to the locality	42	81
Increased rate farm land degradation as a result of mass erosion incidence	22	42
Increase in incidence of drought	47	90
Excessive rain within a short period of rainfall	24	46

Source: Field survey, 2011.

Table 2: The indigenous adaptation strategies practiced by farmers in the study area

Adaptive practice	Frequency	Percentage
Changing planting date	51	98.0
Multiple cropping	52	100.0
Growing cover crops	22	42.0
Soil water conservation by mulching	45	86.54
Strip cropping	04	07.69

Source: Field survey, 2011

Table 3: Indigenous climate change mitigation strategies practiced in the study area

Mitigation practice	Frequency	Rank
Growing leguminous crops	52	1
Use of green manure	46	2
Use of organic manure	42	5
Maintenance of soil structure by application of organic materials	45	3
Avoiding deforestation	44	4
Avoiding bush burning	42	5

Source: Field survey, 2011

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occurred in parts of the study area could be as a result of change in climate. Others (81%) pointed out that there was an incidence of crop pests/diseases hitherto alien to the locality. Other observations include; excessive rainfall within a short period, increase in the incidence of rain flood and massive erosion. Similar findings were also reported in Nasarawa-Eggon area of Nasarawa State by Umar and Ibrahim (2011). Surprisingly, no respondent observed that a rise in temperature is also attributed to climate change. Oladipo (1995) observed that there has been a persistent rise in temperature in Nigeria which is an indication of an abrupt change in climate resulting in unpredictable timing of rainfall and planting. The implication of these findings is that farmers in the research area are not very much aware of some major indicators climate change.

The indigenous climate change adaptation practices in the area are presented in Tables 2. All the respondents (100%) were actively practicing multiple cropping as a climate change adaptation strategy, while about 98% of the respondents used change of planting date as an adaptation strategy. The use of mulching for conserving soil moisture as is also very common in the research area. Obinne *et al.* (2008) observed that mulching is a major farming practice among farmers. The least practiced adaptation strategy was strip cropping which is practiced by less than 10% of the respondents.

The most prevalent climate change mitigation strategies are presented in Table 3. The growing of leguminous crops, use of green manure, and maintenance of soil structure by application of organic materials and avoiding deforestation respectively are the major practices adopted by the respondents. The practices adopted against climate change mitigation by the farmers are quite invaluable in enhancing the sustainability of agricultural production systems,

CONCLUSION

Farmers in the research area are quite aware of climate change and as such, have adopted local practices for both mitigation and adaptation. However, there is need for further awareness

especially on the causes and major indicators of climate change. In addition, the practices they have adopted should be incorporated into mainstream climate change mitigation and adaptation plans of Nasarawa State Agricultural development project.

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