

ASSESSMENT OF NON-TIMBER FOREST PRODUCTS (NTFPs) UTILISATION AMONG RURAL DWELLERS IN IGABI LOCAL GOVERNMENT AREA OF KADUNA STATE

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ABSTRACT

The study examined the assessment of Non-Timber Forest Products (NTFPs) utilisation among rural dwellers in Igabi Local Government Area of Kaduna State. Data were elicited through the administration of questionnaire to 80 randomly selected rural dwellers from 2 villages each, in 4 purposively selected wards in the Local Government Area based on availability of NTFPs. The wards are: Birnin Yero, Sabon Birni Dajis, Gadan Gayah, and Afaka. The result showed that majority (80%) had secondary education. Also, 44% of the rural dwellers are in their youthful age, married (44%) with house hold size of 11 - 15 members. The use of vegetables ranked 1st in the list of NTFPs assessed. Households (33%) and trado-medical practitioners (30%) were perceived to use NTFPs more with frequent (≥ 2.3) level of utilisation than other rural dwellers while insecurity/kidnapping ranked 1st in the list of utilisation constraints. The provision of proper arms and ammunition to forest guards and other security personnel to tackle

the problems of insecurity in the study area was recommended among others.

Keywords: *Assessment, utilisation, users and constraints.*

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1. INTRODUCTION

Non-Timber Forest Products (NTFPs) are plants and animal resources in their biological origin that are collected from forest areas as well as farmlands, man-made plantations, trees outside forests, and other common lands (Anokye and Adu, 2014). Forest resources are sources of food, shelter, building materials, fuel, cash income, and medicine for millions of people. They are collected from a wide range of ecosystems such as high forests, farm fallow and farmland, and they are widely used in a variety of ways for subsistence livelihoods, including food, medicine, and trade. Ganiyu (2023) defined NTFPs as the biological materials (other than industrial round wood and derived sawn timber, wood chips, wood- based panels, and pulp) that may be extracted from natural ecosystems and be utilized within the household, marketed, or have social, cultural, or religious significance. The contribution of NTFPs to rural livelihoods has received global recognition among researchers, policymakers, and development experts (Mamo *et al.* 2017).

It was observed that most poor households engaged in NTFPs mainly because its exploitation requires less capital than timber activities. Mutamba (2018) also reported that barriers to entry and market access discourage most households from engaging in timber extraction, despite its high returns. Thus, only those

who are well-connected to markets (usually wealthier households or those from urban areas) engage in business activities related to timber. Still, NTFPs remain an important source of income for the rural poor throughout the developing world, especially in Sub-Saharan Africa (Sacande and Parfondry, 2018). In a study of household use of natural resources in the Kat River Valley of South Africa, Shackleton and Shackleton (2016) noted that NTFPs share of total household income was about 20%. Detailed examination of the use and value of four NTFPs (wood fuel, wild fruits, edible herbs, and grass) revealed that in all instances, the poorest households used more of the resource per capita than the wealthy classes. Wealthy households typically have a greater number of income streams; thus, NTFPs represent a lower, but still important, proportion of total livelihood income. This is a clear indication that the poor tend to rely more on NTFPs than wealthier households.

One of the vital products obtained from agroforestry systems is NTFPs. The importance of NTFPs in sustaining people's livelihoods is widely accepted and is one of the two main driving forces behind donor support to NTFPs commercialization initiatives, the other being resource conservation. The increasing focus of development policy on poverty reduction has, however, brought with it a need for unequivocal and more differentiated evidence about whether and how much NTFPs commercialization can contribute to poverty reduction (Olawuyi and Odeyale, 2025).

Ethnobotanical researchers have so far brought on record over 500 plants significantly used by different tribes as food, dyes, tannins, drugs, narcotics, drinks, housing materials, weapons,

fibers, and medicine (Ganiyu, 2023). Non-Timber Forest Products (NTFPs) play an important role in the livelihoods of the rural poor, as a source of food, medicine, construction materials, and income. Earnings from NTFPs are often important as a complement to other income sources.

Hitherto, insecurity has posed a significant threat to many NTFPs traders due to the inaccessibility of the forest to obtain woods, honey wax, fruit, and other products. Furthermore, many households generate some of their income from selling forest products, often when farm production is not enough to provide self-sufficiency year-round. Income from NTFPs is often used to purchase seeds, hire labour for cultivation, or generate working capital for trading activities.

In view of these, the study sought to provide solutions to the following research questions.

- i. What are the socio-economic characteristics of the respondents in the study area?
- ii. What are the types of Non-Timber Forest Products (NTFPs) in the study area?
- iii. Who are the perceived users of Non-Timber Forest Products in the study area?
- iv. What is the level of utilisation of Non-Timber Forest Products in the study area?
- v. What are the constraints to the utilisation of Non-Timber Forest Products in the study area?

The broad objective of the study was to examine the factors affecting the utilization of Non-Timber Forest Products (NTFPs) in Igabi Local Government Area of Kaduna State.

The specific objectives of the study are to:

- i. describe the socio-economic characteristics of the respondents in the study area;
- ii. describe the types of Non-Timber Forest Products (NTFPs) in the study area;
- iii. identify the perceived users of Non-Timber Forest Products in the study area;
- iv. examine the level of utilization of Non-Timber Forest Products in the study area; and,
- v. identify the constraints to the utilization of Non-Timber Forest Products in the study area.

In many developing countries, including Nigeria, the majority of rural households and a large proportion of urban households depend on NTFPs to meet some parts of their nutritional, health, construction material, and income needs. In economic terms, NTFPs contribute substantially to national economic growth and international trade. This research provides empirical data that can be used to obtain information on factors affecting the utilisation of NTFPs in Igabi Local Government Area of Kaduna State. Furthermore, the findings of the research can be useful to policy makers, researchers, as well as households in the study area.

2. REVIEW OF LITERATURE

2.1 Forest and Its Associated Products

Forest is defined by FAO (2020) as land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds *in situ*. It does not include land that is predominantly under agricultural or urban land use. Oni *et al.* (2024); classified forest products into two: Timber, which constitutes the bulk of forest-based materials used for economic purposes, and the Non-Timber Forest Products (NTFPs). It was further emphasized that forest products earned large amounts of foreign exchange during the 1960s and 1970s, and the sector was ranked highest in employment generation. A prominent feature of the recent concern for forest conservation has been the fact that many of the traditional uses of forest products are not only important to large numbers of people, but they are also to a large extent consistent with the maintenance of the global biodiversity and carbon sequestration values of the forest itself (Ganiyu, 2023). Many of the systems meet the criteria for sustainability, whereas there are countless examples of modern agricultural and forestry systems that have been imposed upon forest lands and are neither sustainable nor meet the needs of the people who depend on the forests.

Decisions to change the use of forest land or intensify the management of forests have often been taken without due regard to the values that people are already deriving from the forest. Simple economic analysis may suggest that conversion to plantations or agriculture will yield greater utility than retention of the natural forest. But often, such calculations

ignore the need to provide substitute incomes and employment for forest-dependent people. Centre for International Forestry Research (CIFOR), Indonesia, recognises that there is already a vast body of scientific knowledge on non-timber forest products. Most of these knowledges are specific to localities, products, or groups of people. As a result, it does not allow us to predict future trends, nor does it allow us to elaborate a policy to promote sustainability or enhance the welfare of people dependent upon the products. Khain and Yeo-Chan (2019) stated that the value of forests was recognized primarily in terms of timber production at the national level. Later on, NTFPs became significant not only at the local level but also at the national level. There is growing evidence that NTFPs contribute significantly to rural livelihoods in developing countries, but are frequently underrepresented at the national level in terms of economic reporting because they are often part of the informal economy.

Forests contribute directly to diverse nutritious diets by serving as a source of wild foods, the most commonly consumed being vegetables, mushrooms, fruits, insects, and wild animals. According to Olawuyi *et al.* (2021), many plant resources are derived from the forest, which include: wrapping leaves, fruits, nuts, essential oils, mushrooms, medicinal products, dyes, herbs, resins, and even animal products such as honey and wild game. Other products may be produced with varying degrees of cultivation and domestication, either with a forest ecosystem or as part of a planted ecosystem such as an agro-forestry or forestry project. To this end, Olagunju *et al.* (2020) explained that agroforestry combines agriculture and forestry practices to create a more integrated, diverse, productive, profitable,

healthy, and sustainable land use system. This same unit satisfies the ecological needs as well as the socio-economic needs of the rural people.

Agroforestry science and its application in development by small holders throughout the tropics play an important role through the combination of forestry, agriculture, and pastoralism in achieving greater food security. Agroforestry systems were defined by Adelani *et al.* (2020) as land-use systems in which woody perennials (trees, shrubs, palms, bamboos) are deliberately used on the same land management unit as crops (woody or annual), animals, or both, in some form of spatial arrangement or temporal sequence. It further stressed that agroforestry is a land use system in which trees are grown in combination with crops, and where both ecological and economic interactions occur between the tree and non-tree components of the system. Duffy *et al.* (2021) reported that since food security also means both physical and economic access to food, agroforestry practices enable people to generate a significant amount of income and employment that will enhance the standard of living and enable them to purchase food they cannot or do not produce. Forest management in Nigeria has been largely focused on timber production ever since the beginning of organized forestry in 1906 (Akpan-Ebe, 2017).

However, in the 20th century, there has been increasing recognition of the fact that this approach to forest management is neither conducive to sustainable management of the forests, particularly of the tropical moist forest, nor is it in the best economic interest of the predominantly rural societies in the

tropics (Ganiyu, 2023). Trees provide products such as oil seeds, edible leaves, and fruits rich in important vitamins (Adejoba *et al.*, 2020). Forests provide products for different uses at household and industrial levels (Suleiman *et al.*, 2017). These products are grouped into timber and non-timber products (NTFPs). Although timber products are highly valued worldwide, the NTFPs, which play an important role in sustaining the livelihoods of communities living around forest areas, have been given minimal attention.

2.2 Non-Timber Forest Products and Their Classifications

Non-Timber Forest Products (NTFPs) refer to all tropical forest products, plants, and animals or parts thereof, other than industrial timber, which are (or can be) harvested for human use at the level of self- support or for commercial purposes (Adeniran and Adebayo, 2022). Ganiyu (2023) defined NTFPs as all vegetal and faunal products (other than wood) derived from forest and other wooded land and trees outside the forest, excluding industrial round wood, wood used for energy, horticultural, and livestock products. The term non-timber forest products came up because forest conservation agencies are shifting the attention of the population near forest areas from timber towards more environmentally friendly uses of the forest. On the other hand, Non-Wood Forest Products (NWFPs), according to FAO (2020) refers to goods derived from forests that are tangible and physical objects of biological origin other than wood. Non-timber forest products are very diverse and can be classified into different categories such as extractive, edible, pharmaceutical plants, bee products, as well as handicrafts and biofuels (Ganiyu, 2023). In Nigeria, rural

households depend on non-timber forest products collected from the forest or produced on farms for their nutritional needs.

Their diets are mainly made up of staple grains, and the main source of vitamins is NTFPs. About 80% of the population of the developing world relies on NTFPs for nutritional and health needs (Adejoba *et al.*, 2020). It is therefore paradoxical that despite their real and potential value, most NTFPs remain grouped as minor products of forests. Due to the relative scarcity of most of the NTFPs now as a result of deforestation, and the present awareness of their importance, more value is being added, which has made them highly marketable (Ganiyu, 2023). Research at a global scale has identified that rural households draw from a diversity of income sources and adopt a range of livelihood strategies in order to achieve and maintain a sustainable livelihood. These include the use of NTFPs both for household consumption and for sale. The contribution of forest products to poor people's livelihoods goes largely unrecorded in national statistics, as noted by Famuyide *et al.* (2013). This is due mainly to the role of forest products in subsistence economies and the informal sector, from which reliable and quantifiable data are inherently difficult to obtain.

There has been a longstanding interest in the commercialization of NTFPs from different disciplines, as, on the one hand, a vehicle for poverty alleviation, and on the other hand, a dynamic process with the risk of driving unsustainable resource use practices. Products that are sold on national and international markets gather more attention from government and development agencies because typically they can engage a lot of people, have a long market chain with a variety of stages,

skills required, actors, some degree of specialization, and perhaps value addition (Wynberg and van Niekerk, 2014).

Thus, there is a greater need to understand both the nature and dynamics of local markets, as well as foster environments and policies that will support them and the underlying sustainability of the NTFPs on which they are based (Shackleton and Pandey, 2014). The role of NTFPs, according to Suleiman *et al.* (2017), varies from one place to another depending on the economic and cultural contexts. In developed countries, for instance, NTFPs are usually used for cultural and recreational purposes, biodiversity conservation, and rural economic development. In the developing nations, NTFPs are considered a safety net that fills the gaps due to a shortfall in agricultural production or other forms of emergencies (Suleiman *et al.*, 2017). Ganiyu *et al.* (2024) indicated that the NTFPs-based activities, if prioritized by the government and other stakeholders, can be used to enhance the economic and social well-being of communities living in and around forestlands. Economic estimates of approximately USD 90 billion per annum have been set for NTFPs worldwide, and approximately one-third of the same is consumed in the local economy without entering the market (Peerzada *et al.*, 2022).

Most importantly, the NTFPs' contribution to rural households' income is significant in many countries globally. For example, Suleiman *et al.* (2017) submitted that the shares of households' income from NTFPs revenue are sometimes equal to or more than the school teachers' minimum wages in Central and West Africa. They further reported that the NTFPs traders from the Democratic Republic of Congo earned between USD 16 and

160 per week, while producers earned about 50–75% of that amount per week. Previous workers have observed that rural households in Nigeria derived up to 80% of their incomes from the sales of NTFPs (Jimoh *et al.*, 2013). In addition, Zaku *et al.* (2013) reported that over 70% of the country's households depend directly on fuelwood as their main source of energy, with daily consumption estimated at 27.5 million kg/day. Thus, harvesting and processing of NTFPs in many areas in the country have shifted from subsistence exploitation and sales at the local markets to international cross-boundary trade. For example, in the high forest zones of Eastern and Western Nigeria, harvesting of game meat and snails for sales are now a major income generating activities almost all year round (Momohjimoh *et al.*, 2022). While in the Savannah zone of Central and Northern Nigeria, honey, fuelwood, locust bean seeds, gum Arabic, and charcoal production generate lots of income for the rural households (Jimoh *et al.*, 2013). Similar contributions of NTFPs to rural wellbeing have been reported in other African countries, including Kenya and Tanzania (Schaafsma *et al.*, 2014).

2.2.1 Identification of Non-Timber Forest Products Usage in Nigeria

Olawuyi *et al.* (2021) identified various NTFPs in Oluwa Forest Reserve, Ondo State, viz: wrapping leaves, fuel wood, and kolanut. Wrapping leaves was observed to be mostly used by people residing in Oluwa Forest Reserve for special delicacies such as wrapping finger foods, bean pudding, and pap. The findings were corroborated by Olawuyi and Agbeja (2018), who stated that non-timber forest products in the broad sense are

any biological resources collected from the wild by rural people for direct consumption and income generation.

Similarly, mean ratings on frequency of utilization of NTFPs in Ikwerre by Sunday and Holly (2019) showed that fruits and vegetables, oils, spices and condiments, fodder and forages, nuts and seeds, medicinal plants, and wild animals were frequently used by the respondents. It was also found that fibres, stimulants, dye, gum, and resins were rarely used by the respondents.

2.2.2 Classification of Non-Timber Forest Products

Non-Timber Forest Products can be classified according to their uses. Ganiyu (2023) identified two broad groupings of NTFPs, viz.: (i) NTFPs of animal origin (game and other fauna products) and (ii) those of plant origin. They further stressed that product types can be categorized according to their presence in the market and their final use within each of these two broad groupings.

(i) NTFPs of animal origin

These are animal and animal products such as wild animals (squirrel, grasscutter, snail, fish, primates, duickers); animal products (whole part, fluid, elephant shrews), including insects and their products (honey)

(ii) NTFPs of plant origin

These include live plants and parts of plants. Live plants (Mushroom, locust bean, bush mango, shea butter, jatropha, lemon grass, kola nut, bitter kola, moringa); Parts of plants

(fresh, cut, dried or crushed), collected for specific uses; Specific parts of plants with multiple uses, not included under the previous group; Vegetable materials not elsewhere classified; Raw exudates and similar natural products.

(iii) Other classifications aside from the above broad classification, according to Ganiyu (2023), are:

(a) Prepared/manufactured products

Prepared (provisionally preserved) edible products; Prepared beverages; Prepared animal feed/fodder; Vegetable oils/fats; Animal fats/oils; Prepared waxes of animal or vegetable origin; Dying and colouring extracts of plant or animal origin; Phytopharmaceutical/medical extracts, galenicals, medicaments; Essential oils and their concentrates; Rosin and rosin derivatives; Processed gums and latex; Fuels and alcohols; Other basic organic/phytochemicals; Prepared bark products; Plaited products; Products of natural fibre; Tanned leather, fur and products of taxidermy; Miscellaneous products, manufactured from non-wood forest raw materials; Other non-wood plant and animal products.

(b) Services: Forest-based services

(c) End use classification Category: Sponges, chewing sticks, tooth cleaners (Bathing sponge, Chewing sponge and sticks, Tooth cleaners, Aphrodisiac, Fibres, bast fibres, jute, cloth; Basketry (fish traps, furniture, ornaments); Jute fibre; Wool; Cloth; Pestles; Foodstuffs; Wild fruit; Sweeteners; Neutralisers, Vegetables and mushrooms; Edible leaves; Water, beverages, wine; Intoxicants; Medicinal plants; Latex, rubbers, gums and

resins; Adulterants; Bird lime; Coagulants; Gum copal; Gutta percha; Decorative beads (Decorative seeds).

(d) Plant use classification as used by ethnobotanists are: Timber, special purpose wood, bark/leaves, edible fat, fruit, exudate, medicinal, no use (Ganiyu, 2023); aesthetic, construction, edible, firewood, hunting, animal habitat, intoxicant, medicinal, oils, poison, resins, shade, utility; no use, general purpose, NTFPs not in trade, NTFPs in trade; raw materials for commercial sale or processing, subsistence food or drinks, animal fodder, fuel, timber and fibres for tools and construction purposes, medicinals.

(e) Grouping of NWFPs according to feasibility criteria for forest inventory.

Table 1. NWFPs Grouping by Feasibility Criteria

NWFP group	Group description	Examples	Comments
1	Non-wood tree parts	Fruits, leaves, twigs	Can be related to tree dimensions
2	Products from 'tree-like' plants	Bamboo, rattan	Relatively easy measurable dimensions
3	Herbs and other plants	Medicinal and aromatic herbs	Some specific properties to be considered when incorporating into standard forest inventories

Source: The author(s) own work.

(f) NTFP classification based on life form and plant parts:

Animals - No sub-division; Plants - Perennial species and products; Trees (wood, bark), Non-trees: Climbers (lianas,

rattans); non-climbers (palms, bamboo, epiphytes, shrubs); Ephemeral products from perennial species (fruit, fluff from seed cases, nuts/seeds, oil seeds, apical buds, leaves; Ephemeral species (herbs, mushrooms, wild honey).

(g) Provisional categorization of NTFPs according to management characteristics: (a) Supply characteristics (i) Production characteristics (degree of ecological sustainability of extraction, ease of vegetative or regenerative propagation, ease of cultivation under different environmental conditions, ease of stimulating production by technological means; (ii) Organization of production (access to NTFPs resources, gender division of production responsibilities (b) Demand characteristics (i) Opportunistically collected products for subsistence consumption not related to main household needs (e.g. snack foods); (ii) Occasionally collected products purposively collected in times of emergency (e.g. medicinal products, emergency foods during droughts), products for regular household consumption, easy to substitute with products of other species (e.g. various food products, fodder, fuelwood); (iii) Difficult to substitute with products of other species (e.g. preferred forest foods); (iv) Products for sale at various market types (local, regional/national, international), high degree of competition with substitutes, low degree of competition with substitutes; (v) Products demanded in manufactured form, and which can be locally produced giving them added value (e.g. palm sugar, liquors).

3. RESEARCH METHODOLOGY

The study was conducted in Igabi Local Government Area of Kaduna state. It is bounded in the East by Kaduna North L.G.A; in the South by Chikun Local Government Area, and in the West by Kaduna South Local Government Area. Igabi LGA covers an area of about 1,864 km² and lies between latitudes 10° 25' 28" N and 11° 35' 53" N and longitudes 7° 21' 49" E and 7° 50'00" E. (Sunday *et al.*, 2020). The people of Igabi are predominantly Adara by tribe and speak two other languages, viz: Hausa and Gbagyi. The climatic condition of the area is characterized by a hot and wet season in the tropical areas, with November to January as the harmattan period (Sunday *et al.*, 2020). It has its Headquarters in Turunku. It consists of the following wards: Kerawa, Rigachikun, Gadan Gayah, Kwarau, Zangon Aya, Birnin Yero, Sabon Birni Daji, Turunku, Afaka, Gwaraji, Rigasa, and Igabi. The main occupations of the people are: trading, farming, artisans, and Civil servants. The people of Igabi LGA of Kaduna State plant crops such as maize, beans, groundnut, rice, millet, sorghum, yam, cassava, and rear animals which include ram, sheep, goat, poultry, and cattle.



Figure 1. Map of Kaduna State showing Igabi Local Government Area

3.1 Sampling Techniques

Multistage sampling techniques were used for the study. The procedure involved three stages. The first stage involved purposive selection of four wards, out of the 12 wards in the Local Government, viz.: Gadan Gaya, Afaka, Sabon Birni Daji, and Birnin Yero. The second stage was a purposive selection of two (2) villages from each of the four wards. The final stage was random selection of ten (10) rural dwellers from each village, making a total of eighty (80) respondents used for the study, i.e., $4 \times 2 \times 10 = 80$.

3.2 Method of Data Collection

Primary data was used to elicit information through a well-structured questionnaire, while secondary information was sourced from journals, Conference proceedings, textbooks, magazine and past projects related to the topic.

3.3 Analytical Technique

The following analytical tools were used to achieve the stated objectives.

- i. Simple descriptive statistics were used to achieve objectives (i), (ii), (iii), and (v) of the study.
- ii. Mean score through the Likert-type scale was used to achieve objective (iv).

3.4 Descriptive Statistics

Descriptive statistics such as frequency counts and percentages were used to describe the basic features of the data in the study area. Descriptive statistics are typically distinguished from inferential statistics, describing what is or what the data shows.

3.5 Likert scale

This involved the use of a 3-point Likert-type scale, which was used to achieve objective (iv) of the study. To examine the level of utilisation of NTFPs in the study area (iv), questions were asked on five (5) forms of utilization identified in the study area, and the response of yes or no was used. The questions were captured on a 3-point Likert-type scale of rarely, sometimes, and often, with scores of 1,2, and 3, respectively. A summation of scores for each respondent was determined, and the point of average and above was accepted as frequently used.

4. RESULTS AND DISCUSSION

4.1 Socio economic characteristics of the rural dwellers

4.1.1 Age of the Rural Dwellers

The age distribution of the respondents shows that 43.8% are between 36 and 45 years. This is followed by those in the age range of 25 years and below, 26 – 35 years, and 46 years and above. These represent 22.5%, 21.3%, 6.3% of the respondents, respectively. This means that the respondents are still within the youthful age. This corroborates the submission of Ganiyu *et al.* (2023) that users of NTFPs in Kwara State, Nigeria, are in their active working age.

Table 2. Distribution of the Respondents by Age

Age (years)	Frequency	Percentage
≤ 25	18	22.5
26 - 35	17	21.3
36 - 45	35	43.8
46 - 55	5	6.3
> 55	5	6.3
Total	80	100

Source: Field survey, 2025

4.1.2 Marital Status of the Rural Dwellers

Table 3 shows that 43.8% of the respondents were married, while 26.3% of the sampled respondents were single. Only 17.5% and 12.0% are divorced and widows respectively. This implied that most of the respondents are married, implying that marital status influences the utilization of NTFPs in the study area. This is in line with the submission by Ganiyu *et al.* (2016) on the "Socio-economic factors influencing the adoption of forest conservation Practices in Birnin-Gwari local government of Kaduna State," where 75% of the farmers were married.

Table 3. Distribution of the Rural Dwellers by Marital Status

Marital Status	Frequency	Percentage
Single	21	26.3
Married	35	43.8
Divorce	14	17.5
Widow	10	12.5
Total	80	100

Source: Field Survey, 2025

4.1.3 Sex of Rural Dwellers

Table 4 revealed that most (55%) of the rural dwellers are males, while 45% are females. This implies that males are mostly engaged in NTFPs utilisation in the study area. Thus, NTFPs collection from the forest and their processing will be enhanced while the availability is guaranteed for Sustainable use. This is consistent with Olawuyi and Odeyale (2025), who opined that 58.4% of NTFPs traders in Ibadan, Oyo State, are males.

Table 4. Distribution of the Respondents by Sex

Sex	Frequency	Percentage
Female	36	45.0
Male	44	55.0
Total	80	100

Source: Field Survey, 2025

4.1.4 Household Size of Rural Dwellers

The household distribution of respondents shows that 38.8% of them had a household size that range from 11 - 15 members. This is closely followed by 37.5% of the respondents who had a household size of 6 - 10 members. Only 12.5% and 11.3% of the respondents had a household size of 1 – 5 members and above 15 members respectively, implying that NTFPs utilization increases with an increase in household size. The result is consistent with the submission by Olagunju *et. al.* (2020), where

rural women involved in agroforestry practices in Kaduna State had 6 - 10 household members.

Table 5. Distribution of the Respondents by Household Size

Household size	Frequency	Percentage
1 – 5	10	12.5
6 – 10	30	37.5
11 – 15	31	38.8
> 15	9	11.3
Total	80	100

Source: Field Survey, 2025

4.1.5 Educational Level of the Rural Dwellers

The educational distribution of the respondents shows that the majority (80.0%) had secondary education. Only 7.5% each of the respondents had primary education and tertiary education, while 5% had non-formal education. This implies that respondents in the study area will readily accept technology that can affect their productive capacity positively when given the opportunity because they can read and write and thus will easily have access to information on NTFPs utilisation. This conforms to Bankole *et.al.* (2020), where 63% of farm youth in rural communities of the Federal Capital Territory were users of social media.

Table 6. Distribution of the Respondents by Educational Level

Education level	Frequency	Percentage
Non-formal	4	5.0
Primary	6	7.5
Secondary	64	80.0
Tertiary	6	7.5
Total	80	100

Source: Field Survey, 2025.

4.1.6 Occupation of the Rural Dwellers

Table 7 shows that 45.0% of the respondents are traders who generate income from NTFPs trading activities in the study area. This is followed by 25.0%, 17.5%, and 12.5% who are farmers, artisans, and civil servants, respectively. This implies that the users of NTFPs in the study area are traders. This finding is in line with that of Suleiman *et. al.* (2017), where it was posited that farming was the main occupation of the households in a study on NTFPs and their contribution to household income around Falgore game reserve in Kano, Nigeria.

Table 7. Distribution of Rural Dwellers by Occupation

Occupation	Frequency	Percentage
Trading	36	45.0
Artisans	14	17.5
Farming	20	25.0
Civil servant	10	12.5
Total	80	100

Source: Field Survey, 2025

4.1.7 Membership of Association

The association membership in Table 8 revealed that about half (48.8%) of the respondents are members of a religious group, while 36.3% belongs to a cooperative society. Only 15.0% of the respondents belong to a work group association. This implies that most of the rural dwellers preferred religious groups than other associations in the study area, because participation in an association gives them access to loans and capital to finance their NTFPs trade. This finding agrees with the assessment of Shea fruit processors in Niger State, Nigeria,

by Solomon *et.al.* (2018), where 94.7% of the processors were members of Cooperative societies.

Table 8. Distribution of Respondents based on Association Membership

Association	Frequency	Percentage
Religious group	39	48.8
Work group	12	15.0
Cooperative Society	29	36.3
Total	80	100

Source: Field Survey, 2025

4.1.8 Sources of Capital

The rural dwellers' sources of capital in Table 9 show that about half (48.8%) of the sampled respondents acquire their capital from personal savings, 26.3% of the respondents sourced their capital from family members. Only 10.0%, 8.8%, and 6.3% of the respondents sourced their capital from friends, cooperative society and bank, respectively. This implies that most of the respondents are petty traders since personal savings are their main source of funds.

Table 9. Distribution of Respondents by Sources of Capital

Capital Sources	Frequency	Percentage
Personal saving	39	48.8
Family	21	26.3
Friends	8	10.0
Cooperative society	7	8.8
Bank	5	6.3
Total	80	100

Sources: Field Survey, 2025.

4.1.9 Farm Size of Rural Dwellers

The farm size of rural dwellers in Table 10 revealed that 38.8%, 33.8%, 15%, and 12.5% of them had farm size of 1 – 4, < 1, 5 – 8, and > 8 hectares, respectively. This means that most of the

respondents are small holders. This agrees with the submissions by Suleiman *et. al.* (2017), on non-timber forest products and their contribution to households' income around Falgore game reserves, Kano State, Nigeria

Table 10. Distribution of the Rural Dwellers by Farm Size

Farm Size	Frequency	Percentage
< 1	27	33.8
1 – 4	31	38.8
5 – 8	12	15
>8	10	12.5
Total	80	100

Sources: Field Survey, 2025

4.2 NTFPs Utilisation Experience by Rural Dwellers

Table 11 shows that most (52.5%) of the respondents had between 1-5 years of experience in NTFPs either as producers, collectors, traders and users in the study area. Only 25% and 22.5% and of the total respondents have between 6 and 10 years of experience, and only 22.5% of the respondents had 6 – 10 years and above 10 years of experience, respectively.

Table 11. Distribution of Respondents by Years of Utilisation Experience

Years of experience	Frequency	Percentage
1 – 5	42	52.5
6 – 10	20	25.0
>10	18	22.5
Total	80	100

Sources: Field Survey, 2025

4.2.1 Sources of Labour

The study revealed that most (50.0%) of the rural dwellers sourced the labour for NTFPs production or trading from the

family, while 37.5% make use of hired labour. Only 12.5% used mechanical labour for NTFPs processing in the study area.

Table 12. Distribution of Respondents by Sources of Labour

Labor sources	Frequency	Percentage
Family	40	50.0
Hired	30	37.5
Mechanical	10	12.5
Total	80	100

Source: Field Survey, 2025

4.2.2 Types of Non-Timber Forest Products (NTFPs) in the study area

Table 13 showed the types of non-timber forest products commonly used in the study area. From the table, vegetables were ranked 1st in the list of identified NTFPs in the study area. This was followed by fish (2nd), Honey and beeswax (3rd), medicinal plant (4th), nuts and fruits (5th), mushrooms (6th), snail(7th), and bush meat (8th). This means that vegetables are the commonly used NTFPs in the study area.

Table 13. Distribution of Respondents by the Types of NTFPs

NTFPs	Frequency*	Percentage	Rank
Mushroom	11	3.6	6 th
Nuts and fruits	17	5.6	5 th
Vegetables	80	26.4	1 st
Honey and beeswax	60	19.8	3 rd
Fish	70	23.1	2 nd
Bush meat	6	2.0	8 th
Medicinal plant	50	16.5	4 th
Snail	9	3.0	7 th

Source: Field Survey, 2025

* Multiple responses

4.2.3 Perceived Users of NTFPs

The perceived users of NTFPs were depicted in Table 14. From the table, 33.2% of households use NTFPs on a daily basis, while 29.6%, 11.5%, 9.7%, 9.3% and 6.6% of trade-medical practitioners, pharmaceutical industries, manufacturers, traders, and researchers respectively were also identified as perceived users of NTFPs in the study area.

Table 14. Distribution of the Respondents based on Users of NTFPs

Users of NTFPs	Frequency *	Percentage
Households	75	33.2
Traders	21	9.3
Researchers	15	6.6
Pharmaceutical industries	26	11.5
Trado medical practitioner	67	29.6
Manufacturers	22	9.7
Total	226	100

Source: Field survey 2025.

* Multiple responses

4.2.4 Level of Utilisation of Non-Timber Forest Products (NTFPs)

To determine the level of utilization of accessible NTFPs in the study area, a mean score using a 3-point Likert-type scale of rarely, sometimes, and often, with scores of 1,2, and 3, respectively was used. A summation of scores for each respondent was determined, and the point of average (2.3) and above was accepted as Frequently Used (FU) NTFPs while points below the aggregate score were regarded as Not Frequently Used (NF). As Table 15 shows, there is a high index score with respect to utilization of NTFPs as spices and condiments (2.9), food (2.8), medicinal herbs (2.7), sweetener (honey) (2.6), and beverages (2.5) by the rural dwellers in the study area. Since 5 utilisation statements were significant (62.5%) out of the 8 statements, it implies that the rural dwellers

in the study area frequently utilized NTFPs on a daily basis to meet their nutritional needs. This is in line with the findings of Sunday and Holly (2019) among the Ikwerre farmers, Rivers State, Nigeria.

Table 15. Mean Response of Respondents on the Level of Utilisation of NTFPs

NTFPs Utilisation Statement	Weighted Score			Total (N=80)	Mean	Decision
1. Used as Fruits	3	2	1	109	1.4	NF
2. Used as food	4	21	55	222	2.8*	FU
3. Used as Meat	62	18	-	121	1.5	NF
4. As Spices and condiments	5	31	44	231	2.9*	FU
5. As Medicinal herbs	71	9	-	215	2.7*	FU
6. As Stimulants	59	17	4	138	1.7	NF
7. As Sweetener (Honey)	9	40	31	211	2.6*	FU
8. As Beverages	51	29	-	196	2.5*	FU
Aggregate Score	37	42	1		2.3*	

Note: ≥ 2.3 = Frequently Used (FU); < 2.3 = Not Frequent (NF).

Source: Field Survey, 2025.

2.4.5 Constraints Faced in the Utilisation of NTFPs by Rural Dwellers

Table 16 showed the constraints faced by the respondents in the utilisation of NTFPs in the study area. From the Table, insecurity and kidnapping ranked 1st among the list of constraints. This was followed by inadequate storage facilities that leads to infestation of NTFPs with pest/diseases, lack of awareness on product use, availability, fluctuation of prices of NTFPs, affordability, inadequate manpower for NTFPs collection/processing, unstable demand and access to capital, inadequate transport for conveying NTFPs from the forest and

seasonality of NTFPs ranked 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th and 11th respectively in the study area.

Table 16. Distribution of respondents by Constraints faced in NTFPs utilization

Constraints	Frequency*	Percentage	Rank
Inadequate transport	21	5.1	10 th
Access to capital	32	7.7	8 th
Seasonality	17	4.1	11 th
Unstable demand for products	32	7.7	8 th
Price fluctuation	42	10.1	5 th
Inadequate storage	57	13.7	2 nd
Lack of awareness on product use	45	10.8	3 rd
Inadequate man power	33	8.0	7 th
Affordability	34	8.2	6 th
Availability	43	10.4	4 th
Insecurity/kidnapping	59	14.2	1 st

Source: Field survey, 2025; *415

*Multiple responses allowed.

5. CONCLUSION AND RECOMMENDATIONS

The result of the study showed that the respondents are in the young age, most (43.8%) of whom are married (43.8%) with a family size of 11 - 15 and had secondary education (80%). Furthermore, most (45.0%) of the respondents are traders, who associate with a religious group (48.8%) and acquire their capital from personal savings (48.7%), and mostly (50.0%) use family labour for NTFPs collection, processing, and trading. The study observed that households (33.2%) constituted the main users of NTFPs that frequently (62.5%) utilize vegetables (1st) daily in the study area. However, the issue of insecurity/kidnapping militates against effective accessibility and utilization of NTFPs in the study area.

In light of the above, the following recommendations are presented:

- i. The government should provide adequate security through the provision of proper arms and ammunition to forest guards and other security personnel to tackle the problems of insecurity in the study area, which hinders NTFPs collection and its subsequent utilisation.
- ii. There should be dissemination of information by extension agents on adequate and affordable storage facilities for the rural dwellers that will minimize infestation of pests and diseases.
- iii. There should be a price checking mechanism put in place by marketers to address the issue of price fluctuation, which will promote the level of usage of NTFPs in the study area.
- iv. The government should provide loans with a low interest rate to beekeeping farmers to promote large-scale production.

REFERENCES

- Adelani, D. O., Oladele, O. N., Amos, O. S., & Maikano, S. (2020). Agroforestry Contribution to Food Security Sustenance. In: Ogunsanwo, O.Y., Adewole, N.A., Oni, P.I. and Idumah, F. O. (Eds). *Forestry Development in Nigeria: Fifty Years of Interventions and Advocacy*. Proceedings of the 42nd Annual Conference of the Forestry Association of Nigeria, 370 – 380.
- Adeniran, O. A., & Adebayo, O. O. (2022). Effects of Non-Timber Forest Products Consumption on Household Food Security Level in Oyo State, Nigeria. *European Journal of Food Science and Technology*, 10(2), 35-45.
- Adejoba, O. R., Adekoya, O. O., Alagbada, O. R., & Anyim, C. C. (2020). Survey of Non-Timber and Non-Wood Forest Products in Use in Ishiagu LGA of Ebonyi State, Nigeria. In: Ogunsanwo, O.Y., Adewole, N.A., Oni, P.I. and Idumah, F. O. (Eds). *Forestry Development in Nigeria: Fifty years of Interventions and Advocacy*. Proceedings of the 42nd Annual Conference of the Forestry Association of Nigeria, 989 – 1003.
- Akpan-Ebe, I. N. (2017). Reforestation in Nigeria: History, Current Practice and Future Perspectives. *Refrasta*, 3, 105 –115. DOI: <https://dx.doi.org/10.21750/REFOR.3.09.33>
- Anokye, R. & G. Adu. (2014). The status of non-timber forest products (NTFPs) development in Nigeria. *J. Environ. Sci. Comput. Sci. Eng. Technol.* 3(1):144–155.

- Bankole, O., Abdulkarim, S. B., Ganiyu, L., Suleiman, R. O., Emmanuel, J. O., Akanni, R., Okechalu, O. S., Lapkat, L. G. & Likita, M. S. (2020). Constraints and Perception of Social Media Usage among Farm Youth in Rural Communities of Federal Capital Territory (FCT), Nigeria. *Nigeria Journal of Agricultural Extension*, 21(1) 55 – 61.
- Duffy, C., Toth, G. G., Hagan, R. P., McKeown, P. C., Rahman, S. A., Widyaningsih, Y., Sunderland, T. C., & Spillane, C. (2021). Agroforestry Contributions to Smallholder Farmer Food Security in Indonesia. *Agroforestry Systems*, 95, 1109 – 1124. Springer International Publishing. <https://doi.org/10.1007/s10457-021-00632-8>
- Famuyide, O. O., Adebayo, O., Bolaji-Olutunji, K. A., Awe, F., Owoeye, A. Y., Awodele, D. O., & Adeyemo, A. (2013). Assessment and Sustainable Management of Non-Timber Forest Products Used as Food and Medicine among Urban Dwellers in Oyo State, Nigeria. *Journal of Horticulture and Forestry*. 5(11), 186 – 193. DOI 10.5897/JHF2013.0324.
- FAO (2015). Global Forest Resources Assessment 2015—Desk Reference; Food and Agriculture Organization of the United Nations: Rome, Italy, ISBN 9789251088265.
- Food and Agricultural Organization (2020). Global Forest Resources Assessment 2020. Forestry Department, FAO, Rome. <http://www.fao.org/forest-resources-assessment/en/>
- Ganiyu, L., Babasanya, B., Abdulkareem, S. B., Fadele, O. K., Suleiman, R. T., Oladele, A. O, Haruna, Z. A., & Odey, B.

- O. (2024). Effects of Non-Timber Forest Products (NTFPs) on the livelihood of users in Kwara and Niger States, Nigeria. *Journal of Forestry Research and Management*. Forestry Research Institute of Nigeria. 21(2), 117 - 125. ISSN 01898418. www.jfrm.org.ng
- Ganiyu, L. (2023). Effects of the Utilization of Non-Timber Forest Products on the Livelihood of Users in Kwara and Niger State, Nigeria. *PhD Unpublished Thesis*. Department of Agricultural Extension and Rural Development. Ahmadu Bello University, Zaria, 1 - 165.
- Ganiyu, L., Akinola, M. O., Saddiq, N. M., & Egwuma, H. (2023). Factors influencing the utilisation of Non-Timber Forest Products among users in Kwara State, Nigeria. *Journal of Community & Communication Research*, 8(2), 232 - 241.
- Ganiyu, L., Abdulkareem, S. B., Babasanya, B., Oladele, G. O., Yahaya, U. F., Olumuyiwa, S., & Olowohunwa, J. I. (2016). Socio-Economic Factors Influencing the Adoption of Social Forestry Practices by Farmers in Birnin Gwari Local Government Area of Kaduna State. In Madukwe, M. C., Igbokwe, E. M., Garforth, C. J., Dube, M. A. and Akinbile, L. A. (Eds.). *Repositioning Agricultural Extension for Sustainable Agricultural Development and National Economic Regeneration. Proceedings of the 21st Annual National Conference of the Agricultural Extension Society of Nigeria*. University of Ibadan, Ibadan, Nigeria. April 16th - 21st, 2016. Pp. 193 - 200.

- Jimoh, S. O., Amusa, T. O., & Azeez, I. O. (2013). Population Distribution and Threats to Sustainable Management of Selected Non-Timber Forest Products in Tropical Lowland Rainforests of Southwestern Nigeria. *Journal of Forest Resources*, 24(1), 75 – 82.
- Khaing, T. S., & Yeo-Chang, Y. (2019). Livelihood Dependency on Non-Timber Forest Products: Implication for REDD +Forest, 10, 427.doi 10.3390/f10050427
- Mamo, G., E. Sjaastad, & P. Vedeld. (2017). Economic dependence on forest resources: A case from Dendi District, Ethiopia. *Forest Policy Econ.* 9:916–927.
- Momohjimoh, Y., Alao, A. O., & Bolarinwa, S. O. (2022). Economic Analysis of Non-Timber Forest Products to Rural Poverty Alleviation in Oriire Local Government Area of Oyo State. *African Scholar Journal of Biotechnology and Agricultural Research (JBAR-1)*, 26(1), 185 – 202.
- Mutamba, M. (2018). Farming or Foraging? Rural Livelihoods in Kabompo and Mufulira Districts of Zambia. In *Managing the Miombo Woodlands of Southern Africa: Policies, Incentives and Options for the Rural Poor*, Technical Annexes No. 53618.2. Washington, D.C.: The World Bank, Sustainable Development Department, Environmental, and Natural Resources Management Unit, Africa Region.
- Olagunju, O. E., Oluyaire, B., Ganiyu, L., Olagunju, O. S., Olorukooba, M. M., Olafemi, S. O., & Tor, L. G. (2020). Knowledge and Attitude of Rural Women

towards Agroforestry Practices in Kaduna State. *Asian Journal of Agricultural Extension, Economics and Sociology*, 38(12), 11 – 21. DOI: 10.9734/AJAEES/2020/v38i1230482.

Olawuyi, E. B. & Odeyale, O. C. (2025). Non-Timber Forest Products Trading and Rural Livelihood Sustenance in Ibadan, Oyo State, Nigeria. *Journal of Integrated Science*, 5(2), 159 – 182.

Olawuyi E. B., & Agbeja B. O. (2018). Socio-Economic Impact of Gazetted Forest Reserves on Forest Dependent Communities in Edo State, Nigeria. *Commonwealth Forestry Association (CFA) Conference Proceedings*, 2, 51-60.

Olawuyi, E. B., Odeyale, O. C., Ugege, B. H., & Adenuga, D. A. (2021). Socio-Economic Analysis of Non-Timber Forest Products: A Case of Wrapping Leaves in Oluwa Forest Reserve, Ondo State, Nigeria. *Agro Science*, 20(2), 9-13. DOI: <https://dx.doi.org/10.4314/as.v20i2.2>

Oni, B. O., Ganiyu, L., Abdulkareem, S. B., Suleiman, R. T., Ademola, T. O., Obekpa, N. B., Amila, J. J. & Omoleye, S. O. (2024). Analysis of Non-Timber Forest Products (NTFPs) Utilisation among Households in Chikun Local Government Area of Kaduna State. *Nigerian Journal of Scientific Research*, 23(1), 43 – 48.

Peerzada, I. A., Islam, M. A., Chamberlain, J., Dhyani, S., Reddy, M., & Saha, S. (2022). Potential of NTFP Based Bioeconomy in Livelihood Security and Income In

-
- equality Mitigation in Kashmir Himalayas. *Sustainability*, 14, 2281. <https://doi.org/10.3390/su14042281>
- Sacande, M. & Parfondry, M. (2018). *Non-timber forest products: from restoration to income generation*. Rome, FAO. 40 pp. License: CC BY-NC-SA 3.0 IGO.
- Sarki, S. H., Gyuk, P. M., Kassimu, A. A., Daniel, I. H., & Kure, N. (2020). Determination of activity concentration level of ^{226}Ra , ^{40}K and ^{232}Th in soil within Igabi Local Government Area of Kaduna State, Nigeria. *Science World Journal*, 15(1), 113 – 1188.
- Schaafsma, M., Morse-Jones, S., Posen, P., Swetnam, R. D., Balmford, A., Bateman, I. J., & Geoffrey, V. (2014). The Importance of Local Forest Benefits: Economic Valuation of Non-Timber Forest Products in the Eastern Arc Mountains in Tanzania. *Global Environmental Change*, 24, 295–305.
- Shackleton C. M., & Pandey A. K. (2014). Positioning Non-Timber Forest Products on the Right Development Agenda. *Forest Policy and Economics*, 38, 1-7.
- Shackleton, C. M. & S.E. Shackleton. (2016). The Importance of Non-timber Forest Products in Rural Livelihood Security and as Safety Net: A Review of Evidence from South Africa. *South African Journal of Science* 100: 658-64.
- Solomon, O., Gold, I. L., & Igene, L. (2018). Assessment of Shea Fruit Processors in Niger State for Improved Livelihood and Entrepreneurial Activities. *Global Journal of Pure and*

Applied Sciences, 24, 17 - 23. DOI:
<https://dx.doi.org/10.4314/gjpas.v24i1.3>.

Suleiman, M. S., Wasonga, V. O., Mbau, J. S., Suleiman, A., & Elhadi, Y. A. (2017). Non-Timber Forest Products and their Contribution to Household's Income around Falgore Game Reserve in Kano. *Ecology Process*, 6(1), 23.

Sunday, B., & Holly, L. D. (2019). Non-Timber Forest Products Utilization among the Ikwerre Farmers of Rivers State: Implications for Community Development Education. *International Journal of Agriculture and Earth Science*, 5(1), 61 - 71.

Wynberg, R., & Van Niekerk, J. (2014). Global Ambitions and Local Realities: Achieving Equity and Sustainability in Two High-Value Natural Product Trade Chains. *Forests, Trees and Livelihoods*, 1- 9. DOI: 10.1080/14728028.2013.868708.

Zaku, S. G., Tukur, A. A., Kabir, A., & Jimento, I. G. (2013). Wood Fuel Consumption in Nigeria and the Energy Ladder: A Review of Fuelwood Use in Kaduna State. *Journal of Petroleum Technology*, 4(5), 85-89.