



# Securing Indigenous Plants in **NIGERIA**

# Background Information



Many local dishes which are popular delicacies in Nigerian homes have Indigenous plants as their major ingredient

We might not be seeing our popular soups and foods on our table in the nearest future because high demand for these delicacies is leading to a high demand for the plants hence over exploitation as well as large scale destruction of forest



These indigenous plants are described as wild, can contribute significantly to improved health, nutrition and sustained livelihood

However, very little is known about them, hence their full development is hampered by:

- Lack of awareness
- Lack of relevant capacity with research communities
- Increased threats by local and global pressure due to over exploitation



Home gardens or home farms model have been proven to help conserve indigenous plants

Growing diverse plant species in home gardens is to enhance use-value of the species to households as income generation, food, nutritional supplements and medicine.





# *Petrocarpus mildbraedi* and *Petrocarpus soyauxii*

Oha (Ocha & Oji: Igbo) Madoobiya (Hausa) Urube (Edo)



Ecological Status: **Endangered**

## Description

An evergreen or semi-deciduous tree with a small, rounded crown, grows 15-25 metres tall and 36 metres in East Africa



It is the major ingredient in the preparation of the famous Oha/Ora soup



All the young shoots of the leaves are edible



It starts to yield or produce edible leaves from one year

## Ecological Usefulness of the plant



Makes significant ecological contribution in nutrient high levels in the soil



A drastic loss of this tree in the forest means reduction in the Nitrogen cycle in the forest



It forms root nodules that host a type of symbiotic bacteria known as Rhizobia that in turn captures nitrogen

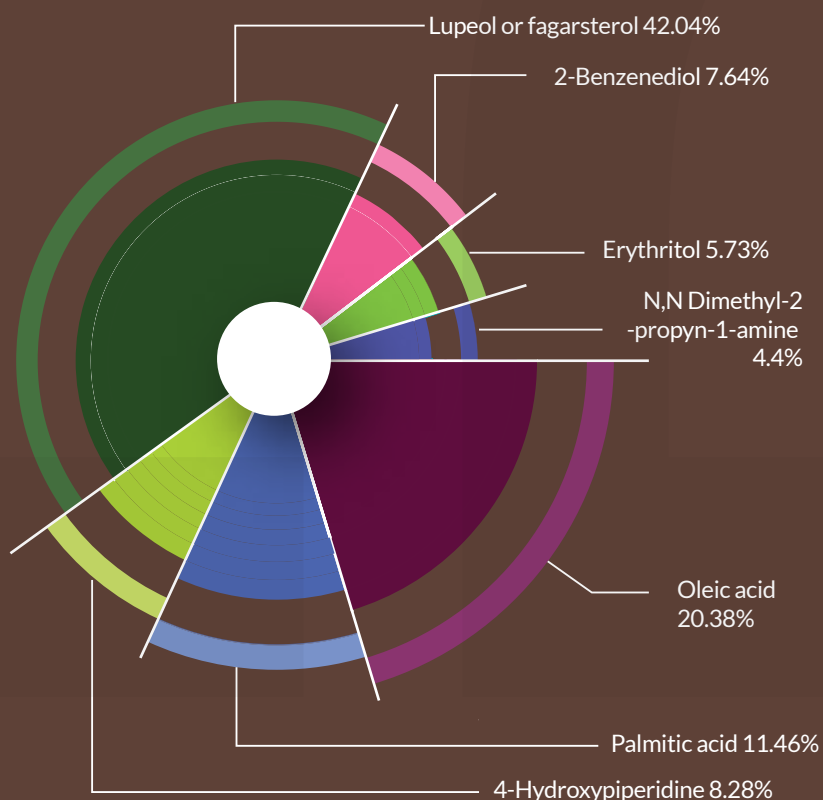
# Nutritional values

## Mineral Composition



|           |               |
|-----------|---------------|
| Calcium   | (1283mg/kg)   |
| Potassium | (1048mg/kg)   |
| Magnesium | (778mg/kg)    |
| Sodium    | (603.20mg/kg) |
| Iron      | (146.46mg/kg) |
| Zinc      | (25.10mg/kg)  |
| Copper    | (9.55mg/kg)   |
| Chromium  | (7.90mg/kg)   |
| Manganese | (4mg/kg)      |

## Bioactive Components



## Securing Oha in Home garden



Young seedlings are to be kept under shades to acclimatize

8 day  
Max

Germination is approximately 86% in 8 days of planting in gardens.

# 80%

Juvenile Stem cuttings of the plant in home gardens can be successfully achieved in a soil composition of either Top soil, Saw dust or a combination of Top soil, Saw dust and River soil.

## Medicinal Value



The Plants are utilized in the treatment of **hypercholesterolemia** due to its Saponins contents



Flovonoids contents of the leaves **reduce cancer** by interfering with the enzyme that produces estrogen



Useful in **treatment of ulcers** as wounds cuts to accelerate healing



They have **anti-malarial and anti-leukemic properties.**  
Useful as powerful analgesic.



Good remedy for cardiovascular diseases including **stroke**, atherosclerosis and some infection



Leaves are grinded and mixed with Shea butter in the **treatment of rheumatism and inflammation**



Consumption of both plants leaves **protect against allergies, inflammation, free radicals, platelet aggregation, microbes, ucler**



They have an expectorant action useful in the **management of upper respiratory tract infection**

## Economic Viability of growing Oha Plant



Initial Investment

**₦50,000**

for about  
100 Juvenile Stem cuttings



Harvesting after

**1 - 2 years**

500 sizeable bunch



Return on Investment  
per month after 2 years

**₦500,000**

₦ 1,000 per sizeable bunch

**An increased and continuous harvest of new market size bunches every new month.**

# Gnetum africanum

Afang (Efik and Ibibio), Okazi (Igbo)

Ecological Status: **Endangered**



It is used in the preparation of Afang soup and Okazi soup



The leaves form a very popular and highly valued vegetable in many parts of Africa.



Tough (hard) papery glossy texture and is somehow tasteless without any distinctive smell

## Ecological Usefulness of the plant



They contribute substantially to canopy closure and help stabilize the microclimate underneath



The plant plays important ecological roles in the forest ecosystem dynamics

## Vitamin composition



Riboflavin (0.12 mg/100g)

Niacin (0.41 mg/100g)

Thiamine (0.51 mg/100g)

Tocopherol (25.95 mg/100g)

Vitamin C (52.49 mg/100g)

Carotenoids (316.78 mg/100g)

## Medicinal value



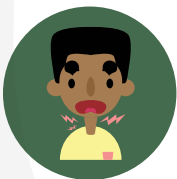
Decreases the absorption of cholesterol in the gut and management of diabetes



The High Iron Content of "Okazi" makes it an excellent remedy for Anemia especially in Children



The carotenoids content of G. africanum helps extensively to protection against numerous forms of cancers



Remedy for sore throats, nausea and as a dressing for warts



Reduction of pain during Childbirth



## Nutritional value

### Mineral Composition

Rich in calcium, Magnesium and Phosphorus for healthy bones and teeth. Also rich in zinc and iron

### Phytochemical Composition

1.37%, tannin, 1.85% alkaloid, 1.04% flavonoid, 3.82% cyanogenic glycosides, 1.09% Saponins and 0.05% sterols

### Proximate composition

82.37% moisture; 1.49% Ash; 4.14% Crude fibre; 1.21% lipid; 5.05% Crude protein; 10.04%



# Securing Okazi in Home Gardens



## Propagation by seeds

Difficult to germinate in nursery conditions, though the plants self sow successfully in the wild

## Leafy Stem Cuttings

Methods of vegetative propagation using leafy stem cuttings have recently been developed. It is recommended that leaf blades of cuttings be trimmed in half.



## Conditions that aid growth

The vine grows best in well-shaded areas similar to that of a forest, as too much sunlight can burn the vine and produce substandard leaves for selling purposes. Shade is necessary in order to have forest like conditions that will aid growth

## 6 weeks

The rooted cuttings are transferred to polythene sleeves, bamboo pots or other containers where they remain for a further 2 - 3 months



## Soil Mixture

The soil mixture for these containers consists of **25% sand** and some compost, supplemented with forest soil

## Economic Viability of growing Okazi Nursery



### Initial Investment

**₦100,000**  
for about  
1,000 Juvenile Stem cuttings



### Harvesting After

**1 - 2 years**  
1000 sizeable bunch



### Return on Investment per month after 2 years

**₦1,500,000**  
@ ₦1,500 per sizeable bunch

Funds are needed to buy bamboo for shades and for Nursery Box construction and stakes for vine elongation

## Value Addition



The average cost of the vegetables per household per week and per year were ₦2,000.13 and ₦6,894 for rural households and ₦10,299 and ₦35,355.48 for urban households



The price estimates given by those categories of households who planted their own vegetables showed that they were saving ₦1,280.08 and ₦6,660 in the rural and ₦6,600.70 and ₦15,488.48 in the urban

**62%**

*Gnetum* contributes on average to 62% of a harvester's annual income



# Treculia africana

African Breadfruit, Local names: Ukwa (Igbo), Ediang (Efik), Afon (Yoruba)

Ecological Status: **Endangered**



Seeds of breadfruit gotten from the plant



## Description



Is a large, slow-growing, evergreen tree with a dense, spreading crown; usually



A very valuable food crop in Africa, providing a nutritious protein and oil rich food



The plant species is threatened with extinction in Nigeria due to unsustainable harvesting.

## Nutritional Value

### Proximate composition

|               |                        |        |
|---------------|------------------------|--------|
| Moisture      | <div><div></div></div> | 8.02%  |
| Crude Protein | <div><div></div></div> | 12.47% |
| Fat           | <div><div></div></div> | 4.23%  |
| Ash           | <div><div></div></div> | 2.26%  |
| Fibre         | <div><div></div></div> | 1.62%  |
| Carbohydrate  | <div><div></div></div> | 73.26% |

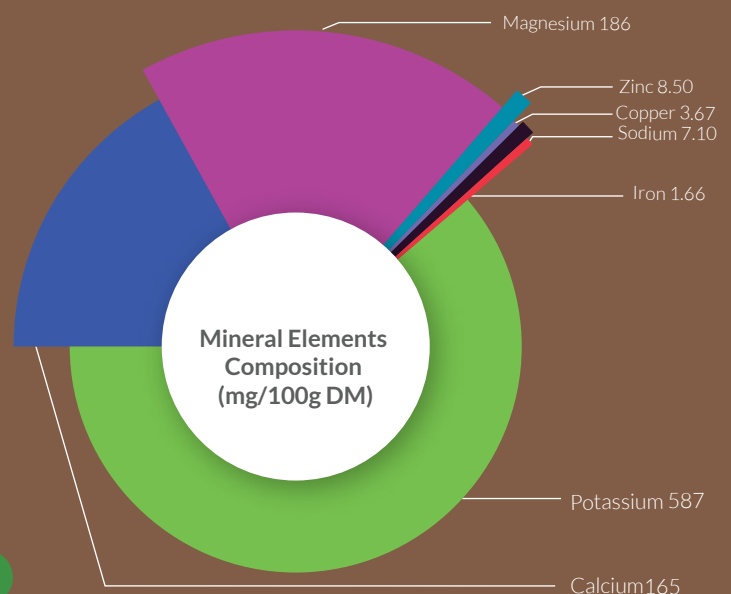
### Photo-chemicals:

It controls Large quantities of Flavonoids, Anthraquinone, Polyphenols, Saponins, and Cardiac glycosides

## Ecological Usefulness of the Plant

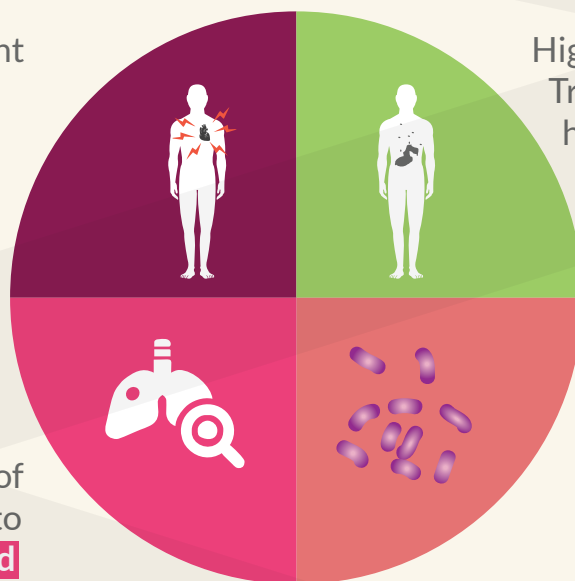


The tree is an excellent plant for erosion control as well as a good natural source of mulch





The seeds help to prevent **coronary heart disease**



High Anthraquinone content of *Treculia africana* seeds help to **prevent and manage cancer and inflammation**

The high flavonoids content of *Treculia africana* seeds helps to prevent, **oxidative stress, and inflammation.**

*Treculia africana* seeds possess antimicrobial, diuretic, **vasorelaxing**, and phytoestrogen activities.

## Growing Ukwa in Home Gardens

Raising seedlings is an excellent way to grow the tree outside the forest

With juvenile cuttings, one can obtain 69% rooting.



Seedlings are sown in pots, and direct spot sowing at site. Pre-treatment of seeds is not necessary.

Propagation can also be through budding, cuttings and shield grafting.

Using adult scions, budded trees have produced fruits with viable seeds within 2-4 years.

Soils for good germination and growth should be rich, deep, moisture-retentive soil and a position in partial shade or full sun.



# Economic Viability



Initial Investment  
**₦200,000**  
to get about 100  
budded tree



Harvesting After  
**3 - 4 years**  
100kg of Shelled clean  
breadfruit seed



Return on Investment  
per month after 2 years  
**₦800,000**  
-  
**₦1,200,000**

## Value Addition



A single bread fruit tree has the capacity to feed a family of four for more than 50 years. Once planted breadfruit outperforms wheat, rice, maize and tuber crops.



Cheap source of flour for  
the confectionary  
industry



High protein content of the seeds makes the plant a high source for the enrichment of baby weaning foods which are majorly cereal based







# Tetracarpidium conophorum

Ekporo (Efik and Ibibio), Ukpa (Igbo), Awusa or Asala (Yoruba) Okhue or Okwe (Edo),  
Gawudibairi (Hausa) and Kaso or Ngak (Littoral and the Western Cameroon),  
English name: African Walnut.

Ecological Status: **Endangered**

## Description

It is often found growing wild as a climber in the forest region of Africa and India. The vine is mostly found between 40'15N and 8N of the equator.



In Nigeria plants flowers between November and early January and fruits between January and September with peak production in July



They are found both in primary and secondary forests

## Ecological Usefulness of the plant



High source of plant protein as food



The plant plays a crucial role in water cycle in the Forest Eco-system

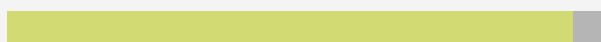


Plays a major role in flood control, soil erosion control and desertification

## Nutritional Value: Vitamin Composition



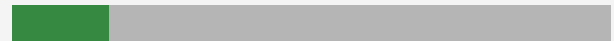
Thaimine (B1) 0.002mg/g



Ascorbic acid (C) 4.1mg/g



Riboflavin (B2) 0.004mg/g



Niacin 0.004mg/g



Cyano-cobalamin (B12) 0.001mg/g

# Medicinal Value



leaves and barks effective for **relieving abdominal pains**



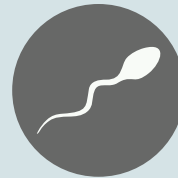
It can be used for treating **rheumatoid arthritis, bronchial inflammation or asthma**



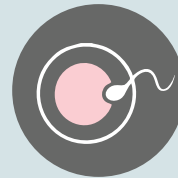
Can be used for preventing the **onset of early ageing** as well as **prevents cellular damage**



Contains essential minerals for **boosting stronger immune** system as well as for preventing anemia



Walnut seeds are effective for tackling male infertility issues by **boosting sperm productions in the testicles**



The presence of vitamin E in the seed supports its use in southern Nigeria ethno medicine as a **male fertility agent**



African walnut contains important vitamins for **boosting the healthy functioning of the brain**



The plant can be used in herbal medicine for the **treatment of skin conditions, including eczema, pruritus, psoriasis and parasitic skin conditions**

## Growing Walnut in Home Gardens



Plants can be grown in Home gardens via the stem cuttings



Growth is very successful when soil composition is made up of Top soil, Sawdust, River sand or a composition of Top soil, Saw-dust, River sand and Charcoal

## Economic Viability



Initial Investment  
**₦50,000**  
for about 5,000  
Juvenile Stem Cutting



Harvesting After  
**1 - 2 years**  
100kg of the raw, unshelled  
nuts at the peak of the  
fruiting season (6month)



Return on Investment  
1 kg of unshelled nut cost between  
N1,200 and N2,300 Giving a  
return of  
**₦1,200,000/ 6months**

### Value Addition



The seeds of the plants have  
great potentials for the  
production of anti- aging cream



There are also potentials for  
seed export as cheap source of  
vitamin E used in the  
production of Male fertility  
drugs



# Gongronema latifolium

Utazi (Igbo), Arokeke (Yoruba), Utasi (Efik), Bush buck (English)

Ecological Status: **Threatened**



*Gongronema latifolium*



Utazi used to garnish Nkwobi and other local delicacies



## Description

Very sharp-bitter and sweet and is used in small quantity in preparing soups like Nsala, Ugba sauce, Yam and also in garnishing dishes like Abacha Ncha, Isi Ewu, Nkwobi etc

The origin of the plant is traced to Nigeria in West Africa however, it has spread beyond Nigeria to other tropical African Countries

## Nutritional Value

Moisture: **15.2%**, Fibre: **6.3%**,  
Crude protein: **33.2%**, Crude fat: **16%**  
Ash: **1.3%** as well as Carbohydrate: **43.7%**

## Ecological usefulness of plant

The plant is reported to be an excellent medium for the absorbance and detoxification of pollutants

**27.2%**

**Protein  
Content**

## Growing Utazi in Home Garden



*Gongronema latifolium* can be propagated by seed or softwood, semi-hardwood and hardwood cuttings

**85%**

Fresh seeds have a germination rate of up to 85% at 25–29°C



**Cold** storage for a brief period improves seed germination

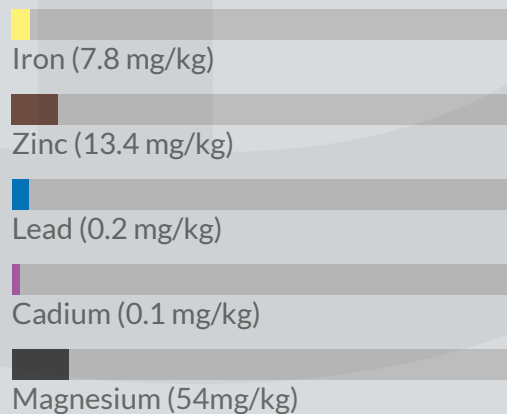
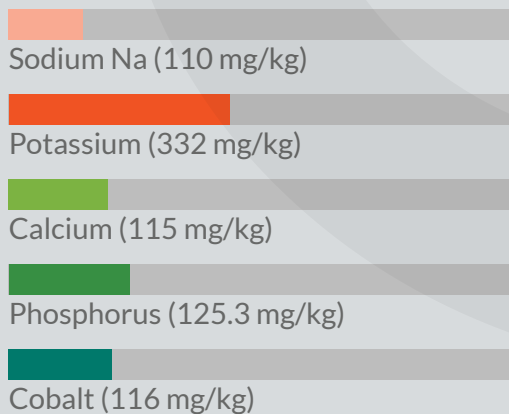


Softwood stem cuttings have a better shoot and root development during the **wet season**, whereas semi-hardwood and hardwood cuttings perform better during the **dry season**



Seeds from green-yellow follicles are matured enough to germinate, and can be stored for a longer period than seeds from yellow follicles.

## Mineral Composition



## Medicinal value



Decoction mix of the leaves of bitter leaf, scent leaf and Utazi **decreases baseline blood glucose levels and high blood pressure**



**Treatment of cough, intestinal worms, dysentery, dyspepsia and malaria** It is also taken as a tonic to treat loss of appetite



A decoction of Utazi, balsam pear and fever plant is usually given to patients been **treated for hepatitis** to help cleanse and rebuild their liver



### ANTI-BACTERIAL

The plant is considered an **antimicrobial agent** and can play a role in disease resistance and prevention. Since it contains a reasonable percent of phenol compound

## Economic Viability of growing Utazi



Initial Investment

**₦20,000**

for about 200 stem



Harvesting After

**6 months to 1 years**

100 market size bunches in the 1st season of harvest



Return on Investment

1 Kg of unshelled nut cost between ₦1,200 and ₦2,300

Giving a return of

**1,200,000/ 6 month**

### Value Addition

A mixture of dried *Gongronema latifolium* (Utazi) leaves and Seeds of *Garcinia kola* (Bitter Kola) are the main constituents for producing **cough syrup**.



An estimated cost for a 190mls bottle is ₦1000. With expansion, 10,000 ml of cough syrup from bitter kola is estimated to cost 10 million naira (₦10,000,000).

The price could double when exporting to the US

# Ecological and Environmental Impact of Indigenous Plants to Ecosystem Services



## Soil Maintenance

Soil maintenance as an important function of the ecosystem, including Nitrogen fixation, Nutrient pump and recycling in the agroforestry system (*Petrocapus mildraedi*, *Tetracarpidium conophorum*)



## Ecosystem services

Provision of an array of ecosystem services essential for Sustainability and Nutrition Sensitivity of agric systems (pollination and genetic resources) (*Gentum africanum*, *Treculia africana*, *Tetracarpidium conophorum*, *Gongronema latifolium*)



## Pollutant detoxification

Pollutant detoxification and phytoremediation processes. (*Gongronema latifolium*, *Gentum africanum*)



## Wind and soil Erosion

Wind and soil erosion controls (*Treculia africana*, *Petrocapus mildraedi*)



## Water cycle

Water cycle in the forest ecosystem (*Tetracarpidium conophorum*, *Gongronema latifolium*, *Petrocapus spp*, *Gentum africanum*)



## Habitat Support

Habitat Support for forest trees and animals (*Gentum africanum*, *Tetracarpidium conophorum*)



# Policy Direction for Indigenous Food Plants in Nigeria



## Nigeria School Feeding Programmes

Integration into the Nigeria School feeding Programmes and promoting them as components in sustainable diets, enriching food aids. (Target: Ministries of Education and Health)

## Incentives

Encourage their use, incentives to support farmers to grow and conserve them via cultivation in Home gardens (Target: Ministry of Agriculture, CBN Anchor Borrowers Scheme)

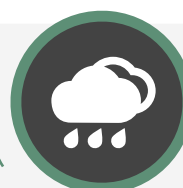


## Market Value Chains

Upgrade market value chains and develop market value added products (Target: Nigerian Economic Group, Bank of Industry, Bank of Agriculture, CBN)

## Climate Change

Use them to build resilience to climate change (Target: Ministry of Environment)



## Investments in Research

Investments in Research, Improving productivity, adaptability and utilization of these plants (Target: Ministry of Science and Technology)





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