



Utilization of Forest Herbal Resources among Rural Farming Populace in Niger and Kogi States, Nigeria

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Abstract

This study analysed forest herbal utilization among rural farming populace in Niger and Kogi State. Multistage sampling was used to select 326 of farming populace. The first stage involved selection of all the agricultural zones in both States. At the second stage, one (1) LGA from each agricultural zone was randomly selected. The third stage involved random selection of four communities from the selected LGAs. At the fourth stage, 10% of the farmers were randomly selected from the sampling frame of each communities. In all, a total of 326 respondents were selected as the sample size for the study. Data were collected from primary source using questionnaire complemented with interview schedule. Data were analysed using descriptive statistics (frequency, percentage and mean). The mean age of the respondents was 40 years while 80.7% of the respondents in the study area were married. It was found that the average of 4.7 years was spent on formal education. Further findings showed that 23.5% of the rural farming populace utilised trees shrub/leaves when fresh. While 23.0% of the rural farming families utilize tree shrubs/leaves when boiled. Moreover, 23.6% of the farming populace utilized skin herbal for their medicinal purposes such as cough, fever and charming while 14.1% of the rural farming populace utilized feather when dried for medicinal and domestic uses such as cure of

paralysis and skin rashes. Wind blowing possess the most environmental hazard in the utilization of forest herbal resources (\bar{x} -2.44) while bush burning leads to animal going into extinction (\bar{x} -2.42). It is therefore recommended that farmers should be trained and sensitized by the extension agents on how to safely explore forest resources in order to curb negative incidents while rural farming populace organize themselves into community self-help group for protection of forest against bush burning.

Keyword: *Woody vegetation, Environmental hazard, Fire wood, Farming populace, Utilization*

Introduction

Forests are plant communities consisting predominantly of trees and other woody vegetation occupying an extensive area of land. They are essential natural resources for rural farming families while providing them with both subsistence and market oriented livelihood strategies (Oludotun, 2015). Globally, many wood forest products like fuel wood, construction materials and non-wood forest products such as wild foods, leave litters, leaves for wrapping, medicinal products and land snails provide rural farming families with several entrepreneurship livelihood opportunities. Forest products are known to be essential sources of income generation for rural farming families for a means of livelihood, expansion of farms and diversified commercial activities. Fonta *et al.* (2013) reported that more than 300

million people in the world especially the poor, depend largely on forest gathering for daily subsistence and survival. The potential benefits of freest and forestry resources include: daily subsistence and survival from forest product gathering, income redistribution and poverty reduction, recreational facilities, firewood, timber and medicine. The rural farmers depend largely on subsistence agriculture as their major occupation which is characterised by small-scale farming activities, low production and income. They also partake in other income generating activities like blacksmithing, motorcycle riding and other artisan activities to augment output from farming activities to improve livelihood. Income generated from farming activities is not enough to carter for household needs such as payment of children school fees,

payments of hospital bills, purchase of households' items, buying of agricultural inputs, as well as cultural activities such as marriage, naming and burial ceremonies (Amulya, 2015). The aforementioned could force the rural farmers to engage in exploitation and utilisation of forest products to augment income from the farming activities in order to enhance livelihood. Agarwal (2011), stressed that rural people are highly dependent on forest products for subsistence foods and materials. Over ninety percent of rural residences rely on forest to meet their family requirements. It was estimated that between 1.095 billion and 1.745 billion people in the world depend on wide range of forests products for their livelihoods and about 200 million indigenous rural communities are almost fully dependent on forests (Chao, 2012). This study "utilization of forest herbal resources among rural farming populace in Niger and Kogi states" become imperative in order to better the livelihood of rural farmers. It has been observed that there are many untapped forest resources that could improved rural farmers income if seriously harnessed at the same time improving their standard of living. However the study want to determine the socio-economic characteristics of farming populace, examine the herbal forest resources utilisation and identity environmental hazard encountered in forest resources utilisation.

METHODOLOGY

Study Area

Kogi State

Kogi State consist of twenty – one (21) Local Government Areas (LGAs) is located within Longitude 7.9075°N and Latitude 6.5783°E Latitude (Kogi State Geographical Information System, 2019). The State has two seasons, the wet and dry seasons. The wet season begins in March and ends in October and the dry season spans between November and early March. The annual rainfall is between 1016mm and 1524mm. The State has maximum temperature of 29°C, average temperature of 24°C and minimum temperature of 22°C with relative humidity of 81%. The State is bordered to the South by Federal Capital Territory (FCT), Abuja, and also shares boundaries with nine other States in the country. To this and, the State is bordered to the Northern by Nasarawa State by the North East, Benue State to the East, Enugu State to the South East, Anambra State to the South, Edo State to the South West, Ondo State to the

West, Ekiti State to the West, Kwara State to the North West and Niger State to the North. This gives way to common interstate trade.

Kogi State has a wide stretch of forest and arable land for farming, good grazing land for livestock and large bodies of water for fishing and irrigation farming. The State is located at the confluence of the two largest rivers in West Africa, Rivers Niger and Benue. The State has a total human population of 3,278,487 as at 2006 census and with a growth rate of 3.2%, the State has an estimated population of 4,636,071 in 2017, while the land area is about 30,354.74 square kilometers ((Kogi State Geographical Information System, 2019).

Niger State

Niger State consists of twenty-five (25) Local Government Areas (LGAs) that are grouped into three agricultural zones viz; i, ii and iii with the zones having eight, nine and eight LGAs, respectively. Nupe, Gwari and Hausa are the major ethnic groups in the State. There are other minor ethnic groups such as Koro, Kakanda, Kadara, Ganagana, Dibo, Kambari, Kamuku, Pangu, Dukawa and Angwai. The fertile soil permits the cultivation of most of Nigeria staple crops and still allows sufficient opportunities for grazing, fresh water fishing and forestry development. The State is blessed with abundant forest such fuel wood, timber, tree root, teak, mahogany, tree barks, forest animals (rat, rabbit, antelope, monkey, grasscutter) (Niger State Ministry of Information, 2012).

Multi-stage sampling technique was used for the study in both States. The first stage involved selection of all the agricultural zones in both States. At the second stage, one (1) LGA from each agricultural zone was randomly selected. The third stage involved random selection of four communities from the selected LGAs. At the fourth stage, 10% of the farmers were randomly selected from the sampling frame of each communities. In all, a total of 326 respondents were selected as the sample size for the study. Primary data were used for this study. Data were collected by researchers and trained enumerators using a questionnaire complemented with interview schedule. Data were analysed using descriptive statistics

RESULTS AND DISCUSSION

The pooled result in Table 1 shows that the mean age of the farming populace was 40 years, which is not far from the mean ages of both States. The finding suggests that the respondents belong to the middle age classes, who are

physically fit to withstand the stress and rigorous activities involved in the exploitation and utilisation of forest resources for their livelihood and are more mentally alert to embrace new techniques that will reduce environmental hazards. This finding agreed with that of Olujide and Oladele (2014) who found agro-forestry practitioners in Oyo State to be in their active ages of forty one years. Finding in the Table 1 showed that 83.0% and 78.6% of the respondents in Niger and Kogi States respectively were married. The pooled result revealed 80.7% of the respondents in the study area were married which is a strong indication of some kinds of family responsibilities that will compel them to seek for alternative source of livelihood from forest resources to augment their incomes. since it has been observed that there are many untapped forest resources that could improved rural farmers income if seriously harnessed at the same time improving their standard of living such as grasshopper, edible cricket and Shea-nut processing. The result in Table 1 further indicated that majority (73.4%) in Kogi State were males while 58.2% of the respondents in Niger were male. These findings showed that there are more male respondents in Kogi State than Niger State. The pooled results showed 66.3% of the respondents in the study area were male. . The finding suggests that the respondents belong to the middle age classes, who are physically fit to withstand the stress and rigorous activities involved in the exploitation and utilisation of forest resources for their livelihood and are more mentally alert to embrace new techniques that will reduce environmental hazards. This finding agreed with that of Bola *et al.* (2012)that agro-forestry practitioners in Oyo State were in their active ages of forty one years.

Table 1 further showed that the mean household size of respondents in Niger State was 11 persons, while that of Kogi State 7 persons and the mean of the pooled result was 9 persons. Large household size point to availability of family labour for forest resources exploitation and utilisation. Conversely, large household size could worsen the livelihood situation of farming populace particularly if they are composed of many dependents. This agreed with Bola *et al.* (2012) who stated that the large household with many dependents could negatively affect the livelihood of rural farming populace. In Table 1 the average years of experience in forest resources utilisation in both States of Niger and Kogi were 20 and 18 years respectively, while the mean year of experience for the respondents for the pooled result was almost 19 years. The fact is that majority of the respondents in the study area started forest products exploitation

and utilisation long ago and early in their lives, which signifies that most farmers in the study area earn their livelihood through forest resources exploitation and utilization. The pooled result also revealed that 48.2% of respondents in the study area have no formal education. Only 18.1%, 15.6%, 12.1% and 6.1% had secondary, primary, tertiary and adult education respectively.

Table 1: Distribution of farming populace according to socio-economic characteristics

socio-economic characteristics	Kogi State (n=173)	Niger State (n=153)	Pooled (n=326)
	Freq` (%)	Freq (%)	Freq (%)
Age (year)			
≤20	7 (4.0)	4 (2.6)	11 (3.4)
21-30	42 (24.3)	34 (22.2)	76 (23.3)
31-40	39 (22.5)	35 (22.9)	74 (22.7)
41-50	56 (22.4)	55 (35.9)	111 (34.0)
51-60	24 (13.9)	21(13.8)	45 (13.8)
>60	5 (2.9)	4 (2.6)	9 (2.8)
Mean	39.8	40.6	40.2
Marital status			
Single	36 (20.8)	18 (11.8)	54 (16.6)
Married	136 (78.6)	127 (83.0)	263 (80.7)
Widow	1 (0.6)	6 (3.9)	7 (2.1)
Separated	-	2 (1.3)	2 (0.6)
Sex			
Male	127 (73.4)	89 (58.2)	216 (66.3)
Female	46 (26.6)	64 (41.8)	110 (33.7)
Educational level (year)			
No-formal education	59 (34.1)	98 (64.1)	157 (48.2)
Primary education	21 (12.1)	30 (19.6)	51 (15.6)
Secondary education	46 (26.6)	13 (8.5)	59 (18.1)
Tertiary education	33 (19.1)	6 (3.9)	39 (12.0)
Adult education	14 (8.1)	6 (3.9)	20 (6.1)

Sources: Field survey, 2018

F- Frequency

Figures in parenthesis are percentages

Forest herbal plants utilised

The pooled result in Table 2 indicated that 26.4% utilised tree barks when boiled for treatment of malaria and typhoid fever in the study area. Moreso, 18.5%, 15.7% and 17.2% of the respondents respectively in Niger, Kogi States and pooled utilised tree roots when boiled. The reasons might be due to their ability to cure many sickness and protection against all forms of diseases. Furthermore, the findings revealed that 18.3% utilised grass stem when boiled in Niger State compared to that of Kogi State with 16.1% where they were utilised when grinded. The pooled result showed that 14.2% of the farming populace utilised grass stem when grinded in both States, for treatment of piles and body itches.

Table 2: Distribution of respondents according to form utilisation of forest plant herbal resources

Forest plant herbal resources*	Kogi State (n=173) Freq (%)	Niger State (n=153) Freq (%)	Pooled (n=326) Freq (%)
Tree shrub/leaves			
UB	39 (22.5)	36 (23.5)	75 (23.0)
UD	19 (10.9)	27 (17.6)	45 (13.8)
UG	23 (13.8)	29 (19.0)	53 (16.3)
Fruits /seeds			
UB	15 (8.7)	28 (18.3)	45 (13.8)
UD	15 (8.73.5)	33 (21.6)	48 (14.7)
UG	5 (2.9)	12 (7.8)	17 (5.2)
Tree branches			
UB	11 (6.4)	25 (16.3)	36 (11.0)
UD	22 (12.8)	45 (29.4)	67 (20.4)
Tree bark			
UB	44 (25.4)	40 (26.1)	86 (26.4)
UD	18 (10.4)	37 (24.1)	55 (16.9)
UG	24 (17.5)	23 (15.0)	45 (13.8)
Tree root			

UB	32 (18.5)	24 (15.7)	56 (17.2)
UD	8 (4.6)	24 (15.6)	32 (9.8)
UG	15 (8.7)	24 (15.9)	39 (11.9)
Grass stem			
UB	12 (6.9)	28 (18.3)	40 (12.3)
UD	1 (0.6)	25 (16.3)	26 (8.0)
UG	28 (16.1)	18 (11.9)	46 (14.2)
Grass root			
UB	10 (5.8)	23 (15.0)	33 (10.1)
UD	2 (1.2)	26 (17.0)	28 (8.6)
UG	27 (15.6)	22 (14.3)	47 (14.4)

Sources: Field survey, 2018

*Multiple response

Figures in parenthesis are percentages

Note: UB = Utilised when boiled, UD = utilised when dried, UG = utilised when grinded

Forest animal by products

Finding in Table 3 indicated that skin of forest animals were used by 45.0% of the rural farming populace in Niger State when dried. However, the skins were used in the boiled form in Kogi State and study area with 32.9% and 23.6% respectively. For forest animal claws they are used only in dry form in Niger, Kogi State and study area with 25.5%, 14.5% and 19.6% response rate respectively. Forest animal feathers were also utilised in dry form by 25.4%, 22.3% and 22.7% of the respondents respectively in Niger, Kogi States and pooled results. Specifically, forest animal scales were used in a dry form in Niger (43.1%), Kogi State (25.4%) and 33.1% for the pooled result. Similarly, forest and furs were also utilised in dry form by 26.2% of the respondents in Niger State and 15.8% in Kogi State as well as 21.5% for the pooled result. All forest animal by products in both state of Kogi and Niger are used for domestic and sold for industrial purposes to augment income from farming activities to enhance their livelihood such as sponsoring of their wards to school and settlement of hospital bills, the domestic use such as consumption in form of meal and for cultural purposes such as festival and burial ceremonies.

Table 3: Distribution of respondents according to form utilisation of forest animal by product

Forest animal resources*	herbal	Kogi State (n=173) Freq (%)	Niger State (n=153) Freq (%)	Pooled (n=326) Freq (%)
Skin				
UB		57 (32.9)	22 (14.3)	77 (23.6)
UD		36 (20.9)	69 (45.0)	105 (22.2)
UG		-	-	-
Claws				
UD		25 (14.5)	39 (25.5)	64 (19.6)
Feathers				
UD		35 (22.3)	39 (25.4)	74 (22.7)
UG		13 (7.5)	36 (22.2)	49 (15.0)
Scale				
UD		44 (25.4)	66 (43.1)	110 (33.1)
UG		-	-	-
Fur				
UD		30 (15.8)	40 (26.2)	70 (21.5)
UG		-	-	-

Sources: Field survey, 2018

*Multiple responses

Figures in parenthesis are percentages

Note: UB = Utilised when boiled, UD = utilised when dried, UG = utilised when grinded

Environmental hazards encountered by farming populace in the utilisation of forest resources

The Table 4 showed that the farming populace in Niger and Kogi States admit that wind blow was severe with mean value of (\bar{x} =2.46) and (\bar{x} =2.42). The pooled results indicated that wind blow was also severe with mean value (\bar{x} =2.44) implying that wind blow was the major environmental hazards encountered by rural farming populace in the utilisation of forest resources for their livelihood. This findings was in line with Inoni (2012) who reported that

wind blow was the most environmental hazards face by chainsaw operators in Nigeria. This was followed by bush burning with similar trend in Niger and Kogi State with (\bar{x} =2.49) and (\bar{x} =2.36) respectively. The pooled mean value (\bar{x} =2.42) indicated that bush burning was also severe in the utilization of forest resources. The researcher also stated that bush burning had resulted to the extinction of some fauna and flora resources in Sub-Saharan Africa.

Table 4: Environmental hazards encountered in forest resources utilisation

Environmental hazards	Kogi State (n=173)			Niger State (n=153)			Pooled (n=326) Mean (\bar{x})		
	Mean (\bar{x})	R	D	Mean (\bar{x})	R	D	Mean (\bar{x})	R	D
Flood	2.02	3 rd	S	2.37	3 rd	S	2.18	3 rd	S
Soil erosion	1.97	4 th	NS	2.25	5 th	S	2.12	4 th	S
Drought	1.50	9 th	NS	2.06	6 th	S	1.76	6 th	NS
Intensive radiation	1.59	6 th	NS	2.33	4 th	S	1.94	5 th	NS
Snake bite	1.53	7 th	NS	1.61	8 th	NS	1.57	8 th	NS
Stricken of bees on bees extractors	1.60	5 th	NS	1.73	7 th	NS	1.66	7 th	NS
Windblow	2.42	1 st	S	2.46	2 nd	S	2.44	1 st	S
Unpredictable fall of trees on wood loggers	1.53	7 th	NS	1.58	9 th	NS	1.55	9 th	NS
Bush burning leads to animal extinction	2.36	2 nd	S	2.49	1 st	S	2.42	2 nd	S
Wild animals attack	1.33	10 th	NS	1.22	10 th	NS	1.30	10 th	NS

Sources: Field survey, 2018

Note: R=Ranks, D=Decision, S=Severe, NS=Not sever

Conclusion

The majority of rural farming populace were male in their active productive ages. Also, majority of the rural farmers in the study area were married with long years of experience in forest resources utilisation. Also, majority of the rural farmers in the study area had no formal education. .Shea tree (forest wood resources), vegetables/fruits, (forest animal bye product), tree bark/tree,

shrub/leaves (forest herbal plants) and skin (forest animal by-products) were the major exploited and utilised forest resources in the study area. Most of the respondents utilized, shea tree extensively as woody forest products. Also, forest animal by-product were the most widely utilized for means of their livelihood. Other forest resources utilised were tree shrubs/leaves and skin for decoration and medicinal purposes. Two major environmental hazards encountered during the utilization and exploitation of forest resources were wind blow and bush burning. It is recommended that farmers should be trained and sensitized by the extension agents on how to exploit forest resources safely to curb negative incidents and rural farming populace should organize themselves into community self-help group for protection of forest against bush burning.

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