



Ethnobotanical Survey of the Wild Edible Food Plants Consumption among Local Communities in Kano State, North-Western, Nigeria

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ABSTRACT

Ethnobotanical survey was carried out to document the wild edible food plants consumed by local people in ten randomly selected local government areas of Kano state, North-Western Nigeria. Data were gathered through oral interviews with local peoples, farmers and herbalists and their responses were recorded in a prepiloted forms which were later analysed, collated and tabulated to form the scientific, common and local names, families, parts used, preparation (whether eaten raw, boiled or cooked), and season for collection. Results obtained showed that twenty eight species of plants were cited by the respondents in the area as being gathered from the wild. Ten species of plants were mentioned more frequently than others based on the respondents consensus, these are *Adansonia digitata*, *parkia biglobosa*, *Leptadenia hastata*, *Cassia tora*, *Mangifera indica*, *Vitalleria paradoxa*, *Occimum gratissimum*, *Momordica balsamina* and *Corchorus oltorus*. Majority of the respondents do not have formal education and most of the plants cited here are facing the threats of extinction through agriculture and other deforestation related activities.

Keywords: Ethnobotanical survey, wild edible plants, local communities, Kano

1. INTRODUCTION

The Kano state located in the northwestern Nigeria has a rich culture of traditional uses of wild edible food plants which has the potential to improve the socio-economic development of the people in the area. The knowledge of wild edible food plants is part of an important strategy that is now being linked to the conservation of biodiversity, and at the same time the bettering of the quality of life of poor rural communities and geographically it is located between latitude 10° 25' N to 13° 53' N and longitude 7° 43' to 10° 35' E, in the Sudan Savannah zone of Nigeria was the main study area. It is a typical semi-arid area, with mean annual rainfall of 750mm. The mean annual temperature of the area is about 26°C but [1] reported that mean monthly values range between 21°C in the coolest months (December and January) and 31°C in the hottest months (April and may). The combination of evaporation and transpiration is very high in the region and is reported to be about 1772mm per annum, (higher than precipitation). The most important single source of domestic energy in the study area is wood fuel [2].

The rapid and indiscriminate clearing of forests for Agricultural land has led to the depletion of the naturally occurring reservoirs of germplasm for medicinal, forests and crop plants [3]. The rapid loss of biological diversity, with extinction of 30 to 300 species per day [4] has initiated a new attitude towards the exploration of natural resources. In Nigeria deforestation have recently caused a severe reduction of gathering of wild species of food plants and this in turn results in a loss of local knowledge about wild food and the local environment. This loss

is serious for several reasons, among which are: gathering and use of wild plants is part of the cultural history of a community [5] wild food species are part of people's local identity and traditions [6]; dishes made of wild foods are often identified as functional foods (foods with medicinal properties) [6],[7]; and wild foods can contribute to overcoming periods of food shortage [6]. The reasons stated above make the preservation of local knowledge of gathering and use of wild food plants crucial.

There are few scientific publications, which aim to contribute to the preservation of wild food uses and even if they are available, these publications may lack information about the origin, actuality, geographical distribution or cultural significance of the identified uses and species. Since wild food knowledge is context specific, in the sense that very different wild food species are used in distinct community and uses of one and the same species can differ widely from one community to another [8], this lack of information weighs heavily. Instead, detailed and systematic scientific investigation is needed for understanding and preserving wild food uses in various communities. The aim of this study is to explore wild food uses by farmers in the community to identify the culinary most relevant species and to make out local classification schemes as well as contributing to the preservation of wild edible food plants.

2. MATERIALS AND METHODS

For the purpose of this review data were collected through oral interview with farmers, herbalists, and local peoples in ten



randomly selected local government areas of Kano state in North-Western Nigeria, and their responses were recorded in the semi-structured questionnaire. The ten (10) selected local governments represent fairly well the ecological, topographical and geographical attributes of the entire state. Farmers, herbalists, and local people were interviewed within their own localities either at home or in the farm. The study was conducted between January to November 2010 to allow full study and observation of both dry and rainy season plants. Some of the questions asked during the interview were age, sex, years of experience (in the case of herbalists) and tribe. The interviews were carried out in vernacular language (Hausa). Samples of all the plants cited were collected for identification and authentication and were deposited at the Herbarium of the Biological Sciences Department of Ahmadu Bello University, Zaria, Nigeria. The names of the plant part(s) used as well as season for collection were recorded. Information gathered from the data form were analyzed, collated and tabulated to form botanical/scientific names, common names, families, part of the plant used, preparation, cultivation and season for collection or gathering.

3. RESULTS AND DISCUSSION

Classification

The 28 species of plants belongs to 19 different families and among them *Palmae* and *Moraceae* (3 species each) possess the highest number followed by *Anacardiaceae*, *Asclepiadaceae*, *Caesalpiniaceae* and *Rhamnaceae* (2 species each). The rest of the 14 families possess one representative member only (Table 1)

Parts gathered (leaf, fruit, flower and seed)

Morphological groups frequently gathered includes: leaves (6 species), fruits (17 species) and flowers (1 species). However, in some plant species more than one parts are gathered as in the case of black plum (*Vitex doniana*) and baobab (*Adansonia digitata*) both the leaves and fruits are gathered, for shea butter (*Vitalleria paradoxa*) and locust bean (*Parkia biglobosa*) both fruit and seeds are used separately (Table 1)

Culinary Use Value and the preparation of the most common wild food species (Local Uses in Food Preparation)

The wild edible food plants are gathered in close proximity of the living communities, while for some few ones, the consumers have to travel far to get it. These plant parts which includes leaf, fruits and seeds are most often boiled, or use in soup, porridge or eaten raw. The leaves of these species are

mainly (almost) use in making soup preparation, boiled or use in form of porridge. The seeds of locust bean (*Parkia biglobosa*) are used in making local seasoning (dadawa) which are used in several traditional soup preparations, mango fruit (*Mangifera indica*) are used in making a local stew (taushe) in the absence of or in place of pumpkin. The fruit of black plum (*Vitex doniana*) are used in making local sweet and in preparation of sweet taste drink (local honey, comparable to honey) in Hausa language. The leaves of *Occimum gratissimum* are mainly used as a condiment in preparation of various local soups. Likewise, the leaves of foetid cassia (*cassia tora*) are used in making soup, porridge as well as boiled as salad (with groundnut cake). Baobab (*Adansonia digitata*) and jews mallow/jute (*Corchorus olitorus*) are used in making local soup only and the leaves of Tears (*Leptadenia hastata*) black plum (*Vitex doniana*) and *Ficus thoningi* are used in making salad (with groundnut cake) while balsam apple leaves (*Momordica balsamina*) are used mainly in the preparation of a local porridge. The seeds of Shea butter plant (*Vitalleria paradoxa*) are pounded heavily to extract thick white solid oil used in eating various traditional dishes similar to ground nut oil and palm oil usage.

Culinary Use Value

The most commonly used species are baobab (*Adansonia digitata*), tears (*Leptadenia hastata*), locust bean (*Parkia biglobosa*), mango (*Mangifera indica*), foetid cassia (*Cassia tora*), shea butter (*Vitalleria paradoxa*), African cucumber (*Momordica balsamina*), *Occimum gratissimum*, and jews mallow/jute (*Corchorus olitorus*). These plants are very common among the Hausa local communities in terms of food preparation in Kano State (Table 1 and 2).

Among the various gathered parts of wild edible plants, fruits (21 species) are gathered most by consumers of these communities and are usually eaten raw. Leaves (7 species) are most often used in food preparation as leafy vegetables. The seeds of locust bean (*Parkia biglobosa*) are used in making local seasoning (dadawa) and Shea butter plant (*Vitalleria paradoxa*) in extracting oil. *Calotropis procera* are the species in which flowers are gathered as edible part mainly by Fulani speaking people.

In terms of consumption of plant species gathered as wild food plants, Baobab (*Adansonia digitata*) has the highest culinary use value, followed by locust bean (*Parkia biglobosa*). foetid cassia (*Cassia tora*) and tears (*Leptadenia hastata*) are also very common and cosmopolitan among the whole communities and also of high culinary use value. The fruits of West African Ebony (*Diospyros mespiliformis*) can be eaten fresh or dried and preserved for a longer time usage.



4. CONCLUSION

The field of wild edible food plant gathering and preparation is new in Nigeria in the field of ethnobotany and gathered wild edible foods are neglected in ethnobiological studies especially in the area of culinary preparation. Gathered green leaves are most eaten often boiled, porridge, or used as salads (with groundnut cake). Frying and eaten raw are not common, in the case of fruits, except for mango (*Mangifera indica*) where the unripe fruits were used in making a local stew and fan palm plant (*Borassus flabellifer*) boiled in water, all the wild edible fruits reported are mainly eaten raw, although the fruits of black plum (*Vitex doniana*) are used in preparation of local honey in addition to the leaves being eaten raw. This further development of indices adds to quantification in ethnobotany. The classification of wild food species through gathering and use variables reveals additional information about which wild food species are used in an area and about differences in preparation. This classification can be used to better understand how people classify their environment and how they select certain wild food species and neglect others.

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Table 1: Gathering and Preparation of the Common Wild Edible Food Plants Species among Local Communities in Kano State, North-West, Nigeria

Scientific name	Local names	Gathered part	Preparation	cult.	Season
<i>Mangifera indica</i> (Sapotaceae)	Mangwaro	Fruit	raw, sou	w,c	spr, sum,fall
<i>Senna obtusifolia</i> (Fabaceae)	Tafasa	leaf	sou, sal	w	spr,sum,fall
<i>Momordica balsamina</i> (Curcubitaceae)	Garahuni	leaf	coo	w	spr,sum,fall
<i>Leptadenia hastata</i> (Aslepiadaceae)	Yadiya	leaf	coo	w	All season
<i>Parkia biglobosa</i> (Fabaceae)	Dorawa	fruit	raw, sou	w,c	fall, win
<i>Vitalleria paradoxa</i> (Sapotaceae)	Kadanya	fruit, seed	raw, sou	w	sum, fall



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<i>Vitex doniana</i> (Verbenaceae)	Dinya	fruit	raw, coo	w	win, spr
<i>Diospyros mespiliformmis</i> (Ebanaceae)	Kanya	fruit	raw	w	win, spr sum
<i>Ziziphus spina-christ</i> (Rhamnaceae)	Kurna	fruit	raw	w	win, spr
<i>Ziziphus mauritiana</i> (Rhamnaceae)	Magarya	fruit	raw	w	win, spr
<i>Adansonia digitata</i> (Bombaceae)	Kuka	leaf, fruit	sou, mil	w	All season
<i>Hyphaenia thebaica</i> (Palmae)	Goruba	fruit	raw	w	All season
<i>Phoenix dactylifera</i> (Palmae)	Dabino	fruit	raw	w,c	All season
<i>Borassus flabellifer</i> (Palmae)	Giginya	fruit	raw, coo	w	All season
<i>Corchorus oleratus</i> (Teliaceae)	Turgunnuwa	leaf	sou	w	fall
<i>Annona senegalensis</i> (Annonaceae)	Gwandar daji	fruit	raw	w	sum, fall
<i>Balanites aegyptiaca</i> (Balanitaceae)	Aduwa	fruit	raw	w	win, spr
<i>Tamaridus indica</i> (Fabaceae)	Tsamiya	fruit	raw, coo	w	sum, fall, win
<i>Occimum gratissimum</i> (Labiatae)	daddoya	leaf	con, sou	w,c	All season
<i>Ficus sur</i> (Moraceae)	Dullu	fruit	raw	w	All season
<i>Ficus exasperata</i> (Moraceae)	baure	fruit	raw	w	All season
<i>Sclerocrya birrea</i> (Anacardiaceae)	danya	fruit	raw	w	All season
<i>Ximenia americana</i>	Tsada	fruit	raw	w	All season
<i>Nauclea latifolia</i> (Rubiaceae)	Tuwon biri	fruit	raw	w	All season
<i>Calotropis procera</i> (Aslepiadaceae)	tumfafiya	flower	raw	w	All season
<i>Strychnos spinosa</i> (Loganiaceae)	Chiwo	seed	raw	w	All season
<i>Nymphaea lotus</i> (Nymphaeaceae)	Bado/kwala	fruit	raw	w	All season
<i>Ficus thoningi</i> (Moraceae)	Cediya	leaf/fruit	coo/raw	w	All season

Coding systems: Preparation: ways of preparation or use:

sou=soup, con=condiment, sal=salad, raw=raw, coo=cooked : **Cult:** cultivation of plants: C=also cultivated, W=gathered from wild only,

Season: time of the year: spr=spring, sum=summer, fall=fall, win=winter, all season=all season;



Table 2: Culinary Use Value of the Most Common Frequently use Wild Food Species among Local Communities in Kano State, North-West, Nigeria

Plant species	Local name	Part(s) used	culinary use		
			Soup	salad	porridge
<i>Adansonia digitata</i> (Bombaceae)	Kuka	leaf	√	–	–
<i>Parkia biglobosa</i> (Fabaceae)	Dorawa	fruit	√	–	–
<i>Leptadenia hastata</i> (Aslepiadaceae)	Yadiya	leaf	–	√	–
<i>Senna obtusifolia</i> (Fabaceae)	Tafasa	leaf	√	–	–
<i>Mangifera indica</i> (Sapotaceae)	Mangwaro	fruit	√	–	–
<i>Vitalleria paradoxa</i> (Sapotaceae)	Kadanya	seed	–	√	–
<i>Occimum gratissimum</i> (Labiatae)	Daddoya	leaf	√	–	–
<i>Momordica balsamina</i> (Curcubitaceae)	Garahuni	leaf	–	–	√
<i>Corchorus olitorus</i> (Teliaceae)	Lalo/	leaf	√	–	–
<i>Vitex doniana</i> (Verbenaceae)	Dinya	leaf	–	√	–
<i>Ficus thoningi</i> (Moraceae)	Cediya	leaf	–	√	–

Key: (√) = indicate particular use, (–) = indicate no use in that category