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ANALYSIS OF THE SPATIAL DISTRIBUTION AND SOCIOECONOMIC IMPORTANCE OF INDIGENOUS TREE SPECIES IN GARUN MALAM LOCAL GOVERNMENT AREA, KANO STATE

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ABSTRACT

The study analysed the spatial distribution and socioeconomic importance of indigenous tree species in the Garun Malam Local Government Area of Kano State, Nigeria. A physical survey was conducted to inventory indigenous tree species, and GPS was used to obtain geographic coordinates. A social survey method, including questionnaire administration and Focus Group Discussion (FGD), was employed to gather in-depth information on the socio-economic importance of indigenous trees in the study area. A total of 200 questionnaires were administered in ten (10) wards purposively selected. For the spatial distribution, the geographic coordinates were imported into ArcGIS to produce a map. Information on socio-economic importance was obtained through the administration of questionnaires and a Focus Group Discussion (FGD) with 18 elders in the community. The results of the findings showed that approximately 80% of the indigenous trees were found in open spaces that were not under cultivation. The study found that almost all the indigenous tree species have different uses. Additionally, more than 70% of the trees were used for food, medicine, and shelter, allowing people to engage in various trading activities involving the valuable parts of the tree. The study recommends that further research be conducted to explore additional potential uses of trees and that the indiscriminate felling of trees be discouraged.

Keywords: Indigenous Trees, Spatial distribution, Socio-economic importance

INTRODUCTION

Trees have been an integral part of local land use systems for millennia worldwide. The products derived from them, such as food, medicine, cooking fuel, animal feed, and construction materials, are critical for the subsistence of hundreds of millions of people worldwide (Musa & Kabuga, 2018). Trees in rural landscapes also serve protective functions at the farm, landscape, and global levels. They maintain soil fertility, enable more efficient use of water and nutrients, control water erosion, and contribute to moderating the microclimate. The ecosystem services they provide at a global level, including carbon sequestration and biodiversity conservation, are also significant. Trees in human settlements are no less important (Farlex, 2014).

Globally, between 2000 and 2010, a statistical analysis by the World Agroforestry Centre showed that the amount of tree cover on agricultural land increased substantially, with the area of >10% tree cover increasing 3%, or more than 828,000 km² (Ijeomah & Aiyeloja, 2010). South America showed the most significant increase in area with >10% tree cover,

amounting to more than 489,000 km², representing a 12.6% increase. South Asia also showed a significant increase (6.7%), along with East Asia (5%), Oceania (3.2%), and Southeast Asia (2.7%) (World Agroforestry Centre, 2012). In Central America, the area with more than 10% tree cover increased by 1.6% to become 96% of all agricultural land. For Sub-Saharan Africa, we found a 2% increase. Only Northern and Central Asia showed a decrease: -2.9% (Ajake, 2012). Tree cover is still increasing as a standard feature on agricultural land worldwide. This must be recognised by all involved in agricultural production, planning, and policy development (Zomer et al., 2014).

Trees are an integral part of land resources that need careful management to sustain them for the utilisation of future generations; this makes vegetation protection everybody's business. Vegetation serves as a valuable resource, providing essential needs of life, such as food, fuelwood, and conservation of land and soil fertility. Therefore, it plays a vital role in human development. It is believed that vegetation resources form the basis on which the lives of all organisms depend (Usman & Adefalu, 2010; Zomer et al., 2014). Indigenous trees contribute to environmental stability, provide medicinal resources, food, fuelwood, and support local industries. Despite their importance, these species are often threatened by population growth, deforestation, urbanisation, agricultural expansion, and climate change. Garun Malam LGA is home to a considerable variety of vegetation resources, which is one factor contributing to the development of the fuelwood market in the area. This has implications for the exploitation of this resource for various uses. There is a growing need to understand the spatial distribution of these trees and identify areas of high ecological value and conservation priority. Therefore, this paper analysed the spatial distribution and socioeconomic importance of indigenous tree species in Garun Malam Local Government Area (LGA), Kano State, to evaluate their socio-economic importance in the local economy and livelihoods of the people of Garun Malam.

Trees are significant to African farmers because they provide fodder to livestock, which is generally used during the dry season as browse when little or no other fodder is available. The tree is vital to human existence due to the numerous ecological and economic functions it performs, including watershed protection, providing a regular supply of fresh water, and preventing floods. It also prevents soil erosion and maintains the water, oxygen, carbon, and nitrogen cycle. In addition, trees help in the purification and improvement of air quality (Usman & Adefalu, 2010; Ajake, 2012).

The vegetation of Garun Malam LGA exhibits the characteristics of the Sudan Savanna vegetation zone, commonly found in northern Nigeria. Vegetation resources contribute significantly to the environmental and economic development of such an area, as plants account for a substantial percentage of human development, environmental sustainability, and overall well-being. Their importance (plants) has led man to use them in a multi-purpose way. Moreover, Abebe et al. (2011) noted that indigenous species contribute to a cleaner environment, as they sequester more carbon than exotic species. Previous studies have revealed the significance of indigenous trees for human livelihood. Trees intercept particles and gaseous pollutants (McPherson et al., 1997; Harris et al., 1999). Moreover, they act as carbon sinks, helping to mitigate global warming (McPherson & Simpson, 1999). Trees reduce stormwater runoff and can assist with processing wastewater, for example, where other wastewater facilities are insufficient (El Lakany, 1999).

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Table 1: Socio-economic importance of some Indigenous Tree Species in Nigeria

S/N	Local Name	Botanical Name	Fodder	Fuelwood	Medicinal	Food	Other Uses
1	Gawo	*F.albida*	The leaves, the pods, and the young shoots provide a high feed value and are browsed by livestock (Harrison, 1987; Von Maydell, 1990)	The tree has an important role in terms of fuel wood and timber provision (Von Maydell, 1990)	Used in the treatment of various diseases, the bark is used in the treatment of cough, pneumonia, kidney diseases, vomiting, and diarrhea; the leaves and the gum are used in the treatment of hemorrhages, diarrhea, ophthalmia while the roots, flowers, pods and the seeds are used in the treatment of influenza, heart tonic, toothache and rheumatism (Von Maydell, 1990).	The seed is eaten in times of famine (Von Maydell, 1990)	The thorny branches are used in fencing. The wood is used in the manufacture of various implements, such as mortars, drums, and boats (Von Maydell, 1990).
2.	Kuka	*A. digitata*			The bark of the tree is used in the treatment of fever, infections, and toothache, among other conditions (Gebauer et al., 2002). The roots of the tree are also used in the treatment of malaria (Von Maydell, 1990).	The leaves are used in the preparation of soup. The flower is eaten raw, and the seeds are used as flour, which is rich in Vitamin B and protein, and is also used as baby food (Owen, 1970; Von Maydell, 1990; Mohammed, 1997; Gebauer et al., 2002).	It is used in the manufacture of light canoes, trays, and floats for fishing nets. Hollow trees of *A. digitata* provide reservoirs of fresh water, which are used by nomads, particularly in the western part of Sudan (Gebauer et.al, 2002).
3.	Aduwa	*B. aegyptiaca*	The leaves are used as fodder by livestock and wild			The leaves, flowers, and fruits are used as food (Von Maydell,	The thorny branches are used for fencing. The wood is used to

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			animals (Von Maydell, 1990).			1990).	make wooden bowls, mortars, and various household utensils (Alamu & Agbeja, 2011).
4.	Doraw a	*P. biglobosa*	The fruit is used as feed for cattle, sheep, and goats (Alamu & Agbeja, 2011).		The tree is used as an analgesic drug, especially against dental pain, an antidote to snake bites, and as an ingredient used in treating leprosy and hypertension (Alamu & Agbeja, 2011)	The tree is used as a condiment in human food (Alamu & Agbeja, 2011)	The wood is used as timber for construction (Alamu & Agbeja, 2011).
5.	Kadar ya	*V. paradoxa*			The bark, roots, and leaves are used for the treatment of malaria, diarrhoea, dysentery, headache, and other conditions (Irokanulo et al., 2009; Olanipekun et al., 2010; Fayemi et al., 2010; Ampitan, 2013).		The tree is planted as a hedge to increase soil fertility and prevent animals from wandering into the farm (Agea et al, 2010).
6.	Tsami ya	*T. indica*	The pulp and leaves are added to animal feed to enhance milk production in livestock (Okullo, 2005)	The wood from the tree is used as Fuelwood and charcoal in rural livelihoods (Buyinza & Senjonga, 2008)	It is used to treat and manage wound healing, abdominal pain, diarrhoea, dysentery, asthma, cough, cancer, etc. (Kustas et al, 2006)	Its pulp is a key ingredient in flavouring meals and snacks. It is also used in desserts as jam. The pulp is used as a sweetener in sorghum and millet porridge (Kustas et al, 2006)	Tamarind wood has high density and durability, making it suitable for use in furniture and wood flooring. The tree is used as an ornamental in many homes and tourist sites (Gunasena & Hughes, 2000).

Source: Abdurrasheed and Okoh (2022); Konsala *et al*. (2020); Gilbert *et al.* (2019).

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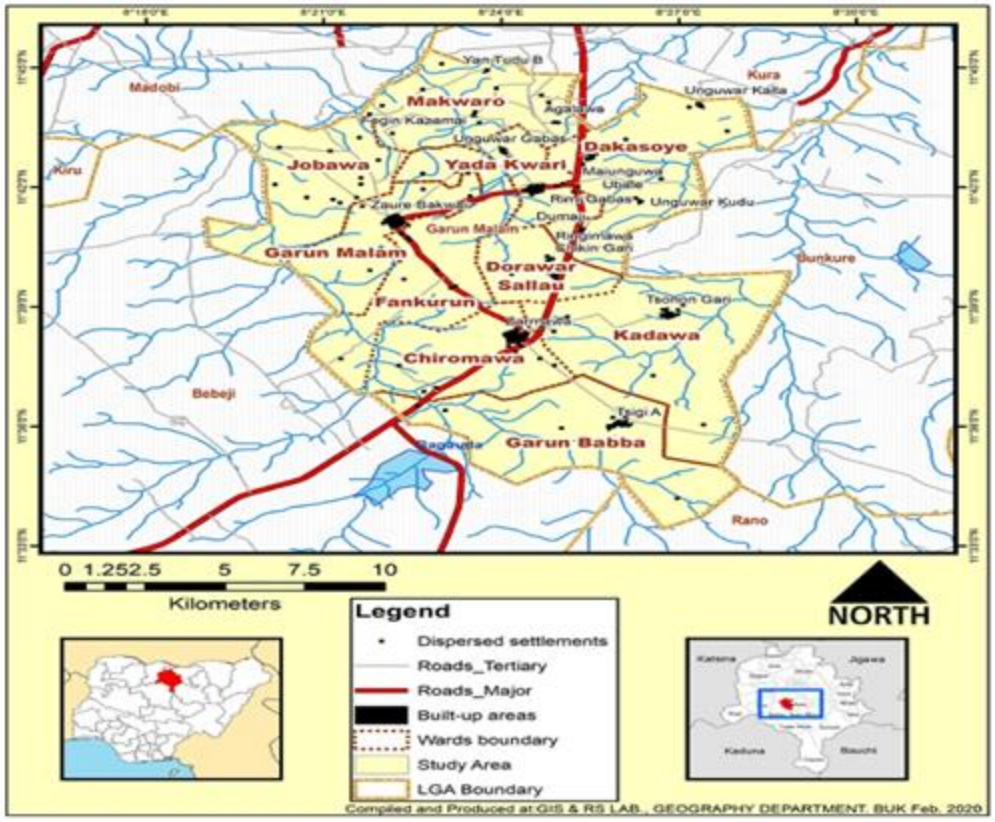

Figure 1: Study Area

The soils in the area have a sandy loam-textured surface and a sandy clay loam-textured subsoil (NEDECO, 1976; IAR, 1994). The vegetation of Garun Malam LGA exhibits the characteristics of the Sudan Savanna vegetation zone, commonly found in northern Nigeria. The Sudan Savanna trees are composed of a variety of species, rarely taller than 20 m, ranging from baobab to different types of acacias, such as Acacia albida, Acacia nilotica, and Acacia seyal. Most of these trees adapt to drought conditions through long taproots, leathery leaves, and small leaves. Garun Malam is an agrarian community where mechanised and intensive irrigation practices are employed. The majority of people in the area engage in high-intensity agricultural activities, which is the primary occupation of the inhabitants.

Materials and Methods

The study employed a multidimensional approach, incorporating both physical and social surveys. A reconnaissance survey was conducted to identify and understand the distribution of various indigenous tree species for spatial mapping purposes. The physical survey, which involved direct field observation and the use of GPS, covered the inventory aspect of the work. The social survey entailed administering a semi-structured questionnaire and conducting a Focus Group Discussion (FGD). The physical survey data were collected in the form of geographic coordinates of the tree species through direct observation, identification of tree species along farmlands, and taking tree identifiers (latitude and longitude). The study area was divided into four sampling plots. A 10 × 10 m quadrant was used, and a random sampling technique was employed within each quadrant. Identification was done using the local extension staff's knowledge. Most of the inventoried tree species were found in open spaces and farmlands. The physical survey exercise was conducted over

a seven-day (7) period. The purposive sampling technique was employed, as used in several studies (Bernard, 2002; Lawrence, 2015; & Romero, Kwan, & Suchman, 2019). Using this technique, respondents were drawn from the ten study locations, namely Chiromawa, Garun Malam, Dorawar-Sallau, Fankuran, Garun Babba, Kadawa, Jobawa, Makwaro, Yadakwari, and Dakasoye, where indigenous tree species are present. The questionnaire was administered to 200 respondents purposely. This correlates with several studies, such as Kwan and Suchman (2019), who asserted that purposive sampling is suitable for use in qualitative research targeting a specific group. In this case, 200 respondents were selected based on their availability at the time of the study. At the same time, the FGD was conducted with 18 respondents who gave in-depth knowledge on the uses of indigenous trees. Data obtained from the semi-structured questionnaire were analysed using simple percentages and presented in tables and charts with the aid of Microsoft Excel. Data generated from the FGD were presented as quotes to complement the quantitative data.

During the FGD, 18 respondents, comprising 12 elderly individuals (aged 60 and above), were selected based on their availability and ability to respond to the questions asked. Additionally, the six local extension officers were specifically selected because they were the only active local extension officers in the study area. The first focus group, i.e., the elderly, provided in-depth information on the types of indigenous trees, local names, and uses, while the second group, i.e., local extension officers, provided information on the natural and anthropogenic threats, as well as the conservation measures involved.

Results and Discussions

Spatial Distribution of Indigenous Trees

For probably as long as people have lived in Africa, they have eaten culturally and traditionally important indigenous fruits such as baobab, desert date, black plum, and tamarind. However, the trees' natural habitats are being lost, mainly to widespread deforestation resulting from population growth, the cutting of trees for firewood or charcoal, and in some cases, industrial agriculture or other business interests. Table 2 presents the indigenous trees found in the study area, along with their botanical and local names (in Hausa), as well as their geographic coordinates, which facilitate an understanding of the spatial distribution in the study area. The research found that 20% of the trees were *Adansonia digitata,* 10% were *Acacia spp,* (5%) *Ziziphus spp*, (5%) *Ficus spp*, and several species of Anogeissus leiocarpus, Barassus aethiopum, and Hyphaene thabaica, which occur in considerable quantity. Approximately 70% of the identified trees had high economic value, including Adansonia digitata, Butyrospermum paradoxum, and Diospyros mespiliformis. The trees provide timber for construction, fuelwood for cooking, and medicinal use (Gunasena et al*., 2000).*

About 50% of indigenous trees were found in Dorawar-Sallau as opposed to other wards. This is because most of the open spaces that are not under cultivation are found around the settlement. The reason for the 1% of indigenous tree species in Kadawa was mainly because most of the farms practiced irrigation farming. More than 95% of the trees have been felled to make way for rice cultivation. This implies that a change of land use has directly affected the availability of indigenous tree species, as many trees are felled to pave the way for different land uses in the study area. Therefore, in terms of spatial distribution, it can be said that villages with less built-up areas have 80% of indigenous trees compared to areas with high concentrations of built-up areas, which have 20% of trees. Land use change and sand mining have a direct impact on the presence of indigenous trees.

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Table 2: Inventory of Indigenous Tree Species in Garun Malam

S/N	Botanical name	Local Name	Coordinates	
			Latitude	Longitude
1	*Adansonia digitata*	Kuka	11°39′47.137″N	8°.24′38.882″E
2.	*Tamarindus indica*	Tsamiya	11°39′41.485″N	8°.24′23.940″E
3.	*Faidherbia Albida*	Gawo	11°39′56.439″N	8°25′04.545″E
4.	*Balanites aegyptiaca*	Aduwa	11°39′45.504″N	8°24′15.462″E
5.	*Acacia nilotica*	Bagaruwa	11°39′50.051″N	8°24′26.375″E
6.	*Anogeissus leiocarpus*	Marke	11°39′43.330″N	8°24′23.843″E
7.	*Diospyros mespiliformis*	Kanya	11°39′42.103″N	8°24′23.372″E
8.	*Parkia biglobosa*	Dorawa	11°39′43.595″N	8°24′22.291″E
9.	*Vitex doniana* (sweet)	Dinya	11°39′32.727″N	8°24′10.308″E
10.	*Barassus aethiopum*	Giginya	11°39′56.404″N	8º24′10.308″E
11.	*Magnifera indica*	Mangwaro	11º39′52.737″N	8º23′58.851″E
12.	*Ficus gnaphalocarpa*	Baure	11º39′43.267″N	8º24′23.108″E
13.	*Ficus thonningii*	Chediya	11º39′57.779″N	8º24′56.373″E
14.	*Ficus platyphylla delile*	Gamji	11º39′50.110″N	8°24′00.000″E
15.	*Hyphaene thabaica*	Goruba	11º39′57.362″N	8º24′00.000″E
16.	*Butyrospermum parkii*	Kadanya	11º39′52.925″N	8º24′00.000″E
17.	*Bridella farruginea*	Faru	11º39′43.267″N	8º24′23.108″E
18.	*Strychnos spinosa*	Kokiya	11°39′41.485″N	8°24′23.940″E
19.	*Ceiba pentandra*	Rimi	11º39′56.439″N	8º25′04.545″E
20.	*Cordia africana*	Alulluba	11º39′43.595″N	8º24′22.291″E
21.	*Annona senegalensis*	Gwandar daji	11º39′56.404″N	8º24′26.561″E
22.	*Dichrotachya cinerea*	Dundu	11º39′50.110″N	8º24′00.000″E
23.	*Ziziphus mauritiana*	Magarya	11º39′45.477″N	8º25′11.927″E
24.	*Bombax costatum*	Gurjiya	11º39′49.990″N	8º24′25.901″E
25	*Phoenix dacylifera*	Dabino	11°40′01.495″N	8º24′29.250″E

Source: Field Survey, 2024

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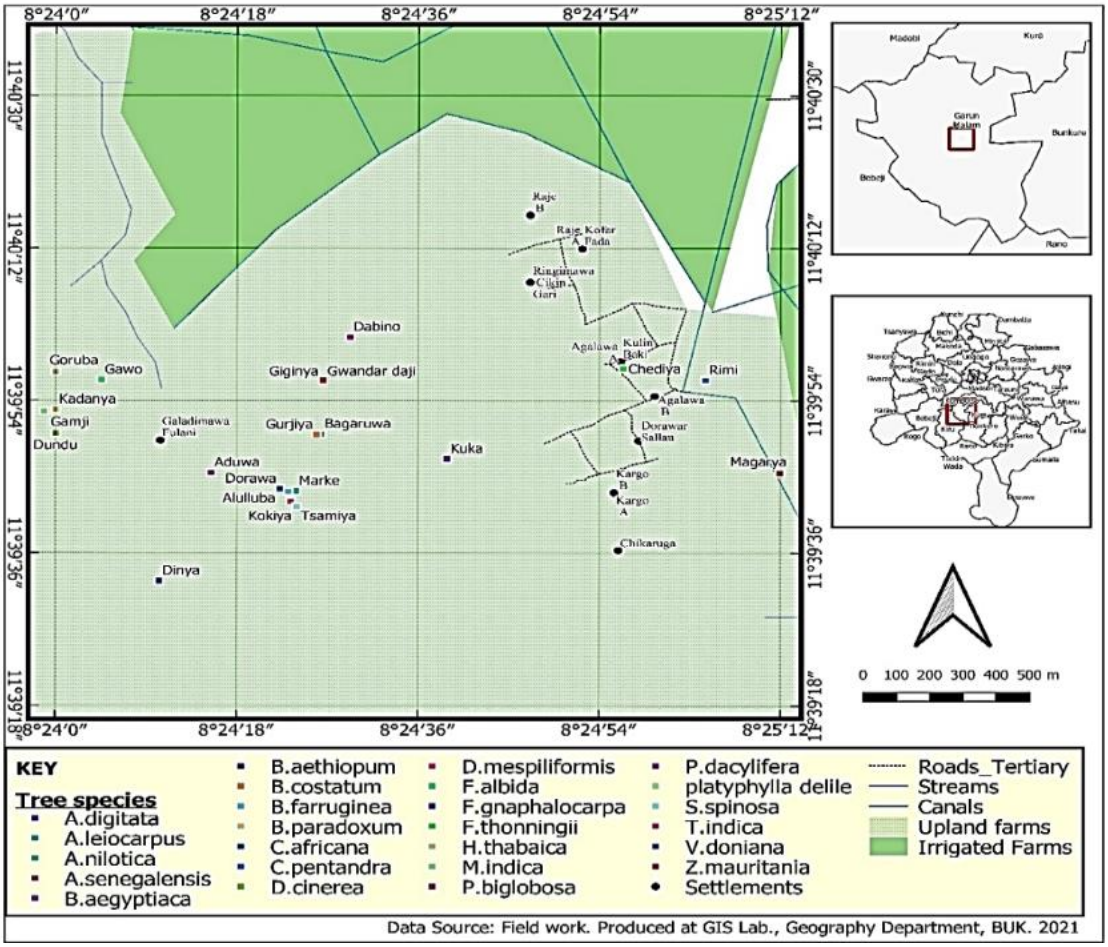

Figure 2: Spatial

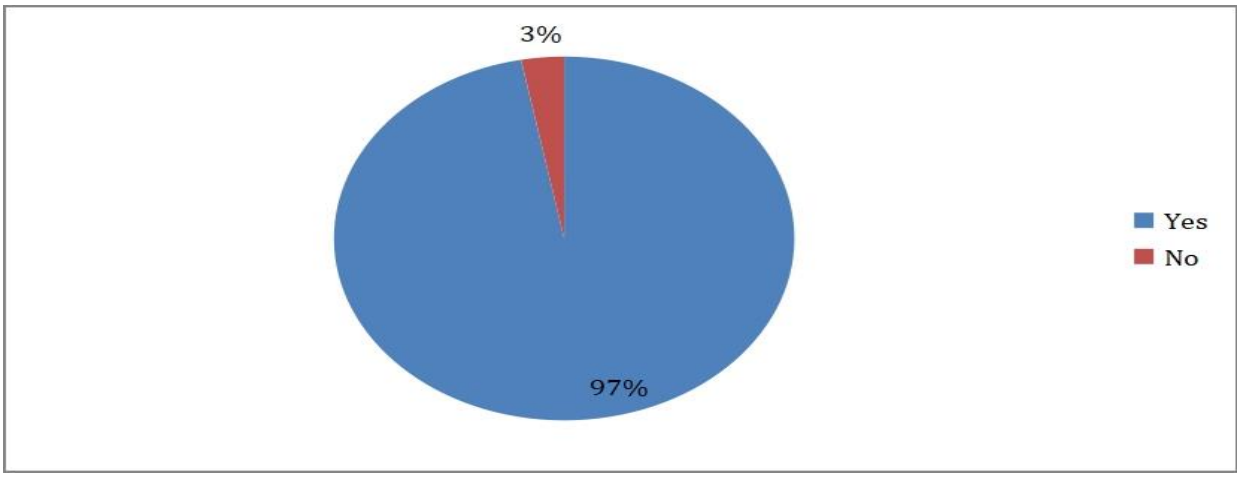

Figure 3: Percentage Presence of Indigenous Trees in the Community

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Demographic Characteristics of Respondents

The results presented in Table 3 indicate that most respondents are male and between 50 and 59 years of age. Also, the majority of the respondents have had some form of education, i.e, they are not ignorant of the economic values that indigenous trees in the study area provide to support their livelihoods. Additionally, the majority of respondents are farmers, indicating the agrarian nature of Garun Malam LGA. The people engage in both rainfed and irrigation farming. Furthermore, the majority of respondents are married, which implies that marital status and gender factors may have been influenced by cultural norms in Northern Nigeria, where males are primarily involved in crop and livestock farming (Lawal et al., 2018).

Table 3: Demographic Characteristics of Respondents

Gender	Frequency	Percentage (%)
Male	180	90
Female	20	10
Age		
19-29	10	5
30-39	15	7
40-49	60	30
50-59	100	50
60 and above	15	7
Marital status		
Married	190	95
Single	-	-
Divorced	-	-
Widowed	10	5
Education Background		
Non-formal education	56	28
Primary education	90	45
Secondary education	47	23.5
Tertiary education	7	3.5
Occupation		
Farmer	145	72.5
Civil servant	5	2.5
Business	50	25
Others	-	-

Source: Field Survey, 2024

Socio-economic Importance of Indigenous Trees in Garun Malam

Uses of Trees

Figure 4 shows that 75% of the respondents utilize indigenous trees, while the remaining 25% do not. This illustrates the vital role that indigenous trees play in the livelihoods of rural populations, as they rely on trees for food, medicine, fuelwood, and other essential purposes. This finding is in

agreement with several studies conducted in various locations in the Savanna region such as the works of Mortimore, (1999), Mohammed, (1997), (Yaro & Abdulrashid, 2017), (AbdulHakim et al., 2017), (Wakawa et al., 2017) which reveal that indigenous trees of the Savanna contribute immensely in almost every sector of rural economy especially in the extreme Northern parts of Nigeria. Furthermore, the findings of Agbelade (2013), Osemeobo (2013), Musa and Kabuga (2018), and Hayatu and Abba (2021) all highlighted the crucial roles indigenous tree species play in supporting the rural economic system.

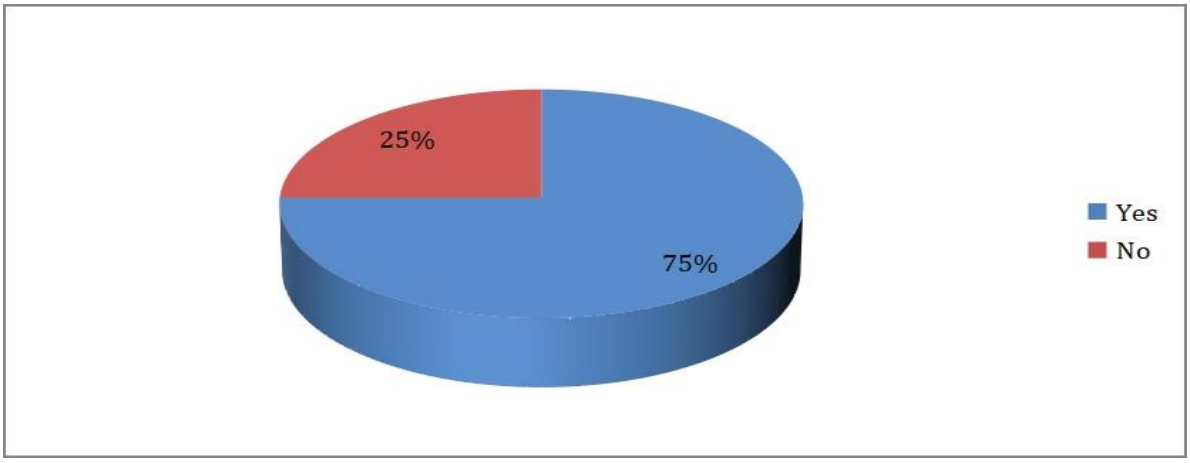

Figure 4: Use of Indigenous Trees

Results presented in Figure 5 show that 25% of the respondents use indigenous trees for firewood, 15% for food, 21% for shelter, 15% of the indigenous trees are used for construction, and 16% of the indigenous trees are used as ornamentals. In comparison, the remaining 16% are used for medicinal purposes. The indigenous trees in the study area have numerous uses for the local people, as the study identified six different uses of the trees. More than 20% of the inventoried trees were found on farmlands. This ensures their protection and sound management by individual owners. Fifty percent of the trees have multiple uses, ranging from medicinal to agricultural, human food, animal feed, construction, and fuelwood uses. Various parts of the tree, including leaves, roots, bark, gum, flowers, fruits, pods, and seeds, have numerous uses.

The study also clearly presents the inventoried trees with their various uses and the parts used. Fuel, food, shelter, and medicinal uses were the key important uses of trees in the study area, with medicinal and fuelwood being the two most important. The communities' dependence on trees for firewood can be attributed to the majority of the people being rural dwellers, who have limited access to alternative fuels such as liquefied petroleum gas (LPG), kerosene, electric stoves, and coal.

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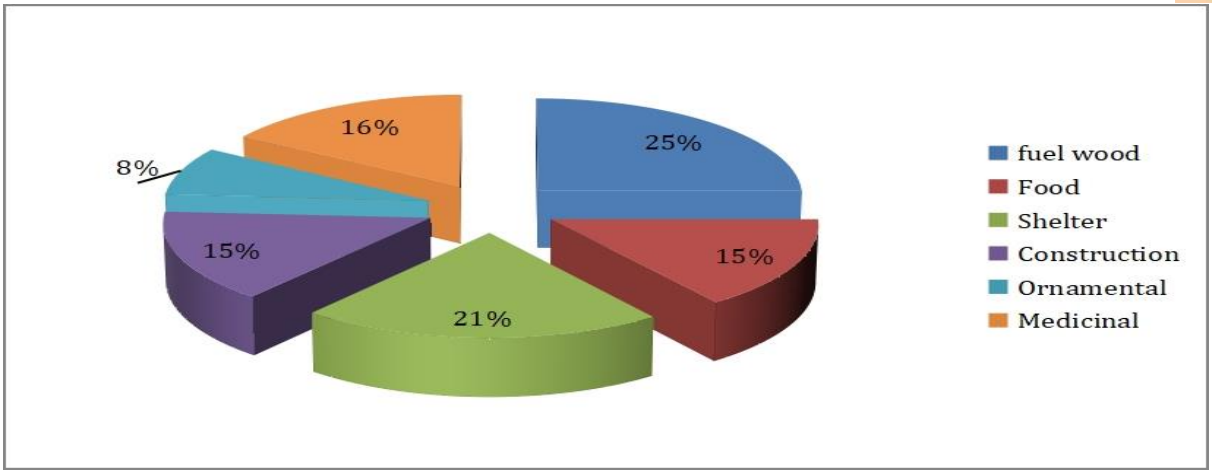

Figure 5: Use of Indigenous Trees

Medicinally, the trees in the study area play a crucial role in traditional medicine practices. Trees such as Acacia nilotica, Acacia albida, Acacia seyal, and Parkia biglobosa are significant in traditional medicine practices in the area. The demand for fuelwood and traditional medicine has led to the depletion of forest resources, which has consequently resulted in the decline or disappearance of particular tree species, such as Butyospermum parkii, due to their medicinal importance. Similar findings have been presented by Dennie (2012), Adamu et al. (2013), and Bvenura et al. (2017).

While conducting the FGD, a respondent recounted that *"Acacia nilotica* (Plate 1) *is important for medicinal purposes. The plant exhibits antimicrobial, antimalarial, and antioxidant properties, and is used in the treatment of human immunodeficiency virus, hepatitis C, and diarrhea.*

Plate 1: ***Acacia nilotica (Bagaruwa).***

Moreover, 63% of the inventoried trees are used as animal fodder, more importantly, during the dry season when there is a shortage of grasses for livestock to graze. The leaves, flowers, pods, and

seeds of trees like Acacia albida, Acacia nilotica, Anogeissus leucocarpus, Annona senegalensis, Parkia biglobosa, and Ziziphus mauritiana are important feed for livestock because they contain a considerable amount of nutrients. This also corroborates the findings by Abdurrasheed and Okoh (2022), Konsala et al. (2020), and Gilbert *et al.* (2019). The findings revealed that some of the important values derived from these trees include feed for animals, as a food condiment in human food, a source of timber, used in traditional medicine as an analgesic drug, especially against dental pain, provision of ingredients used in treating leprosy and hypertension, and an antidote for snake bites, among others. The study found that *Parkia biglobosa (*Dorawa in Hausa) is significant in traditional medicine practices (Tukur *et al, 2013).*

A few trees were important for use as food, in cultural practices, and for construction purposes. Trees such as Anogeissus leocarpus, Borassus aethiopum, and Hyphaene thebaica are important sources of timber. This is due to their resistance to termites and their ability to carry heavy loads. While trees such as *Parkia biglobosa* (Dorawa), *Butyrospermum paradoxum* (Kadanya), *Diospyros mespiliformis* (Kanya), *Cordia africana* (Alulluba), *Strychnos spinosa* (Kokiya), *etc*. are important for use as human food, either their leaves, seeds, or fruits are used as wild food and traditional medicine for the people in the area; this is similar to the findings of Rampheri *et al*. (2022).

The least important or least utilized aspect of trees was their ornamental value, which accounted for only 8% of the total number of inventoried trees. During the FGD, some respondents identified agricultural use as one of the significant uses of indigenous trees in the study area. Farmland fencing and soil fertility improvement were the only primary uses identified. Trees such as Acacia nilotica, Balanites aegyptiaca, and Ziziphus mauritiana are primarily used for fencing, while Acacia albida is used to improve soil fertility. Revelations from this study and relevant literature suggest that a substantial number of indigenous tree species are harvested and utilized by local communities to meet their health, ethnoveterinary, socio-economic, and energy needs. The majority of the indigenous trees still grow in the wild.

During the FGD, the majority of respondents agreed that most indigenous trees in the study area are primarily used for fuelwood, food, and medicine. This finding aligns with numerous other studies conducted in various study areas, such as those by Ladan (2013), among others. Some respondents hold the opinion that indigenous trees, such as Anogeissus leiocarpus and Acacia seyal, are important for medicinal purposes.

One of the respondents reported that:

"*Anogeissus leiocarpus (Market) is an important tree for the traditional herbalist because its bark is used for traditional medicinal purposes. The bark decoction is used to treat stomach worms, dysentery, cough, and pneumonia.* Similarly, the respondent cited *Acacia Seyal (Farar kaya) (Plate 2) as another tree used for medicinal purposes. The root infusion is used in the treatment of osteoporosis, a condition characterized by weak bones. The bark powder is used as incense to ward off evil spirits, and the leaves' decoction serves as a vermifuge.*

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Plate 2: ***Acacia seyal (Farar kaya)***

Moreover, the respondent continued by saying:

"Annona senegalensis (Gwandar daji) is another tree that has huge medicinal potential. Its root is boiled and taken as a snake antidote or repellent; the bark is used for blood-letting, and the root is used for gonorrhoea.

Similarly, another respondent highlighted *Adansonia digitata* and *Parkia biglobosa* as important sources of food nutrients for the local people.

Another respondent during the FGD discussion said:

"*The seeds of Adansonia Digitata (Kuka) and Parkia biglobosa (Dorawa) are used as soup ingredients. The seed of Parkia biglobosa is also used to make locust bean (Daddawa), an important ingredient in miyar kuka.*

Results presented in Table 4 show that 90% of the respondents utilize indigenous trees in some way, while the remaining 10% do not use indigenous trees at all. Several studies have revealed the use of indigenous tree species, including Amonum et al. (2016) and Saka *et al*. (2018), among others. Tree resource serves their host communities in several ways. According to Abbass (2012), indigenous trees in Kano State provide fodder and support livelihoods to a considerable number of rural communities. Furthermore, the indigenous trees play a vital role in supporting the rural livelihoods of the people in the study area.

Table 4: Rates of Usage of Indigenous Trees by the Respondents

Alternative	Respondents	Percentage (%)
Frequently	180	90
Occasionally	20	10
Total	**200**	**100**

Results presented in Table 5 show that 28% of the respondents often use the leaves, 12.5% use the bark, 12.5% use the roots, and 6% use the branches. In comparison, the remaining 41% of respondents utilize all parts of the indigenous tree. The uses of indigenous trees vary among communities, regions, and globally. This depends on the technological, scientific, and social advancements of the communities or nations. Several studies have been conducted on the multipurpose uses of indigenous trees, including those by Tukur et al. (2013), Kacholi (2014), and Alam et al. (2016), among others. (Amonum et al., 2016) revealed that indigenous trees and shrubs are important components of ruminant diet, and they have been found to play some important roles in the nutrition of grazing animals in areas where few or no alternatives are available. Furthermore, this finding is similar to that of Wakawa *et al*. (2017), who conducted a study on the parts of indigenous trees used. The study revealed that all parts of the indigenous tree can be utilized for providing shade, as a medicinal resource (especially the leaves and bark), and for economic and ecological purposes.

Table 5: Parts of the Tree being used by the Respondents

Alternative	Respondent	Percentage (%)
Leaf	56	28
Bark	25	12.5
Root	25	12.5
Branch	12	6
All	82	41
Total	**200**	**100**

Conclusion and Recommendations

Conclusively, approximately twenty-five (25) types of indigenous tree species were identified in the study area, which commonly include Adansonia digitata, Faidherbia albida, Parkia biglobosa, Mangifera indica, Acacia nilotica, Butyrospermum parkii, Ziziphus mauritiana, and Anogeissus leiocarpus, among others. The most important uses are fuelwood, animal fodder, and medicinal purposes. Various parts of the inventoried plants had different uses; fruits, flowers, seeds, and leaves were eaten by humans, accounting for approximately 15% of the total usage of indigenous trees, as seen in the case of Butyrospermum parkia, a significant tree in the area. Animals eat trees like *Acacia albida* and *Acacia nilotica*. In terms of medicinal uses, parts such as bark, roots, and leaves were the primary components used in the treatment of various diseases, including malaria, diarrhea, dysentery, headache, and other bacterial and fungal-related conditions. These trees present significant importance in the lives of the people of the area. The study recommends that the Government and affected communities control fuelwood extraction through massive campaigns against the felling of trees without replacement. Indigenous trees with medicinal potential should be subject to intensive research to explore their potential for socioeconomic growth and development.

Conflict of Interest

All authors declare no conflict of interest.

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