



ASSESSMENT OF BUSH BURNING ON VEGETATION COVER, IN MUBI NORTH LOCAL GOVERNMENT AREA ADAMAWA STATE

ABSTRACT

A study was conducted to evaluate the effects of bush burning on soil physical properties and biodiversity conservation, in Mubi North local government area of Adamawa state. The wards randomly selected were Muchalla, Digil, Mayo bani, Pahuli and

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INTRODUCTION

The vegetation cover is consumed every year by wild fire. Eradicating bushfire will only be successful if the root causes are identified and broad based strategies designed to fight it. (Blank and Zumodio, 1998). Several factors account for the persistent and pervasive nature of wild fires. The vegetation cover is dominated by grass with few scattered trees. The susceptibility of grass to wild fire makes it difficult to control when it starts. Erratic rainfall pattern causes frequents droughts which aggravate the situation. Some parts of the savanna zone become extremely dry to the point that wild fires



starts naturally when lightning occurs (Gideon, and Yager, 2016).

Hunting which is common among the savanna dwellers accounts for a greater percentage of bush fires in the sensitive savanna environment. Hunters increase their catch of the game by destroying the habitat of the wildlife with flames to expose them. Animals that are not even killed by the hunters are mostly consumed by the wild fire (Gideon, 2014).

Bushfire results in atmospheric pollution due to the large quantities of carbon dioxide and smoke emitted into the atmosphere. Bush burning destroy wildlife vegetation and open up

Vimtim. Questionnaires were prepared and distributed to farmers in the study area. Results obtained were analyzed using simple percentage and tables. The study revealed the effects of bush burning on surface destruction; soil erosion and biodiversity destruction as shown in table 4.10. The result also reveals bad farming practices as one major factor accounting for the wide spread of bush fires in Mubi north. The study revealed that about 70 % of respondents in the study areas used hand clearing and 30 % used slash and burn system of farming respectively. The study also revealed the effects of bush burning. Bushfire has been identified to be one of the major socio-economic problems besetting the economic progress. The vegetation cover is consumed every year by wild fire. The susceptibility of grass to wild fire makes it difficult to control when it starts. Bad farming practices is one major factor accounting for the wide spread of bush fires in the north.

Keyword: bush burning, assessment, effects, control measures and questionnaire Mubi north.



forest canopy which also lead to the invasion of shrubs and grasses, as well as climbers and severely reduce the productive capacity of the forest as earlier reported by (Blank and Zamundio, 1998). Frequent fire out break necessitates a research of this kind to ascertain the effect of such localized burnings on the soil and its subsequent effect on crop production and wild life. The vast majority of area burnt and cleared annually for cropping or, to drive game for hunters, to improve grazing condition for livestock and for migration and land settlement lies within the savanna ecological zone as stated by Gideon (2014). As more land is being cleared and prepared for cropping annually, burning has become the easiest and most convenient method often employed. In many areas, wildfire becomes a major cause of depletion of nutrient status. Gideon, *et al.*, (2015) pointed out that relatively large-scale loss of nutrients and an alteration of soil physical conditions occur after a fire. Researchers have identified many fire related impacts on soil condition. They have divided them into the following categories. Physical and chemical properties, Nutrient properties, soil Temperature, soil Moisture, and soil Biota. In general, when compared to the impacts felt by other ecosystem components, fire effects on soil are typically minor, are often Short-lived and can be either positive or negative, on the soil (Bailey,1996).

Blank and Zumundio, (1998) reports that, when the various definitions of biodiversity are pooled together, the term could be understood to mean the multiplicity of living organisms, which include plants, animals, fungi, and related micro-organisms found in both terrestrial and aquatic ecosystems of the earth.

Conservation simply means the management, protection, and wise use of natural resources. Among the numerous constrains faced by the people within the fragile savanna ecology is the issue of bushfire. Bushfire has been identified to be one of the major socio-economic



problems besetting the economic progress. Bad farming practices is one major factor accounting for the wide spread of bush fires in the north. Most farmers have the tendency of burning the vegetation as a way of clearing the land for tilling. This unhealthy farming method is common among northern farmers and will not end in time if conscious conservation measures are not put in place (Gideon, 2013).

The broad objective is to assess the effects of bush burning on soil and vegetation cover in Mubi North Local Government Area. The specific objectives were to determine: The socio economic characteristics of respondents in the study area, the effect of bush burning on land degradation.

MATERIALS AND METHODS

Mubi North Local Government Area is one of the twenty one local governments of Adamawa State. It's among the largest local government area in the state with a land area of 506,4km². with 1991 figure by national population commission (NPC, 2006) and subsequent endorsement by the federal government. Mubi North Local Government Area has about seven hundred, fifty nine thousand and forty five (759045) population as stated by (Gideon, 2015). It lies between latitude 10° 32'' and 10° 11'' north of the equator and Longitude of 13° 12'E to 13° 35'E. Mubi North Local Government Area share borders with Mubi South, Hong and Maiha to the south, also Michika, and Madagali Local Government Area of Adamawa State by the North. It also share border with some villages of Cameroun. Mubi North Local Government Area has an annual rainfall duration of 5-7 months from April to October, rain dwindles and gives way to dry season from November to March. It has the average rainfall of 998 mm and 1262mm average temperature of about 36° C. The vegetation of Mubi North is within Sudan savanna belt, below the Mandara



Mountain. The soil fall the category of ferruginous tropical soil dominated by grasses with scattered emergent vegetation of African Savannah such as *Acacia species philoshgma spp.* the grasses and trees covers ranges from *Andropogon spp pennisetum spp and imperata spp* (Adebayo, 2004).

The main occupation of Mubi North people are farming and bee farming while others embark on trading. Due to the hospitality of Mubi North people, it encourages agricultural practices and attracts other tribes to come for business transaction.

The primary and secondary source of data collection used in the study areas were semi structure interview, personal interview, oral discussion and focus group contact. The secondary data was from the existing relevant document in the study area in other to evaluate the effects of bush burning on vegetation cover in Mubi North local Government Areas. Five wards were selected out of eleven (11) wards, in each of the five wards, one hundred (100) respondents were selected from the five wards and a well-designed questionnaire was administered. A total number of one hundred questionnaires were designed to extract information from the respondents. Five wards that were randomly selected include; Muchalla, Digil, Mayo bani, Pahuli, Vimtim. The data obtained were analyzed by using simple percentage and tables.

Table 1. Age class of the Respondents

Age class	Number of respondents	percentage (%)
20-30	13	13
31-40	18	18
41-50	26	26
51 above	43	43
Total	100	100



Source: field survey (2019).

From the table above it shows that 43 % are people from 51 and above, 26 % fall within 41-50, 18 % falls within 31-40 while 13 % fall within 20-30 respectively.

Table 2. Educational background of the Respondents

Educational background	Number of respondents	percentage (%)
NCE	25	25
Diploma	22	22
Secondary	30	30
Primary	23	23
Total	100	100

Source: field survey (2019).

From the table above it shows that 30 % are secondary, 25 % are NCE holders, 23 % are primary holders and 22 % are diploma.

Table 3. Land preparation for farming

Method	Number of respondents	percentage (%)
Hand clearing	70	70
Slash and burning	30	30
Total	100	100

Source: field survey (2019).

The table above revealed that about 70 % respondents use hand clearing while 30 % use slash and burning.

Table 4. Effects of bush burning on vegetation cover

Effects	Number of respondents	percentage (%)
Surface destruction	52	52
Soil erosion	30	30



Fauna and flora destruction	18	18
Total	100	100

Source: field survey (2019).

From the table above 52 % constitute surface destruction, 30 % respondent constitute soil erosion and about 18 % biodiversity.

Table 5. Measure taken during slash and burning

Response	Number of respondents	percentage (%)
Yes	70	70
No	30	30
Total	100	100

Source: field survey (2019)

The above table indicated that the highest number of respondents was 70 percent who adopt slash and burn method of land preparation than any preventive measures, while 30 percent of the respondents adopted other control measures.

Table 6. Types of control measure taken

Types	Number of respondents	percentage (%)
Control burning	43	43
Early burning	25	25
Both measures	32	32
Total	100	100

Source: field survey (2019).

From the table above it shows that 43 percent practice controlled burning, 25 percent practice early burning measures while 32 percent practice both measure.



Table 7. Effects of slash and burn on crops production

Effects	Number of respondents	percentage (%)
Optimum yield	31	31
Low yield	22	22
Loss of fertility	47	47
Total	100	100

Source: field survey (2019).

The table above shows that about 47 % respondents reported loss of soil fertility as an effect of slash and burn method of land preparation, 31 percent usually have optimum yield harvest, while 22 percent usually have low yield

Table 8. Contribution of slash and burn to soil degradation

Response	Number of respondents	percentage (%)
Sharp decrease in soil fertility	50	50
Low fertility	30	30
Loss of soil fertility	20	20
Total	100	100

Source: field survey (2019).

The table above indicates the types of hazards cause to land through slash and burn method of farming. The highest 50 percent noticed sharp decrease in soil fertility, 30 percent reported low soil fertility that resulted to low output from their crops, while 20 percent reported lost in soil fertility can expose the soil to both wind, erosion and surface run off.

Table 9. causes of soil erosion

Response	Number of respondents	percentage (%)
Over grazing	28	28
Intensive cultivation	56	56.
continue burning	16	16



Total	100	100
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Source: field survey (2019).

The table above reveals that 56 percent reported intensive cultivation is the major cause of soil erosion, 28 percent responded about over grazing while 16 percent said continue burning.

Table.10. Opinion about slash and burn method of farming

Response	Number of respondents	percentage (%)
Positive	20	20
Negative	80	80
Total	100	100

Source: field survey (2019).

From the table above 80 percent shows negative opinion towards slash and burn while 20 percent shows positive reaction towards slash and burn.

Table 11. Reaction of government towards enacting law on bush burning

Response	Number of respondents	percentage (%)
Positive	24	24
Negative	56	56
Neutral	20	20
Total	100	100

Source: field survey (2019).

The table above reveals that 56 percent responded to negative reaction on bush burning, 24 percent responded positively while 20 percent response are neutral.

RESULT AND DISCUSSION

From table 1, it shows that agricultural production and vegetation conservation has the potential to control bush burning since young



and energetic people were engaged in the area. Table 2, reveals that transfer of new technology to this particular community will not be a difficult task, it is often said that people easily adopt new technology when they are enlightened and by implication increase control burning to better the living standard of the community. Table 3, shown most people adopted hand clearing method because it has no or less effects on soil as well as biodiversity. Table 4, reveals that surface destruction was the major cause of bush burning as well as soil erosion, flora and fauna destruction. It was observed in table 5 that majority of the community adopt slash and burn method of land preparation than any other preventive measures. The result obtained in table 6, depicted that control burning is the best control measure to be taken as well as early burning, such practice will conserve vegetation. Table 7, depicted that loss of soil fertility is the main effect of bush burning which brings about low yield of crop production. Table 8, reveals a sharp decrease in soil fertility as the major effects of bush burning. Table 9, reveals that intensive cultivation has become the major cause of erosion as well as over grazing and continued burning. Table 10 reveals government slow reaction towards enforcing the laws enacted against bush burning. While table 11, reveals that most people in the study area are in the opinion of government to enforce the law enacted against bush burning, such as "Prohibition of bush burning and felling of trees". Also people are in the opinion for government to employ forest extension workers to educate the community on the dangers of bush burning on vegetation conservation.

Bushfire has been identified to be one of the major socio-economic problems besetting the economic progress according to Gideon (2015). The vegetation cover is consumed every year by wild fire as reported by (Bailey, 1986). The susceptibility of grass to wild fire makes it difficult to control when it starts as stated by (Gideon 2013). Bad



farming practices is one major factor accounting for the wide spread of bush fires in the north as earlier reported by (Anderson, 1998). This unhealthy farming method is common among northern farmers and will not end unless conservation measures are put in place. Hunters also increase their catch of the game by destroying the habitat of the wildlife with flames to expose animals, even the animals were not killed by the hunters they are mostly consumed by the wildfire (Gideon, 2014). Land is being cleared and prepared for cropping annually and burning has become the most convenient method often employed in many areas. Burning (wildfire) becomes a major cause of depletion of nutrient status. The effects of bush burning on soil are often short-lived and can be either positive or negative earlier reported by Blank and Zamundio (1998). The study revealed that about 70 % of respondents in the study areas used hand clearing and 30 % used slash and burn system of land clearance for farming as presented in Table 3. above.

CONCLUSION

The study evaluates the assessment of bush burning on vegetation cover in Mubi North Local Government Area, of Adamawa State and also revealed the effects of bush burning on land surface destruction, soil erosion and fauna flora destruction as shown in table 4.

Recommendation

In view of the findings from this study, the following recommendations are made:

- There is a need for an awareness campaign to enlighten the community on danger of slash and burn system of farming.
- Government to empower farmer's with modern farm implements and inputs at subsidize rate.



- Policies that would favor farming and forest conservation should be enforced.

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