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ASSESSMENT OF FARMERS' INFORMATION SOURCES UNDER SHELTERBELT PROJECTS IN THE FRONTLINE STATES OF NORTH WESTERN NIGERIA

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ABSTRACT
The study analyzed farmers' information sources under shelterbelt projects in the frontline States of North Western Nigeria. The respondents used were 450. Data was analyzed using descriptive statistics. Mean age of the respondents was 35 years; mean household size was 12 persons; mean farming experience was 12 years; and mean farm size was 6 hectares. About 67% of the respondents were married. Their sources of agricultural information of 29.1% was extension agents, radio accounted for 27.8%, family member (13.3%) and non-governmental organizations/community-based organizations (NGOs/CBOs) occupy 6.7%, print publications (4.4%) and internet (3.1%). Also, extension contact (30.0%), extension agents (25.5%) visited for two times, 18.9% were visited three (3) times, 11.1% were visited four (4) times annually, 7.8% were visited for five (5) times, and 6.7% were visited more than five (5) times annually. The results revealed that 61.1% listened to agricultural program through radio regularly. Majority (72.2%) watched/listened to agricultural program through television once in a week, 18.9% watched/listened twice a week and; 2.2% of the respondents were regular and 6.7% were irregular. Most (40.0%) preferred to radio program as their means of communication. Group meeting (extension agents/farmers) was only 5.1%, agriculture shows/field visit/tours occupy (11.1%) and extension agents interpersonal visit (8.9%), television (7.1%), newspaper and magazine (4.4%); and journals/conference proceedings and the internet services was 2.2%, respectively. The recommended conversion of the shelterbelts to recreational parks and tourism; reducing criminal activities like Indian hemp smoking, theft and kidnapping in the belt; and also, local communities should be allowed to participate in the management and sharing of revenue from the shelterbelts.

Keywords: Frontline, Nigeria, Northwest, Shelterbelt, Sources of information.

INTRODUCTION
Shelterbelts are rows of trees grown across the direction of prevailing winds for the purpose of reducing wind velocity thus minimizing the adverse effects of climatic elements. The traditional shelterbelts in Nigeria are composed of pure stands of *Azadirachta indica* (neem tree) or *Eucalyptus camaldulensis* with ten rows of trees in an escapement of 2.5 m x 2.5 m to give a size of 200 m x 30 m per belt (Francis and Bulus, 2014). Shelterbelts are being used to curb the expansion of desert condition and reduce the subsisting impacts of aridity in northern region. It is crucial that these shelterbelts are successfully established, otherwise, the objectives behind them may never be realized. The most affected States are Adamawa, Bauchi, Borno, Gombe, Jigawa, Kano, Katsina, Kebbi, Sokoto, and Yobe. These States constitute about 35% of the country's total land area. The main objectives of establishing shelterbelts in Nigeria are to: (i) Create windbreaks against high winds, check moving sand dunes and create conducive

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microclimate for sustainable agricultural production and recreation; (ii) Provide habitat for small animals including migratory birds; and (iii) Improve soil productivity and carrying capacities of biotic and abiotic resources.

Shelterbelts are usually rated as investments in future and for long-term productivity of soil. When it is established, it provides multiple uses (Moller *et al*., 2005). There are differences in dimensions based on the objectives of establishment. For instance, protection of surrounding farmlands and provision of fuel wood from thinning and pruning's. Shelterbelts act as wind breaks to wind velocity sometimes to a distance of five to ten times the expected height of the mature trees. The effectiveness is dependent on structure and permeability of the belts which could be compact or wind-proof to allows minimum airflow; permeable that allows about 30% airflow, and porous allowing more than 40% airflow. Most effective belts consist of one or two rows of slow-growing shrubs or trees of fast-growing trees in the inside. Shelterbelts are effective in improving the microclimate, reducing erosion and increasing farm yield (Moller *et al*., 2005). Shelterbelts cleans the air of all micro-particles through, the combing out process of twenty times better than barren lands by physical interception of dust and other aerosols in drylands. This study will therefore review the farmers' information sources under shelterbelt projects in the frontline states of North western Nigeria

MATERIALS AND METHODS

The Study Area

The study was conducted in the three (3) shelterbelt frontline States (Kano, Jigawa and Katsina) North West of Nigeria. Northern Nigeria is dominated by savanna vegetation types; Guinea, Sudan and Sahel savanna, the density of trees and grasses decrease northwards responding to climatic conditions. Agriculture is the most dominant economic activity in the region.

Sampling Procedure

A multi-stage sampling procedure was employed. The multi-stage sampling procedure is most appropriate when a researcher intends to reduce the size of the study area while maintaining fair representation. The technique, also, reduces time and cost of surveying samples from very large population. The procedure essentially involves reducing the size of the study population to a convenient size but passing through several stages to ensure representation. First stage was a purposive selection of the three (3) shelterbelt front line States of Jigawa, Kano and Katsina. Second stage involves purposive selection of one shelterbelt from each of the selected shelterbelt frontline State. Yankwashi shelterbelt from Jigawa, Yambawa shelterbelt from Kano and Kaita shelterbelt from Katsina. Third stage was where 10 Communities having proximity to the shelterbelt were selected at random from each selected shelterbelt to give a total of 30 communities. At the final fourth stage, 15 respondents were randomly selected from each of the 30 selected communities to give total sample size of 450 respondents for the study.

Method of Data Collection

The study used both primary and secondary of data. Primary data were collected directly from the respondents through the use of structured questionnaire. Secondary data were obtained from Ministry of Environment, Jigawa, Kano and Katsina States and shelterbelt research station Kano, Forestry Research Institute of Nigeria, Great Green Wall agency, non-governmental organizations (NGOs) and community-based organizations (CBOs) are involved in tree planting campaign or afforestation programs in the study area.

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Method of Data Analysis

The data were analyzed using both descriptive and inferential statistics. Choice of analytical technique depended on the nature of the analysis to be done. Descriptive statistics (frequency and percentages) used by Ndaghu *et al*. (2015) were adopted to achieve objectives of the studies.

RESULTS AND DISCUSSION

Socio-economic Characteristics of Respondents

The socio-economic characteristics of respondents considered in this study include: age, sex, marital status, house hold size, education, source of farm land, farm size, farming experience, primary occupation and membership of farmer organization. Age refers to the number of years that a respondent had lived since birth to the time of the study. Table 1 present the distribution of the respondents based on their age. The result shows that 62.2% of the respondents were within the age bracket of 30 to 39 years and 24.4% fall within the age range of 40-49 years. Only a dismal (8.8%) of the respondents were above 50 years of age. The mean age among the respondents was 35 years. The result shows that youth constitute the largest age group of the shelterbelt communities in the study area. Age is an important factor for influencing the decision of a farmer. Younger farmers are full of youthful exuberance energy and adventurism needed for driving production to optimum level while older farmers are full of experiences and technical know-how of the production techniques, therefore the two characteristics are important for agricultural production (Enenche *et al.,* 2014). Sex refers to category of the respondents either male or female. Results in Table 1 show the distribution of the respondents according to sex. The result revealed the dominance of male farmers (93.3%) in the study area. Female farmers constituted only about one-quarter (6.7%) of the respondents. Udofia and Udo (2010) observed similar result in their study on perception of people about Shelterbelts in Kaita local Government Area of Katsina State, Nigeria where they reported that all the respondents were male. Marital status in the context of this study refers to the respondent been married or single. Result on marital status of the respondents revealed that two-thirds (66.9%) of the respondents were married as presented in Table 1 while 33.1% of the respondents were unmarried.

The relevance of education to agricultural development programmes could be seen in the opportunities that are opened to the educated farmer to read and understand extension bulletins, posters and understand all the procedures of accessing loan facilities and loan repayment agreement terms. The result in Table 1 clearly shows that 71.1% of the total respondents had Qur'anic education, 15.5% had attended primary level of education and 8.8% attained secondary level of education. It was also observed that 4.4% were exposed to tertiary education. Household size refers to the total number of people in the household which includes the wives, children and dependents who reside within the family and eat from the "same pot". Garba (2016) reported that household size is considered as the number of people living together under the same roof. Size of household was measured as the total number of people living within the family at the time of this study. Table 1 shows that 64.4% of the respondents had 6 to 10 members with mean household size of 12 persons. Household size determines the available human labor force leaving together and eating from the same pot that can be employed in carrying out agricultural activities.

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Table 1: Respondents' based on socio-economic characteristics

Variables	Frequency	Percentage	Mean
Age (Years)			
20 – 29	20	4.4	
30 – 39	280	62.2	**35**
40 – 49	110	24.4	
50 and above	40	8.8	
Total	**450**	**100**	
Sex			
Male	420	93.3	
Female	30	6.7	
Total	**450**	**100**	
Marital status			
Single	149	33.1	
Married	301	66.9	
Total	**450**	**100**	
Educational level			
Qur'anic	320	71.1	
Primary	70	15.5	
Secondary	40	8.8	
Tertiary	20	4.4	
Total	**450**	**100**	
Household size			
1 – 5	80	17.7	
6 – 10	290	64.4	**12**
11 – 15	60	13.3	
16 and above	20	4.4	
Total	**450**	**100**	
Farming experience			
1 – 5	70	15.5	
6 – 10	300	66.7	**12**
11-15	55	12.2	
16 and above	25	5.5	
Total	**450**	**100**	
Land ownership			
Purchase	60	13.3	
Inheritance	310	68.9	
Lease	60	13.3	
Hired	20	4.4	
Total	**450**	**100**	
Farm size			
1-5	305	67.8	
5-9	85	18.9	**6**
10-14	50	11.1	
15 and above	10	2.2	
Total	**450**	**100**	

Source: Field survey, 2020

Ndaghu *et al*. (2015) said household size determines the availability of household labor supply. Farm size refers to the totality of the farm lands owned plus rented by the respondents during the study period. The result of the study reveals that more than half (67.8%) of the respondents had 1- 5 hectare of total farm land while 18.9% of the respondents had between 5-9 hectares of total farm land as presented in Table 1. Mean farm size was 6 hectares. This result agrees with Agwu *et al.* (2008) who reported that Nigerian farmers are generally small-scale farmers that cultivated small areas of land. Table 1 shows sources of farmlands. The result also

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revealed the sources of farmland of the respondents. The result shows that 68.9% of the respondents obtained their land through inheritance, while 13.3% of the respondents obtained their land through purchase.

Farming Experience refers to the length of time taken in years that the respondent had been engaged in farming as an occupation. The practical experience of a farmer counts a lot in his ability to diversify his livelihood sources. Farming experience was measured as the actual number of years since a respondent started farming generally as an occupation. As presented in Table 1, results showed that more than two-thirds (66.7%) of the respondents had 6-10 years farming experience, while another 15.5% of the respondents had 1-5 years of farming experience with mean farming experience of 12 years. This involves the type of farming practices that the farmers engaged themselves such as crop or livestock farming and those that practice both crop and livestock production. The result reveal that about **5**7.8% of the respondents were crop producers, and 11.1% were livestock farmers only, while 31.7% practiced both crops and livestock production) as presented in Table 2. This finding is in agreement with the finding of (Sabo, 2010) found that majority (74%) of the respondents were crop farmers. Sinkaiye (2008) also reported that crop and livestock production are part of the farming enterprises of the Amah community in Rivers State, Nigeria.

Table 2: Respondents categorized by farming enterprise

Type of farming	**Frequency**	**Percentage**
Crop production only	260	57.8
Livestock production only	50	11.1
Both crops and livestock	140	31.1
Total	**312**	**100**

Source: Field survey, 2020

Sources of Agricultural Information of the Respondents

Sources of information refer to the means or channels on how they hear or get agricultural information. Farmers rely on variety of information sources to lead them from the awareness stage to the acceptance and/or rejection stage of an innovation. The result (Table 3) reveal that 29.1% of the respondents received the agricultural information from extension agents, and those who received through radio are 27.8%, family member 13.3%, while television and NGOs/CBOs occupy 6.7%, respectively. Print publications accounted for (4.4%) and the internet (3.1%). This finding agrees with Ado (2012) in his study on assessment of Jigawa Agricultural and Rural Development Authority (JARDA) in promoting agriculture in Jigawa State, Nigeria, revealed that 50% of the respondents rated radio as the most accessible means of their awareness with agricultural information. Farmer to farmer extension is 25% whiles television and newspapers is 12.5%.

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Table 3: Distributions of respondents according to sources of information

Information sources	Frequency	Percentage
Extension agent	131	29.1
Radio	125	27.8
Television	30	6.7
NGOs/ CBOs	60	13.3
Family and friends	70	15.5
Print publication	20	4.4
Internet	14	3.1
Total	**450**	**100**

Source: Field survey, 2020

Farmers need information to enhance agricultural production. Such information however should be accurate, complete, dynamic, concise, and must be in user friendly form. Radio has proved to be one of the most vital and most effective means of disseminating agricultural information and innovations in the developing societies where the greater majority of the rural farmers are having low level of education. The result in Table 4 revealed that majority (61.1%) of the respondents listen to radio broadcast regularly, also 27.0% were irregular, those who listen once in a week accounted for 4.4% of the respondents while those who listen twice a week were 6.7% of the respondents. The use of local dialect in area of reception encourages addressing of issues of local interest thus breaking literacy barrier created in print media.

Table 4: Frequency of listening to agricultural program from radio

Frequency of listening	Frequency	Percentage
Once in a week	20	4.4
Twice a week	30	6.7
Regular	275	61.1
Irregular	125	27.0
Total	**450**	**100**

Source: Field survey, 2020

Frequency of Watching/Listening to Agricultural Program from Television

The result in Table 5 reveal that majority (72.2%) of the respondents watch/listen to agricultural program through television once in a week, another (18.9%) of the respondents watch/listen twice a week and (2.2%) of them were regular while (6.7%) were irregular.

Table 5: Frequency of listening to agricultural program from television

Frequency of listening	Frequency	Percentage
Once in a week	325	72.2
Twice a week	85	18.9
Regular	10	2.2
Irregular	30	6.7
Total	**450**	**100**

Source: Field survey, 2020

CONCLUSION AND RECOMMENDATIONS

The conclusions drawn from the findings of this study which analyses Farmers Livelihoods under shelterbelt projects in the frontline States of North Western Nigeria. The sample respondents share similarities as well as differences in socio-economic characteristics. Generally, the respondents were predominantly male, married, farmers and had a favourable attitude towards on-farm tree planting activities. Characteristics of the respondents like farming experience, level of education and access to extension agents may have a positive influence on use of the shelterbelt and livelihood diversification. The following recommendations are made based on the findings of the study: converting the shelterbelt to recreational park and tourism potentials. This will ensure constant presence of people thereby reducing criminal activities like Indian hemp smoking, theft and kidnapping in the belt and local communities should be allowed to participate in the management and sharing of revenue from the shelterbelt.

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