

CONTRIBUTION OF *Acacia nilotica* PRODUCTS TO THE RURAL LIVELIHOOD OF PEOPLE IN WAMAKO COMMUNITY OF SOKOTO STATE, NIGERIA

Senchi A. A. and Bello A. G.

Department of Forestry and Environment, Faculty of Agriculture, Usmanu Danfodiyo University, Sokoto. Nigeria

aishasenchi07@gmail.com, belloabubakar08@yahoo.co.uk,

Phone: 08038670349, 07033179819

ABSTRACT

The study examined the contribution of Acacia nilotica products to the rural livelihood of people in Wamako community of Sokoto State. Structured and open ended questionnaires were distributed to respondent. Twelve (12) villages were purposively selected from eight (8) Districts. Simple random sampling was used to select ten (10) respondents from each village giving a total sample size of 120 respondents. The data were analyzed using descriptive statistics. The results of the study indicated that, average age of the respondents was between 36 to 55 years with 73%, 93% male and 91% married. 58% had 6 to 10 members in their homes and majority of them are farmers (85%) while 74% obtained Qur'anic education. In contribution to livelihood, Acacia nilotica serves as source of income (33%) and medicinal (64%) purposes. About 73% of respondents source Acacia products from the farm land, while 65% obtained income of N4001 – 6000 monthly. 70% of the respondents sold their products at the local market, while 72% indicated that Acacia nilotica helped them in the control of erosion. However, apart from medicinal values, 67% used Acacia nilotica as fuel wood. The major problems faced by the respondents in the study area include deforestation, infestation and lack of storage facilities. The paper recommended regeneration of Acacia nilotica through afforestation, reforestation and social forestry for an improved livelihood of people in the study area.

Key Words: Indigenous tree, species, *Acacia nilotica*, rural livelihood and development

INTRODUCTION

Development plans in the past two to three decades tended to promote urban development at the expense of the rural areas. This can be gleaned from investments into infrastructural development, job availability, siting of industries and income disparity in favour of the urban areas. Yet, it has been argued that maintaining this rigid occupational dichotomy siphoning of resources from the rural areas to develop the urban sector, to the detriment of the rural sector and its population would negate the process of development (Akhakpe, 2012). Chandler (2007) sees development as a broader concept that recognizes

psychological and material factors that measure human well-being. Development therefore is a multifaceted phenomenon and man centered. It is the process of empowering people to maximize their potentials, and develop the knowledge capacity to exploit nature to meet daily human needs (Ake, 2001). Socio-economic development is a product of development and can be defined as the process of social and economic transformation in a society. Socio-economic development embraces changes taking place in the social sphere mostly of an economic nature. Thus, socio-economic development is made up of processes caused by exogenous and endogenous factors which determine the course and

direction of the development (Chandler, 2007). Socio economic development is a multi dimensional phenomenon. Some of its indicators include the level of economic growth, level of education, level of health services, degree of modernization, status of women, level of nutrition, quality of housing, distribution of goods and services, and access to the communication (Abhiman, 1999). In this case the study of socio-economic development, include improvement in the standard of living and increase in economic life of the people. It also includes the factors such as income, quality and availability of employment, class disparity, poverty rate, quality and affordability of housing, access to quality health care, quality and availability of education, infrastructure, and environmental quality. The standard of living is closely related to quality of life (Anonymous, 2011).

Trees play an important role in human and economic development of any nation, for the simple reason that they (trees) provide many basic needs for life such as medicine, food, fodder, timber, environmental protection and stability etc, based on this, trees touch almost all part of life, (Wilson, 1988). Economic trees provide man with fuel wood, fiber, charcoal, gum, resin, rubber, medicine and employment (Evans, 1992).

In spite of the importance of the indigenous trees especially *Acacia nilotica* found in Wamako area, there are challenges and bottlenecks hindering their greater contribution, innovative approaches as well as strategies to recognize the contributions and value that this tree bring. However, the many ways in which indigenous trees contribute to socio-economic development are poorly understood, under estimated and adequately not considered in policy decision related to development. There are limited understanding of the important role that this tree can play in improving the standard of living of rural people especially in developing countries.

Wamako Local Government Area contains many stands of *Acacia nilotica*. This tree species is an integral part of their rural house hold economy and contributes to the standard of living as it is significant in providing timber and non timber products. It therefore serves as source of medicine, gums, fuelwood and fodder, it is extensively used as a browse, timber and fuelwood species, the bark and seeds are used as a source of tannins. The functions of this species (*Acacia nilotica*) in social and economic

development are not systematically documented. However, it plays a significant role in contributing to the livelihood of rural people. This research work will provide the rural dwellers of different ways on how *Acacia nilotica* contribute to their livelihood. However, the research can serve as baseline information for other researches as it may be fitting to other areas having the same indigenous trees and socio-economic background. The objective of this paper is to assess the contribution of *Acacia nilotica* products to the rural livelihood of people in Wamako community of Sokoto State.

MATERIALS and Methods

Study Area

Wamakko (LGA) is one of the 23 LGAs of Sokoto State, Nigeria. It has an area of 697 km² and a population of 179,619 people, (NPC, 2006). The Local Government Area was created out of Sokoto state in 1991. It has ten (10) districts: Dundaye, Gumburawa, Gumbi, Gwuiwa, Wajake, Gedawa, Kalambaina, Arkilla, Gidan Bubu, and Wamkko. Its headquarters is located in Wamakko town, about 10km from Sokoto city, the state capital. The Local Government Area is located to the extreme North West part of the state on the lat of 13⁰7.5528' N - and long 5⁰ 12.5400' E using GPS Device. It is bordered on the North by Tangaza Local Government Area, to the South by Bodinga (LGA) and Yabo (LGA), to the West by Silame (LGA) and to the East by Sokoto north and Kware (LGA).

The climate of the study area is characterized by a long dry season (October/November-April/May) with a short rainy season (May-September/October), (Singh, 1995). Rainfall starts in late May and ends in late September or early October with annual rainfall ranging from 400 to 700 mm (Singh, 1995). The minimum and maximum temperatures are 19°C and 39°C respectively with mean annual temperature of 27°C with relative humidity of 52 to 56%. The study area experiences harmattan wind (N-E Trade winds), which are dry, cold, and dusty blowing between the months of November to February. The soil of study area is predominantly sandy to sandy-loamy with low fertility level particularly poor in primary nutrients like Nitrogen, Phosphorus and Potassium (Ango *et al.*, 2014). The vegetation of the area falls within the Sudan Savannah vegetation zone characterized by soils that are mostly sandy to loamy in texture with

some patches of clayey subsoil. An assortment of various species of grasses and legumes, patches of bushes and sparsely distributed indigenous tree species majority of which are thorny tree species, such trees include *Acacia nilotica*, *Faidherbia albida*, *Zizipus spp*, *Tamarindus indica*, *Balanites aegyptiaca*, etc, (Ango, *et al.*, 2014).

Sampling Design

Wamako (LGA) has ten (10) Districts; Dundaye, Gumburawa, Gumbi, Gwuiwa, Wajake, Gedawa, Kalambaina, Arkilla, Gidan Bubu, and Wamkko. Purposive sampling was used to select eight (8) Districts base on the concentration and existence of this tree species (*Acacia nilotica*) and producers and marketers of *Acacia nilotica* products. Twelve (12) villages were randomly selected from each District based on the percentage population of the people and random selection was also made of ten (10) respondents in each village. The sample size for the study stood at 120 respondents for the work. Structured and open ended questionnaire were used for data collection. Data collected for this study were subjected to descriptive statistics by using tables, frequency distribution and percentages, using statistical package for social sciences.

RESULTS AND DISCUSSION

Demographic Characteristics of Respondents

Personal characteristics of respondents are important human attributes that play a significant role in measuring the contribution of indigenous tree species (*Acacia nilotica*) towards enhanced livelihood of the community. The variables identified and analyzed includes age, sex (gender), marital status, house hold size, level of education, primary occupation and secondary occupation.

Age

The results from table 1 indicated that 73.3% of the respondents fall between the age range of 36 - 55 years. only 3.4% were between the age range of 15 – 25 years. This was supported by Ogungbile *et al.* (2002) who asserted that younger farmers are more likely to adopt an innovation than older farmers because of better education and more exposure to new ideas.

Gender

The results also indicated that 92.5% of the respondents were male, only 7.5% represented the female respondents. Male do participate more in

outdoor activities than female and due to the religious and traditional background of the study area, it was difficult to get the responses of women especially house wives except older women and mostly in the market place.

Marital status

The results indicated that 90.8 % of the respondents were married while 14.2% were single in the study area. In traditional settings married people are assumed to be more committed to their responsibilities. According to Olarinde *et al.* (2008) reported that one of the most important factors which determine the efficiency of any business is marital status of individual. It is because married people worked hard in order to meet up the demand of their family members and this will improve their social and economic status.

Household size

The results indicated that 77.5% had household size of 6 - 15 persons and 8.3% had up to 20 members in their homes. This finding agreed with Anley *et al.* (2007) and Birunji (2007) who indicated that larger family size is expected to enables farmers to take up labour intensive activities.

Educational level

The results revealed that majority of the respondents had Qur'anic education with 74.2%, while 16.7% had secondary education. The high rate of Qur'anic education in the area (74%) may be due to the fact that majority of the respondents were Muslim and therefore attach greater importance to Qur'anic education. The level of education (western education) of the respondents which is expected to influence their social and economic development was lacking, therefore any social changes, ideas and innovations cannot be easily accepted as Farinde *et al.* (2005) revealed that education is positively related to the adoption of innovation.

Occupation

The results showed that the highest percentage of the respondent's primary occupation was farming with 85.0%. This agreed with the work of Abdullahi (1998) which said majority of the occupation of the rural people was farming activities. The results from the same table explained that the secondary occupation of most people in the area is trading with 90.0%.

Contribution to Livelihood of the Respondents

Indigenous trees contribute immensely to the human and economic development of any nation. Trees provide many basic needs for life such as medicine, food, fodder, timber, environmental protection and stability etc, based on this, trees touches almost all part of life.

Table 1: Socio-Economic Characteristics of Respondents

	Frequency	Percentage (%)
Age		
15-25	4	3.4
26-35	16	13.3
36-45	46	38.3
46-55	42	35.0
Above 55	12	10.0
Sex		
Male	111	92.5
Female	9	7.5
Marital Status		
Single	4	3.4
Married	109	90.8
Widower	6	5.0
Divorcee	1	0.8
Household size		
2-5	17	14.2
6-10	70	58.3
11-15	23	19.2
16-20	10	8.3
Above 20	0	0.0
Education level		
Qur'an	89	74.2
Primary	10	8.3
Secondary	20	16.7
Tertiary	1	0.8
Primary occupation		
Farming	102	85.0
Mining	0	0.0
Fishing	18	15.0
Secondary occupation		
Civil service	1	0.8
Trading	108	90.0
Non compliance	11	9.2
Total	120	100.0

Table 2: Contribution of *Acacia nilotica* to the Livelihood of the Respondents

Contribution	Frequency	Percentage (%)
Source of income	40	33.3
Medicinal purpose	77	64.2
Employment	3	2.5
Total	120	100.0

The results showed that 64.2% of the respondents indicated that *Acacia nilotica* contributes to livelihood for medicinal purposes. The results agreed with the work of Singh *et. al.*, (2009b) that *A. nilotica* is an imperative multipurpose plant that

has been used broadly for the treatment of various diseases, and it contributes also as source of income to rural dwellers (33.3%). Table 3 presents the information on the various medicinal uses of *Acacia nilotica*.

Table 3: Medicinal Uses of *A. nilotica* Parts in Wamako

Disease	Pods		Pulp		Bark		Leaves		Roots	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Stomach ache	--	--	--	--	--	--	1	0.8	--	--
Dysentery	40	33.3	--	--	60	50.0	14	11.7	70	58.3
Cancer	4	3.3	--	--	1	0.8	16	13.3	20	16.7
Loss of appetite	--	--	--	--	--	--	--	--	--	--
Vomiting	--	--	--	--	--	--	--	--	--	--
Coughing	6	5.0	--	--	4	3.3	--	--	--	--
Diarrhea	56	46.7	--	--	16	13.3	56	46.7	--	--
Sore throat	--	--	--	--	--	--	--	--	--	--
Typhoid	--	--	--	--	--	--	--	--	--	--
Ulcer	1	0.8	16	13.3	5	4.2	10	8.3	10	8.3
Catarrh	5	4.2	--	--	--	--	--	--	--	--
Headache	--	--	--	--	--	--	--	--	--	--
Genital problem	3	2.5	--	--	--	--	--	--	--	--
Rashes	--	--	--	--	--	--	--	--	--	--
Pregnancy treat	--	--	4	3.3	--	--	2	1.7	--	--
Wound treatment	--	--	80	66.7	16	13.3	1	0.8	--	--
Rheumatism	--	--	--	--	--	--	--	--	--	--
Body relief	--	--	--	--	--	--	--	--	--	--
Teeth problems	1	0.8	--	--	--	--	--	--	--	--
Breast care	--	--	--	--	--	--	1	0.8	--	--
Tuberculosis	--	--	--	--	--	--	--	--	16	13.3
Non compliance	4	3.3	20	16.7	18	15.0	19	15.8	4	3.3
Total	120	100.0	120	100.0	120	100.0	120	100.0	120	100.0

Source: Field survey 2015

Medicinal Uses

Table 3 presents the information on the medicinal uses of *Acacia nilotica*. 46.7% of the respondents used pods and leaves to treat diarrhea, 33.3%, 50% and 58.3% used pods, bark and roots for dysentery. 66.7% used the pulp for the treatment of wounds and 3.3% used it for pregnancy treatment. The roots are used to cure

cancer (16.7%) and 13.3% used roots for tuberculosis. Most of the respondents explained that they used *Acacia nilotica* for a number of medicinal values. This finding agreed with the work of Ali *et. al.*, (2012), who reported that traditionally the bark, leaves, pods and flowers of *Acacia nilotica* are used against cancer, cold, congestion, cough, diarrhea, dysentery, fever, gall

bladder, hemorrhoid, sclerosis, tuberculosis and small pox, leprosy, bleeding piles, and menstrual problems. *Acacia nilotica* was reported to be used by traditional healers of different regions of Chattisgarh in treatment of various cancer types of mouth, bone and skin. In West Africa, the bark

and gum of *Acacia nilotica* are used against cancers and or tumors (of ear, eye, or testicles) and in the treatments of liver and spleen, the root was used for the cure of tuberculosis, the wood for smallpox and the leaves for ulcers (Kalaivani and Methew, 2010).

Table 4: Sources of *Acacia nilotica* Products

Source	Frequency	Percentage (%)
Market	32	26.7
Farmland	88	73.3
Total	120	100.0

Access to *Acacia nilotica*

The results from table 4 revealed that 73.3% of the respondents source *Acacia nilotica* from the farmland. It was observed that *Acacia nilotica* is among the most abundant tree species found in the study area. This agreed with the work of Pandey *et. al.* (2000) that higher nutrient concentration under canopy compared to canopy gap is mainly a consequence of increased above and below ground organic matter input, nutrient cycling through leaf litter and protection of soil

from erosion which makes *Acacia spp.* available in their farmland.

Production and Marketing of *Acacia nilotica*

The table below provides information on Business of the respondents in relation to *Acacia nilotica* species which has been categorized according to producing, processing or selling of the products. The market places were also categorized for the respondents as farm gate, local market, national market or international market.

Table 5: Distribution of Respondents by Production and marketing of *Acacia nilotica* Products

Business	Frequency	Percentage(%)
Non compliance	4	3.3
Producing	88	73.3
Processing	28	23.3
Market place		
farm gate	36	30.0
local markets	84	70.0
National market	0	0.0
International market	0	0.0
Total	120	100.0

The results from table 5 showed that 73.3% were involved in producing and 23.3% in processing of *Acacia nilotica* products (they make it in to powdered form for easy treatments). The results indicated that 70% sold their products at local market; this also goes with the work of Fagg *et. al.* (2005), who indicated that in Africa, production and trade in tannin, timber and other product of *Acacia nilotica* is important but was sold locally and nationally, only few product enter

international trade while 30% disposed their products at the farm gate this could be attributed to the abundance of *Acacia spp.* found in the area.

Income

Income is the amount of money or equivalent received during a period of time in exchange for labor or services from the sales of goods or

property. However for households or individuals, income is the sum of all wages, salaries, profits,

rents or other forms of earnings received in a given period of time (Faire and Case, 2007).

Table 6: Monthly Income of the Respondents from *Acacia nilotica* Products

Income obtained (₦) Per Month	<i>A. nilotca</i>	
	Frequency	Percentage (%)
Non compliance	24	20.0
less than ₦1000	4	3.3
₦2001-₦4000	1	0.8
₦4001-₦6000	78	65.0
₦6001-₦8000	12	10.0
> ₦8000	1	0.8
Total	120	100.0

The results above indicated that 65% obtained an income between ₦4001- ₦6000 and 10% obtained between ₦6001- ₦8000. Greater percentage of *Acacia nilotica* marketers had very low monthly income because the marketing of the products was at low scale, due to its abundance; people obtained the products from the farmland voluntarily. This agreed with Senchi (2014) who reported that sheabutter marketers earn a very low income

(₦1,500 – ₦1,999 per week) in their business due to high cost of transportation and other expenses.

Impact of *Acacia nilotica* on the Environment

Indigenous trees have profound influence on the environment. By preventing erosion, recharge ground water, provision of cover, windbreak, they can help preserve the integrity of agricultural land.

Table 7: Impact of *Acacia nilotica* on the Environment

Environmental impact	Frequency	Percentage (%)
Control erosion	86	71.6
provide cover	11	9.2
wind break	23	19.2
Total	120	100.0

Impact of *Tamarindus indica* and *Acacia nilotica* to the Environment

The result from table 7 revealed that 71.6% used *Acacia nilotica* trees as erosion control. This agreed with the work of Pandey *et. al.* (2000) that higher nutrient concentration under canopy compared to canopy gap is mainly a consequence of increased above and below ground organic matter input, nutrient cycling through leaf litter and protection of soil from erosion. 9.2% of respondents noted that *Acacia nilotica* provide

cover. This claim may be due its presence around their houses.

Most utilized parts of *Acacia nilotica*

This provides the information on the mostly utilized parts of *Acacia nilotica* in the study area. The different parts recognized by the respondents were pods, wood, bark, seeds, leaves and pulp. The results in table 8 shows that the most utilized part of *Acacia nilotica* was its wood (66.7%).

Table 8: Mostly Utilized Parts

Parts utilized most	Frequency	Percentage (%)
Pods	30	25.0
Fuel wood	80	66.7
Bark	5	4.1
Seeds	2	1.7
Pulp	3	2.5
Total	120	100.0

The above results indicated that 66.7% of the respondents used *Acacia nilotica* as fuel wood. The use of fuel wood is common in the area due to lack of substitute. According to Oguntala (1986), throughout West African regions fuel wood provides the main source of energy for rural household and main source of cooking fuel in urban areas. 25% of the respondents mostly utilized pods as medicine.

CONCLUSION

The finding of this research revealed that the tree species contributed immensely to the livelihood of people in Wamakko community. *Acacia nilotica* which is found in abundance in the study area contributed more in the treatment diseases and serve as fuel wood in the study area. The obvious implication is that fuelwood exploitation will continue to lead to environmental

degradation and consequently induce climate change unless government takes urgent steps to reverse the trend of a growing demand for fuel wood overtime.

Recommendation

Base on the findings of this study, the following recommendations were made;

- I. Regeneration of this tree species (*Acacia nilotica*) through afforestation, reforestation and social forestry should be emphasized, especially *Acacia nilotica* to avoid extinction.
- II. Government should provide measures to prevent infestation and indiscriminate felling of *Acacia nilotica* and others to reduce pressure on fuelwood producing trees for sustainability.

REFERENCES

- Abdullahi, R. (1998). Problem and Prospect of Implementation of Unified Extension System: A B.sc. Thesis, Usmanu Danfodio University Sokoto.
- Abhiman, D. (1999). Socioeconomic Development in India: A Regional Analysis. *Journal of Development and Society*, 2(28). 313-45
- Ake, C. (2001). *Democracy and Development in Africa*. Ibadan: Spectrum Books Limited. 576.
- Akhakpe, I. (2012). Poverty and Sustainable Socio-Economic Development in Africa: the Nigeria experience. *European Scientific Journal*, 8(26), 57-58
- Ali, A., Ali Khan, A. N., Khan M.S., Rasula., Shahiq-UZ-Zaman, N. Khalid, K. Waseem, T. Mahmood and L. Ali (2012). *Acacia nilotica*: A plant of multipurpose medicinal uses. *Journal of Medicinal Plants Research*. 6(9), pp. 1492-1496
- Ango, A. K., Ibrahim, S.A., Yakubu A.A. and Alhaji A.S. (2014). Impact of Youth Rural-urban Migration on Household Economy and Crop Production: A Case Study of Sokoto Metropolitan Areas, Sokoto State, North-Western Nigeria. *Journal of Agricultural Extension and Rural Development*. 6(4):122-131
- Anley, Y., Bogale., A. and Haile GabrielA. (2007). Adoption Decision and Use Intensity of Soil and Water Conservation Measures by Small Holder Subsistence Farmers in Debo District, Western Ethiopia. Cited in Hassan, R. and C, Nhemachena (2008). Determinant of African Farmers' Strategies for Adapting to Climate Change: Multinomial Choice Analysis. *AFJARE*2(1):83-104.

- Anonymous (2011). Retrieved from <http://www.investopedia.com> 2011-11-05 "at 10:33 pm
- Birungi, P. B. (2007). The linkage between the degradation, poverty and social capital in Uganda. Cited in Hassan, R. and C. Nhemachena (2008). Determinants of African farmers' strategies for adapting to climate change: Multinomial choice analysis. *African Journal of Agricultural Research*, 2 (1):83-104.
- Chandler, D. (2007). The Security-Development Nexus and the Rise of Anti Foreign Policy. *Journal of International Relations and Development*, (10), p. 362-386.
- Evans, J. (1992) *Plantation Forestry Tropics*, Published by Ford University Press. Krithika, V and Radhai Sri S., 2007. Value Added Products from *T. indica*. *Science and Technology Entrepreneur, Tamil Nadu*, 11p. pp 65-67
- Fagg, C.W., Magedo, A., and James, Z. (2005). *Acacia nilotica(L.) Wild. Ex Delile In: Jansen P.C.M. and Cardon*, Wageningen, Netherlands. pp. 480
- Faire, R. and Case, k. (2007). *Principles of economics*. Upper Saddle River, NJ: Pearson Education. 54.
- Farinde, A. J., K. O. Soyebó, and M.O. Oyedekun, (2005). Exploration of beekeeping as a coping strategy in a deregulated economy. *Journal of Agricultural Extension*, 8:76-83.
- Kalaivani, T. and L. Mathew, L. (2010). Free radical scavenging activity from leaves of *Acacia nilotica (L.) Wil. ex Delile*, an Indian medicinal tree. *Food Chem. Toxicol.*, (48): p 298-305
- NPC,(2006). Census <http://www.en.m.wikipedia.org/wiki/wamako>. at 10:00 pm on 02-02-2015.
- Ogunbible, A. O., R. Tabo, and S. A. Rahman, (2002). Factors Affecting the Adoption of ICSVIII and ICSV400 Sorghum varieties in Guinea and Sudan Savanna of Nigeria. *The plant Scientist*, 3: 21-32.
- Oguntala, A.B. (ed). (1986). The Challenge of Deforestation in Nigeria: *Proceedings of 1986 Annual Conference of Forestry Association of Nigeria*, Minna, Nigeria (December).
- Olarinde, L.O., A.O. Ajao, and S.O. Okunola (2008). Determinant of Technical Efficiency in Bee Keeping Farms in Oyo State, Nigeria. A stochastic frontier approach. *Resaech Journal of Agriculture and Biological science*. 4(1):65-69
- Pandey, C. B, Pandya, K. S., Pandey, D. and Sharma, R.B., (2000). Growth and productivity of rice (*Oryza sativa*) as affected by *Acacia nilotica* in a traditional agroforestry system. *Tropical Ecology*, 2(40), p. 109-117
- Senchi, A. A. (2014). Production and Marketing of Honey and Sheabutter in Zuru Local Government Area, Kebbi State. Nigeria. Unpublished M.Sc. dissertation. Department of Forestry and Fisheries. U.D.U.S. 87Pp
- Singh, B. R. and Babaji, G.A (1989). Characteristics of Soil in Dundaye District II, the Fadama Soils of the University Farm.
- Singh, B.R (1995). Soil Management Strategies for the Semi Arid Ecosystem in Nigeria: The Case of Sokoto and Kebbi State. *Africa Soil* 28:317-320.
- Singh, B.N, Singh, B.R, Sarma, B.K, Singh, H.B., (2009b). Potential Chemoprevention of N-Nitrosodiethylamine-Induced Hepatocarcinogenesis by Polyphenolics from *Acacia nilotica* bark. *Chem-Biol. Interact.*, 181: 20-28.
- Wilson R.T. (1988), Vital Statistics of the Baobab, *African journal of Ecology*, 26(3):197-193.

ACKNOWLEDGEMENT

We express our appreciation and sincere thanks to our enumerators (Faisal Almustapha) for administering the questionnaires in the study area, We sincerely thank you, We also felt indebted to

Dr. S. B. Shamaki (Department of Forestry and Environment) for our data analysis, and other members of the Faculty of Agriculture for their cooperation, untiring efforts and guidance towards the success of this research. May God in his infinite mercy reward them all abundantly.