

EFFECT OF BUSH BURNING ON FARMING HOUSEHOLDS IN MAKURDI LOCAL GOVERNMENT AREA OF BENUE STATE, NIGERIA

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ABSTRACT

This study analysed the effect of bush burning on farming households in Makurdi Local Government Area of Benue State, Nigeria. Specifically, the study described the socio-economic characteristics of the selected farmers in the study area; identified the reasons for bush burning; analysed the value of assets destroyed by bush burning; and assessed the farmers' awareness of the negative effects of bush burning. Copies of structured questionnaire were employed in obtaining data from the respondents using a multi-stage sampling technique. Descriptive statistics were used to analyse the data. From the findings of the study, the farming household heads were mostly (52.0%) male and the mean age of the farmers was at 42.38 years. Land clearing (93.0%) was considered as the greatest reason why the farmers practice bush burning. The study further showed that 38.30% of the respondents have been burning bushes between 1 and 10 years. The percentage of assets lost by farmers owing to bush burning stood at ₦61, 250.0000, and this accounted for 8.0592% of the estimated value of the household assets which stood at ₦1,179,118.8800 per annum. The farmers were aware that loss of crop (3.41) was one of the perceived negative effects of bush burning, on having a mean higher than the cut-off mean of 2.5. The study recommended that stringent legislation and law should be made against uncontrolled bush burning, and appropriate punishments spelled out for offenders in the courts of law.

Keywords: Bush burning, farmers, farming, household, Nigeria

INTRODUCTION

Man's environment is under constant threat from his activities resulting from expanding population and this remains one of the biggest challenges to the quality of the environment. Ezekwesili-Ofilu and Okaka (2019) noted that in every part of Nigeria, burning represents a useful cultural tradition that cannot be done away with. Bush fires and felling of trees have been a part of Nigerian history for hundreds of years; people use bush fires to their benefit to managing the land and as a hunting aid.

Bush burning is the indiscriminate setting ablaze of the vegetation cover and the burning down of grassland and forest resources by fire. To the peasant farmer, it is the cheapest means of clearing farmlands. To the nomad, it is the easiest way to clearing garbage to allow for early sprouting of fodder for the animals, the hunters say, it is a technique for hunting games. Others set wildfires for the pleasure of it Ambe *et al* (2015). More than half of bush burning throughout Nigeria is deliberately lit, costing millions of naira damages annually. The negative impact of bush burning need not be overemphasized especially during the hot season in

northern Nigeria as apart from environmental pollution and health hazards. Most often bush burning results from a combination with oxygen and one combustible material (Lemon, 1967). Bush burning as it is being studied not only poses health hazards to man alone but also affects the environment in general via the emission of the various pollutants. Hamid *et al* (2010). Apart from the soil destruction and desert encroachment caused by bush burning, it has also had a marked increase in global warming due to the emission of toxic gases which have a tremendous effect on the ozone layer and also the formation of acid rain which deteriorate plant life, damage calcium-containing soils and also increase the acidity of surrounding lakes. (Judge 1991). Bush fires can have significant impacts on individuals, communities, and on public and private assets, by threatening to damage or destroy human life and property, agricultural and forest production, animals, biodiversity, air and water quality, cultural heritage, and infrastructure (Ellis *et al* 2004).

At the household level, loss of shelter through wild fires has often left families traumatized. People

exposed to forest fires may experience grief. Property loss, such as the destruction of a home or damage to personal goods, can be a source of grief. (Machilis 2002). For resource-poor and vulnerable smallholder farmers, loss of assets, housing, and crop harvest further exacerbate their already low food and income security, which may usher them deep into a poverty cycle.

As more lands are been cleared and prepared for cropping, hunting and grazing annually, burning has become the easiest and most convenient method quite often employed. (Isah and Adegeye, 2002). However, accusing fingers are pointing towards bush burning for lowering crop yields, invasion of foreign/alien species compartmentalization of the soil Ambe *et al* (2015). Bush burning can adversely lower the income of household farmers and impede agricultural production, not leaving out the numerous hazards it constitutes to the environment.

Objectives of the Study

The broad objective of the study is to analyse the effects of bush burning on farming households in Makurdi Local Government Area of Benue State, Nigeria.

The specific objectives of the study are to:

- i. describe the socio-economic characteristics of the selected farmers in the study area;
- ii. identify the reasons with for bush burning;
- iii. analyze the value of assets destroyed by bush burning;
- iv. profile the farmers' awareness of the negative effects of bush burning.

METHODOLOGY

The study area was Makurdi Local Government Area (LGA) of Benue State, Nigeria, which equals as the state capital and is located between latitudes 7°74' and longitudes 8°51'E with an altitude of 104m above sea level. Makurdi LGA is divided into two major blocks by River Benue that is, the North, and the South banks. The study area has a total land area of 820square kilometers with the widely disputed result of the 2006 national population census which put the population of Makurdi LGA at 300,377 persons (NPC 2006). The major ethnic groups in the study area are the Tiv, Idoma, Igede, and Etulo with the original indigenes being the Tiv speaking people. Farming is the predominant occupation of the inhabitants.

The sample for the study was obtained using a two (2)-stage random sampling technique. In the first

stage, purposive sampling technique was adopted in selecting six (6) council wards (Agan, Ankpa/Wadata, Bar, Fildi, Mbalagh, and Wailomayo) in the study area because of the high concentration of farmers in those areas, as well as prevalence of bush burning activities. In the second stage, a random selection of 16 respondents from the 6 council wards previously selected (with an exception of Agan which recorded 20 respondents to make-up the anticipated total number of respondents). Hence, a total number of 100 respondents formed the sample size of the study. Data were collected using copies of structured questionnaire administered to the respondents through personal contact. The data were analysed using descriptive statistics, such as, percentage, frequency, mean and standard deviation. Specifically, farmers' awareness of the negative effects of bush burning was analysed using mean score, with cut off mean at 2.5.

Analytical Techniques

Descriptive statistics was used to analyze all the objectives ranging from describing the socio-economic characteristics of the respondents; identifying the reasons for bush burning; analyzing the value of assets destroyed by bush burning; and profiling farmers' awareness of the negative effects of bush burning.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the Respondents

The socio-economic status considered in this study include age, sex, marital status, educational level, household size and farming experience. Entries in Table 1 indicated that the respondents with age categories 21-40 years and 41-60 years recorded 45.0% and 45.0%, respectively. However, the farmers' age at 42.38, implies that farming activities were mostly practiced by older persons (above 40 years), and could be as a result of the rural-urban drift prevalent in Nigeria. More so, many persons of youthful age migrate to cities in search of more lucrative job rather than farming in the villages (Fakayode, 2009). With respect to respondents' sex, majority (52%) were males, while only (48%) were identified as females. This implies that the farming occupation is slightly dominated by male farmers. Entries on marital status show that 12.0% of the respondents were single, majority (67.0%) were married, 7.0% divorced, while 14.0% widowed. Umar *et al.* (2014) made a similar observation.

Table 1: Distribution of Respondents according to their Socio-Economic Characteristics (n=100)

Variables	Frequency	Percentage	Mean
Age (years)			
≥20	1	1.0	
21-40	45	45.0	42.38
41-60	45	45.0	
>60	9	9.0	
Sex			
Male	52	52.0	
Female	48	48.0	
Marital status			
Single	12	12.0	
Married	67	67.0	
Divorced	7	7.0	
Widowed	14	14.0	
Education			
No formal education	13	13.0	
Primary education	37	37.0	
Secondary education	32	32.0	
tertiary education	18	18.0	
Family size			
≤5	33	33.0	
6-10	58	58.0	7.02
11-15	9	9.0	
Farm size			
≤1.00	77	77.0	
1.01-1.50	5	5.0	0.9537
1.51-2.00	10	10.0	
>2.00	8	8.0	
Farming experience			
≤10	42	42.0	
11-20	39	39.0	17.87
21-30	13	13.0	
>30	16	16.0	
Extension contacts			
<1	62	62.0	
1	8	8.0	1.06
2	15	15.0	
3 and >	17	17.0	

Source: Field Survey, 2019.

Results from Table 1 showed that majority (37%) of the respondents had primary education. Only (13%) of the respondents claimed not to have experienced any formal education. The findings of Onoja and Achike (2011) stressed that individuals with educational attainments are usually faster adopters to innovations. Majority (58.0%) of the respondents accounted for a family size of 6-10 persons and the mean family size recorded was 7.02%.

This result implies that the household size in the study area is large. Sadiq *et al* (2015) argued that large household size is a major source of labour. Majority (77.0%) of the respondents claimed to have 1 hectare or less. Entries on farming experience showed that 42% of the respondents had farming experience of 10 years and below and 16.0% had

farming experience greater than 30 years. Rahji (2000) maintained that there is a positive relationship between experience and technical efficiency.

Finally, Table 1 indicated that majority (62.0%) of the respondents had never accessed the contact of an extension agent(s). However, the rest (17.0%) claimed having 3 and more extension contacts.

Reasons for Bush Burning

From Table 2, results indicate the various reasons which account for bush burning in the study area. Entries indicated that land clearing was recorded as major (93.0%) reason why people burn bushes in the area. According to Adewole and Anyahara (2010), bush burning is a land clearing technique, because it requires less capital.

Table 2: Distribution Showing Reasons Respondents Burn Bush

Reasons	Frequency	Percentage (%)
Land clearing	93	93.0
Hunting	24	24.0
Weed control	75	75.0
Building purpose	16	16.0
Security purpose	21	21.0
Fire wood	48	48.0
To protect livestock	47	47.0

*Multiple responses

Source: Field Survey, 2019

Furthermore, as shown in Table 2, majority (75.0%) of the respondents hinged their reasons on weed control, while the rest (24.0%, 16.0%, 21.0%, 48.0%, and 47.0%) attributed their reasons for bush burning to hunting, building purpose, security purposes, firewood and livestock protection, respectively. NEST (1991), as cited by Ambe *et al* (2015) made a similar assertion, that bush fire also serves useful purposes. Similarly, International Forest Fire News (IFFN) (2006) noted that in every part of Nigeria,

burning represents a useful cultural tradition that cannot be discarded.

Number of Years in Bush Burning Practice

Entries in Table 3 show that majority (94.0%) of the respondents admitted to the practice of bush burning, while the rest (38.30%) claimed to be burning bushes for 1 - 10 years. Furthermore, 29.79% claimed to have been burning bushes for 11-20 years and 14.89% fell within the age ranges of 21 and 30 years. Only (17.02%) claimed they have been burning bushes for more than 30 years.

Table 3: Distribution of Respondents Practising and Their Years of Practising Bush Burning (n=100)

Variables	Frequency	Percentage %
Practising bush burning	94	94.0
	6	6.0
Years of practising		
<1	8	8.1
1-10	36	38.30
11-20	28	29.79
21-30	14	14.89
>30	16	17.02

Source: Field Survey, 2019.

Estimated Value of Assets Owned by Household and Assets Lost from Bush Burning

From Table 4, majority (84%) of the farm household heads claimed to have lost household assets valued at ₦100,000 and below, 9% stated they lost assets valued between ₦100,000 and ₦200,000, 3% was recorded as ₦200,000 and ₦300,000, while the rest

(4%) claimed to have lost assets valued above ₦300,000. The total mean value of household assets owned by the respondents is estimated to be ₦1,179,118,88, which is similar to the findings of Oyedepo (2019) that the mean worth of physical assets of rural households was recorded as ₦1.2million.

Table 4: Distribution Showing the Total Value of Household Asset and the Value of Asset lost (n =100)

Value (₦)	Frequency	Percentage %
≤100000.00	84	84.0
100001.00-200000.00	9	9.0
200001.00-300000.00	3	3.0
>300000.00	4	4.0
Mean		
Value of household assets	₦1,179,118.8800	
Value of household assets burnt	₦61,250.0000	
Percentage of assets lost	8.0592%	

Source: Field Survey, 2019.

Moreover, from Table 4, the total mean value of household assets burnt by fire was estimated at ₦61,250, which accounted for 8.05% of the value for household assets or property. However, knowing that the area of study is well-dominated by smallholder farmers, a loss of about (8%) of their assets was recorded as a significant loss, which would have gone a long way in improving their household economy.

Awareness on the Negative Effects of Bush Burning to Farming Households

Perceived negative effects with a mean above the benchmark of 2.5 implies that respondents are aware

of their effects. As indicated in Table 5, the respondents are aware of the negative effects of loss of crops (3.41), destruction of trees (2.54), respiratory diseases (3.31), high temperature (3.02), air pollution (3.61), and soil erosion (2.52). On the other hand, the factor from table 5 with the smallest mean recorded was of acid rain (1.31) showing that the respondents are most ignorant about the negative effect of acid rain among other negative effects they are not aware of. In their studies, Ambe *et al.* (2015) and Aluko *et al.* (2019) made related observations that awareness must be created owing to the negative effects of bush burning.

Table 5: Distribution of the Awareness Levels of the Perceived Negative Effects of Bush Burning. (n= 100)

Perceived Effects	Minimum	Maximum	Mean	Std. Deviation
Loss of life	1	4	2.26	0.872
Loss of crops	2	4	3.41*	0.552
Loss of livestock	1	4	2.41	0.805
Destruction of trees	1	4	2.54*	0.658
Loss of machinery	1	4	2.44	0.608
Destruction of building	1	4	2.89*	0.601
Loss of nonfarm asset	1	4	2.11	0.777
Respiratory diseases	1	4	3.31*	0.598
High temperature	2	4	3.02*	0.603
Ozone layer depletion	1	4	1.90	0.905
Deforestation	1	4	1.94	0.814
Air pollution	2	4	3.61*	0.814
Soil erosion	1	4	2.52*	0.627
Reduction of W.H.C.	1	4	1.69	0.677
Drought	1	4	1.68	0.737
Acid rain	1	3	1.31	0.563

Cut-Off Mean= 2.5; $\alpha > 2.5$ = aware; < 2.5 = not aware

Source: Field Survey, 2019.

CONCLUSION AND RECOMMENDATIONS

The study concludes that the Makurdi LGA is predominantly inhabited by male farm household heads who suffer from the effect of burning activities. The main reasons why farmers' burn bushes in the area can be attributed to land clearing and weed control. More so, farmers have incurred huge loss of assets worth millions of naira owing to bush burning practices. Meanwhile, the farmers among other factors, are very much aware that loss of crop is a negative effect of bush burning. Based on the study findings, it was recommended that farmers, hunters, policymakers and implementers, environmental educators, and the general public should be sensitized on the effects of bush burning, so as to take positive steps and measures in controlling the hazards of bush burning. Moreover, the farmers should be clearly educated by extension agents on safer cultivation strategies and appropriate farming methods to be used instead of bush burning;

and on that regard, some stringent legislative measures should be apportioned to defaulters.

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