

Food Plants International

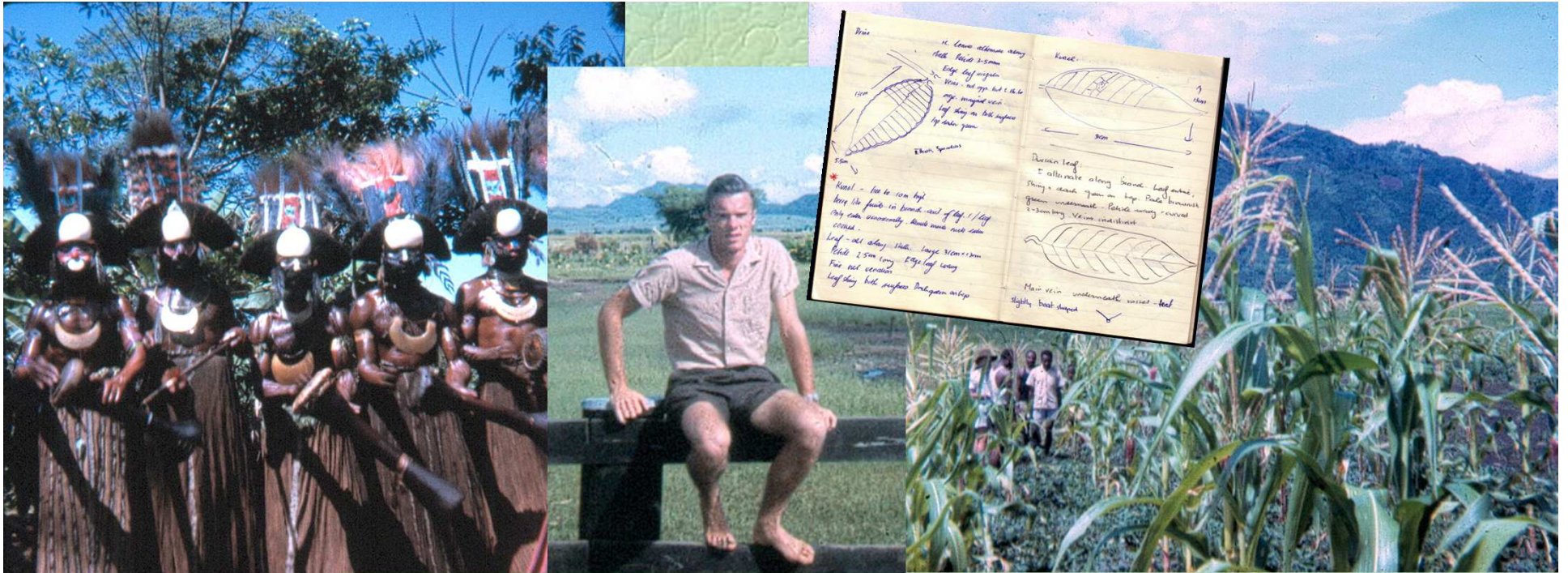
Information for small holders in Africa on edible plants

A presentation at the 3rd Neglected
and Underutilized Species: for a
Food-Secure Africa, Conference
Accra, Ghana by Bruce French
Sep 2013

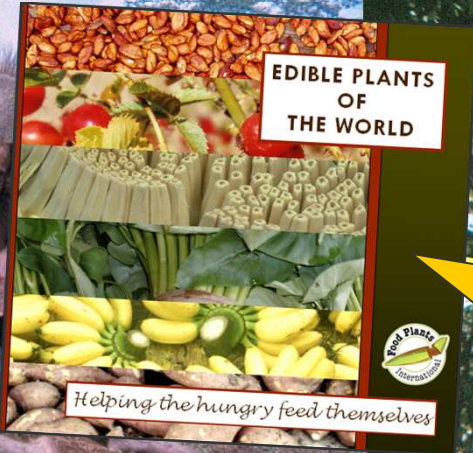
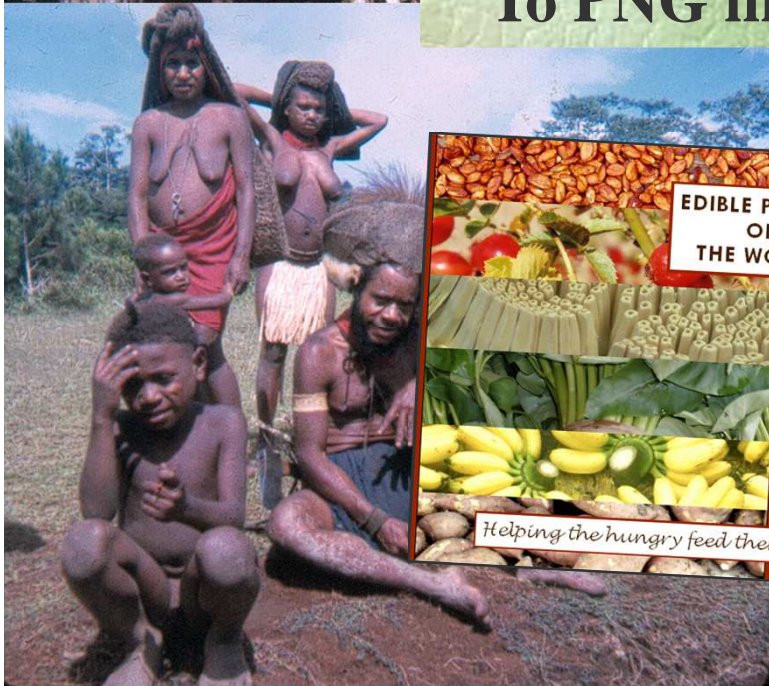
www.foodplantsinternational.com



Helping the Hungry Feed Themselves



To PNG in 1966 with a notebook



You can get a free copy on disk at the end of the talk – and you can share it with your friends




26,400
edible
plant
species

Food Plants International database

Every
country
of the
world


FOOD PLANTS INTERNATIONAL

 *Helping the Hungry Feed Themselves...
... through the strategic use of God's amazing natural resources*

Common names
Boabab, Cream of tartar tree,

Scientific name
Adansonia digitata

Authority L. Family



What is it? | Where does it grow? | Growing it | Nutrition | Photos | Drawings | References | How else is it known?

Description If you are unsure of the plant, please find a technical description or specialist
A large tree. It grows up to 25 m tall. It loses its leaves during the year. The branches are thick, angular and spread out wide. The trunk is short and stout and can be 10-14 m around. Often the trunk has deep grooves or is fluted. The bark is smooth and grey but can be rough and wrinkled. The leaves spread out like fingers on a hand. There are 5-9 leaflets. Often the leaves are crowded near the ends of branches. The flowers are large and 12-15 cm across. The petals are white and the stamens are purple. The fruit hangs singly on a long stalk. The fruit has a woody shell. This can be 20-30 cm long and 10 cm across. On the outside of the fruit are green to brown hairs. Inside the fruit are hard brown seeds. They are about 15 mm long. The seeds are in a yellow white floury pulp. The pulp is edible. The thick roots end in fattened tubers.

Distribution
It is a tropical plant. It grows in the lowlands. It grows in the hot dry regions of tropical Africa. It grows in the Sahel. It survives well in dry climates. It grows where rainfall is 100-1,000 mm a year. It can tolerate fire. It grows where the annual temperatures are between 20°C and 30°C. In most places it grows below 900 m altitude but occasionally grows to 1500 m altitude. It requires good drainage. It can grow in arid places. It grows in Miombo woodland in Africa. It suits hardiness zones 11-12. In Brisbane Botanical Gardens.

Family **Edible portion**

www.foodplantsinternational.com

See also Rotary website
www.learngrow.org for other resources

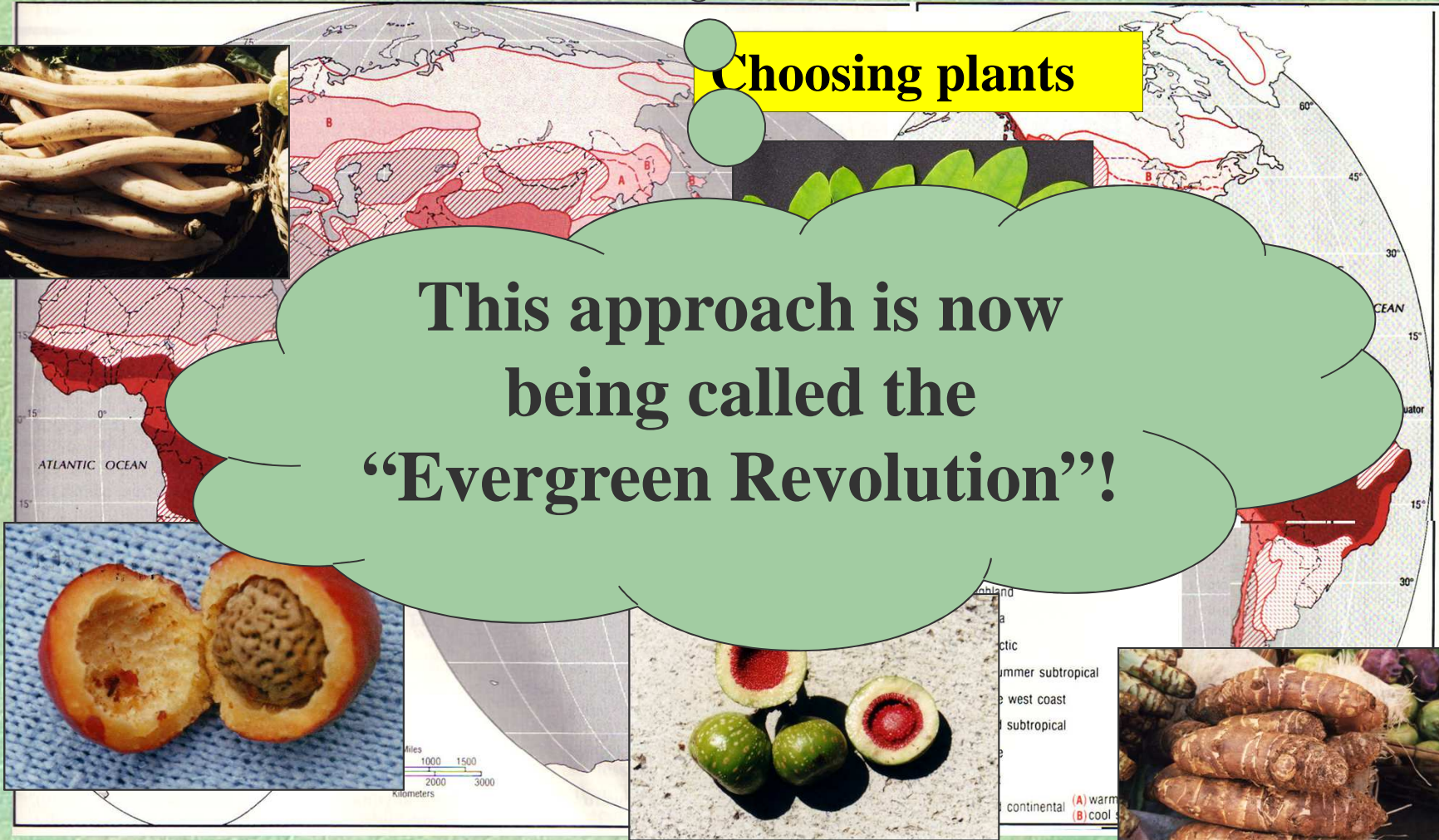
Food Plants International's agro-ecological approach

Choosing plants

This approach is now
being called the
“Evergreen Revolution”!

Matching their environments

Ecologically sound and sustainable



Documenting and Using Plant Diversity



Overlooked



Useful



Undervalued



Unrecognised

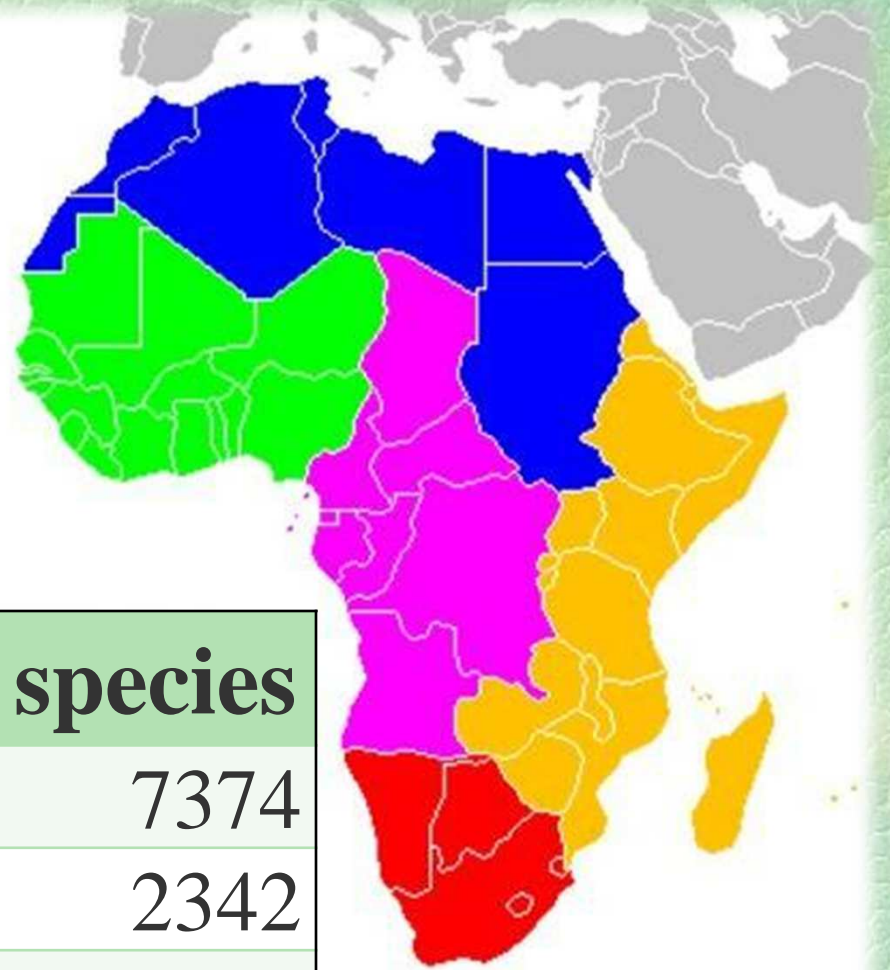


Poorly known

Under-utilised resources

| Edible species in Africa | | Gabon | 594 | Niger | 525 |
|---------------------------------|-------------|----------------------|-------------|---------------------|-------------|
| Algeria | 277 | Gambia | 384 | Nigeria | 1367 |
| Angola | 1066 | Ghana | 1130 | Rwanda | 392 |
| Benin | 676 | Guinea | 1001 | Sao Tome | 89 |
| Botswana | 841 | Guinea-Bissau | 775 | Senegal | 845 |
| Burkina Faso | 492 | Ivory Coast | 763 | Seychelles | 190 |
| Burundi | 355 | Kenya | 1434 | Sierra Leone | 1150 |
| Cameroon | 1202 | Lesotho | 263 | Somalia | 573 |
| Cape Verde | 120 | Liberia | 464 | South Africa | 2155 |
| Central African Rep | 383 | Libya | 225 | South Sudan | 169+ |
| Chad | 349 | Madagascar | 913 | Sudan | 1019 |
| Comoros | 130 | Malawi | 1360 | Swaziland | 1138 |
| Congo | 1893 | Mali | 492 | Tanzania | 1781 |
| Djibouti | 79 | Mauritania | 241 | Togo | 515 |
| Egypt | 644 | Mauritius | 346 | Tunisia | 212 |
| Equatorial Guinea | 253 | Morocco | 295 | Uganda | 1078 |
| Eritrea | 189 | Mozambique | 2066 | Zambia | 1636 |
| Ethiopia | 1344 | Namibia | 759 | Zimbabwe | 1978 |

Geographic regions



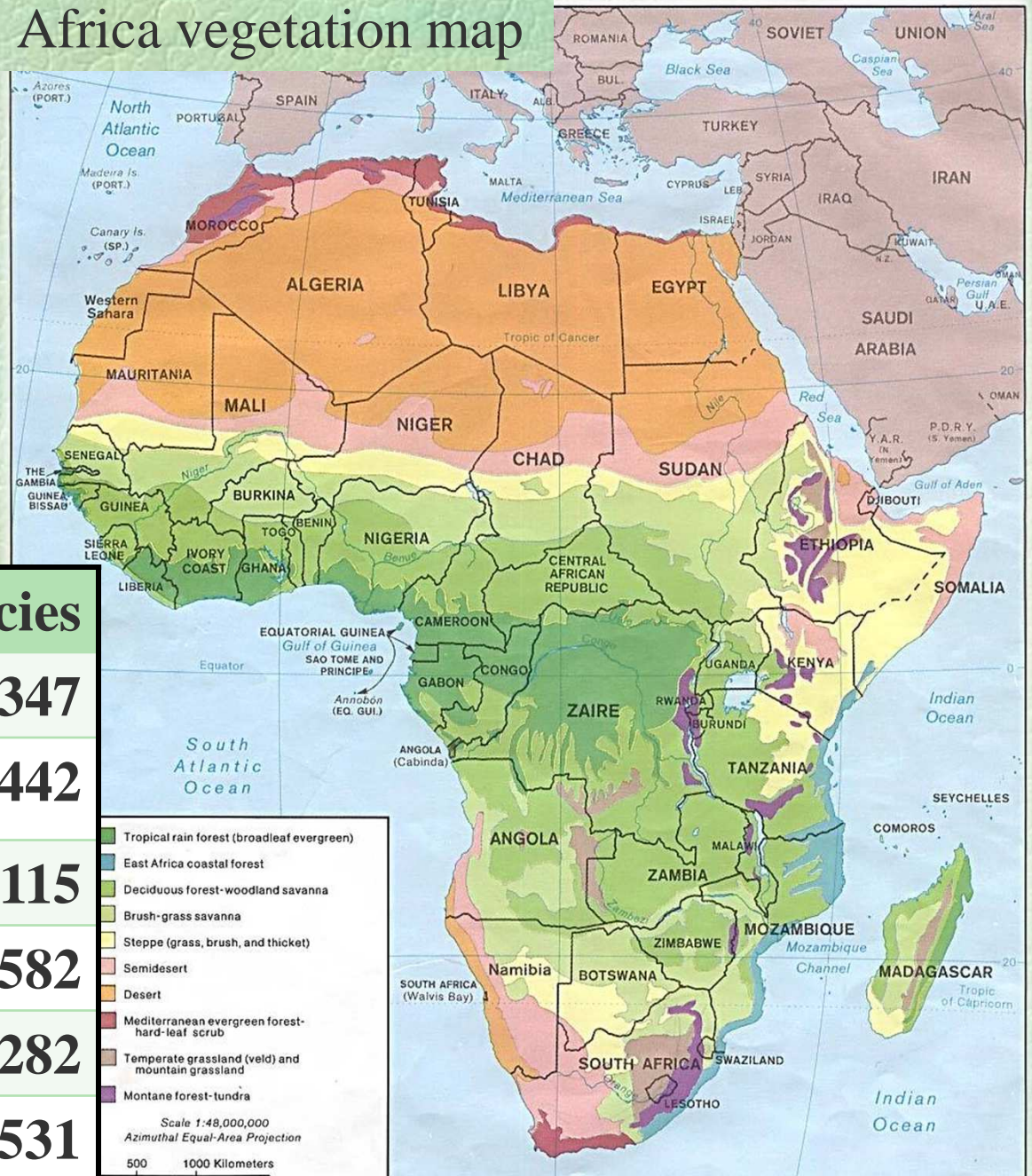
Map Wikimedia Creative Commons

| Region | Edible species |
|-----------------|----------------|
| Africa | 7374 |
| Central Africa | 2342 |
| East Africa | 2553 |
| North Africa | 1555 |
| Southern Africa | 2677 |
| West Africa | 2277 |

Biomes

Figures are currently available indicative numbers only

Africa vegetation map



| Vegetation biome | Species |
|------------------|---------|
| Humid/rainforest | 347 |
| Savannah | 442 |
| Desert | 115 |
| Arid | 1,582 |
| Mediterranean | 282 |
| Temperate | 531 |

Current list edible plants Africa

| Edible species globally | Edible species “tropical” | Edible species Africa | Edible species arid areas in Africa |
|-------------------------|---------------------------|-----------------------|-------------------------------------|
| 26,400 | 11,824 | 7,300 | 1,574 |

Food types edible plants Africa

| Edible leaves | Edible fruit | Edible seeds | Edible roots |
|---------------|--------------|--------------|--------------|
| 2,716 | 2,478 | 1,476 | 1,113 |

Plant families edible species Africa

Acanthaceae
-tropical herbs

101

Amaranthaceae
- amaranth

134

Malvaceae –
okra, hibiscus etc

287

Zingiberaceae -
gingers

36

Fabaceae –
Leguminosae

715

Dioscorea -
yams

51

Orchids

46

Grasses

329

Palms

101

Rubiaceae -
coffee etc

269

Figs

80

Solanaceae
Tomato, potato

115

Sites of edible plants Africa

| Termite mounds | Mangroves | Sahel | Swamps |
|-----------------------|------------------|--------------|---------------|
| 128 | 134 | 120 | 192 |

Plant types edible plants Africa

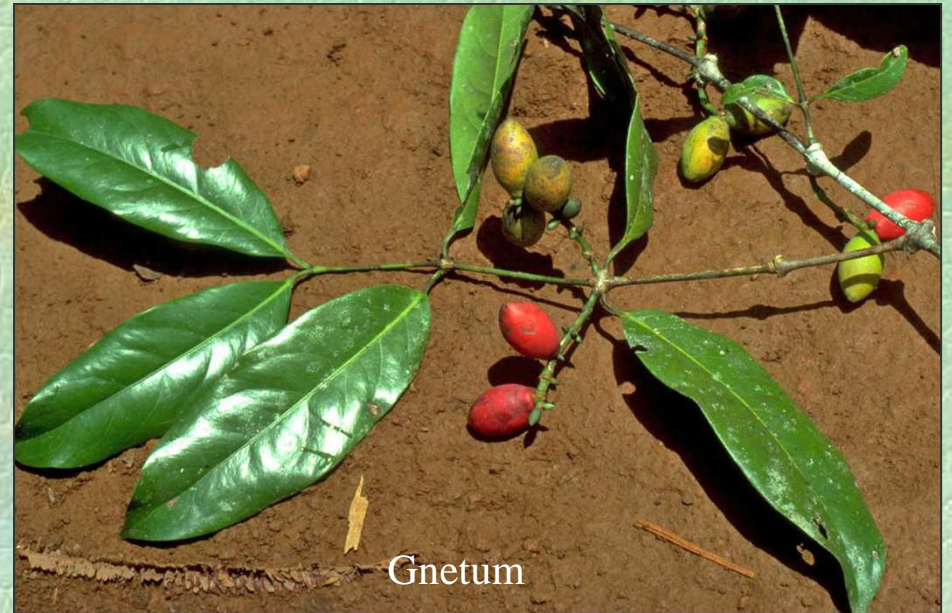
| Trees | Shrubs | Herbs | Grasses |
|--------------|---------------|--------------|----------------|
| 1,835 | 1,587 | 1,831 | 329 |

Fruit and nut groups in Africa

| Genus | No. edible globally | No. edible Africa |
|------------|---------------------|-------------------|
| Canarium | 43 | 4 |
| Gnetum | 23 | 4 |
| Parinari | 22 | 9 |
| Sterculia | 59 | 14 |
| Strychnos | 28 | 23 |
| Syzygium | 58 | 22 |
| Terminalia | 51 | 13 |
| Vitex | 55 | 31 |



Canarium



Gnetum

Some significant underutilized species of fruit and nuts



Parinari



Sterculia



Strychnos



Syzygium

More significant underutilized species of fruit and nuts



Terminalia



Vitex



Aframomum – 24 edible species



Uniquely African underutilized genera of fruit and nuts



Uapaca – 14 edible species



Allanblackia – 11 edible species



Annona cherimolia



Annona reticulata

Of 56 edible *Annona* species 13 occur in Africa



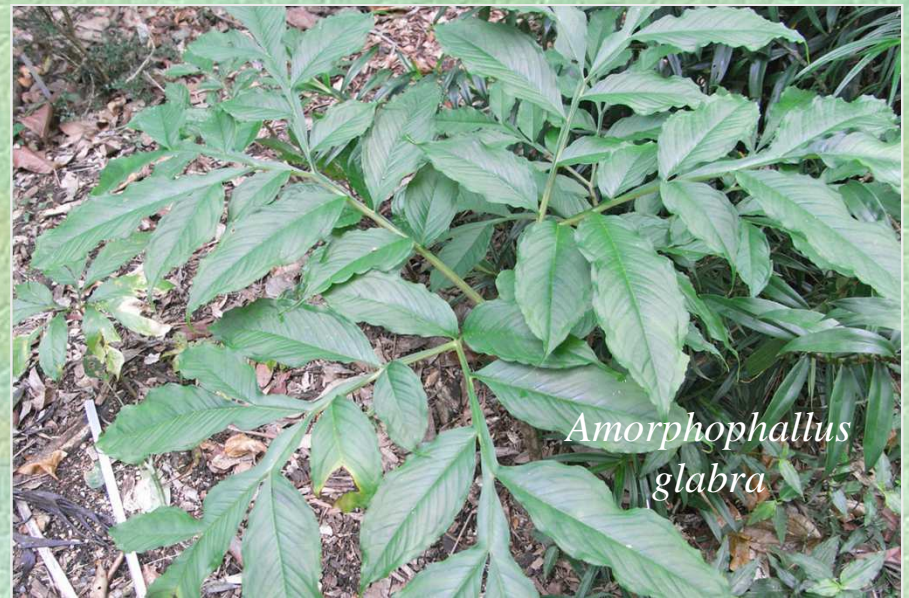
Annona senegalensis



Annona scleroderma

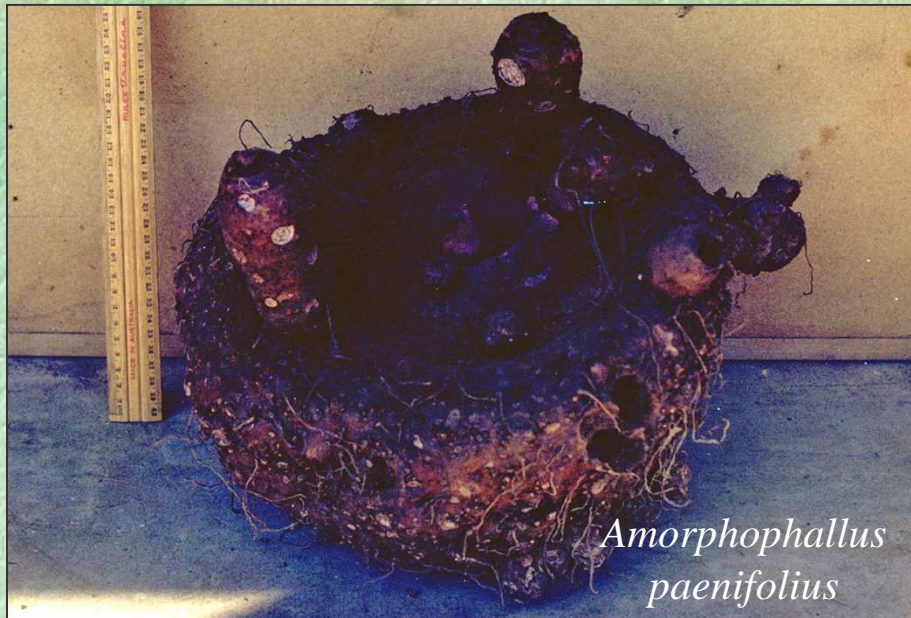


*Amorphophallus
bulbifer*



*Amorphophallus
glabra*

Of 29 edible *Amorphophallus* species 9 occur in Africa



*Amorphophallus
paenifolius*



*Amorphophallus
konjac*

Globally



Winged bean *Psophocarpus tetragonolobus*

580 edible tree legumes



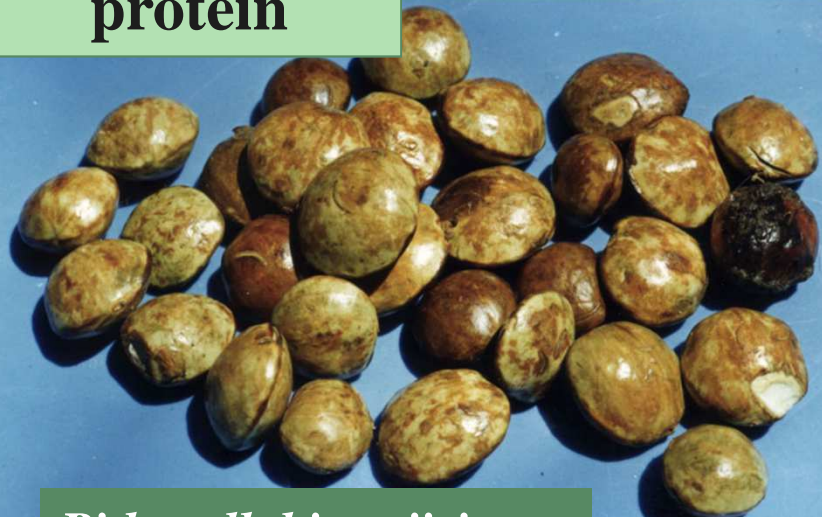
Ice cream bean - *Inga spectabilis*

1,721 edible beans - Fabaceae



Soil restoring
and high in
protein

Pete *Parkia speciosa*



Pithecellobium jiringa

Africa



West African locust bean
Parkia biglobosa



Bambara groundnut
Vigna subterranea

288 edible tree legumes



Camel's foot leaf tree –
Piliostigma thonningii



Schotia afra

715 edible Fabaceae

A sample database record - tab 1

Food Plants World 2013_Aug12

FOOD PLANTS INTERNATIONAL

Helping the Hungry Feed Themselves...
... through the strategic use of God's amazing natural resources

Common names
Greater yam,

Scientific name
Dioscorea alata

Authority L.

What is it? Where References How else is it known?

Description
A yam with sticks. The pairs along 5-20 cm small heads. Many cultures when the very large

Distribution
A tropical plant, drained soil and range is 25-30°C the growing season. Light influences tuber photoperiod, or hours hardness zones 10-12.

Family
Dioscoreaceae

Show All Search

CC BY NC ND

You can click the tabs to go to other layouts

Everything works more quickly and easily if you copy the whole folder off the disk onto your hard drive

The Creative Commons Copyright means you can distribute copies to your friends, free.

If you just click the forward button once per second it will take you 7 hours!

This indicates the number of species in total and selected

Click here to search for any words

You can use this search function but it only gives a preselected range of options

Click here to show the header details

The screenshot shows a web browser window displaying the Food Plants International website. The page title is "Food Plants World 2013_Aug12". The website header includes the logo and the tagline "Helping the Hungry Feed Themselves... through the strategic use of God's amazing natural resources". The main content area shows search results for "Greater yam" (Dioscorea alata). The search results table has columns for "Common names", "Scientific name", "Authority", and "Family". The "Greater yam" entry is highlighted. Below the search results, there is a detailed description of the plant, including its growth habit, distribution, and family. The "Edible portion" is listed as "Tubers, Vegetable". At the bottom of the page, there are buttons for "Show All", "Search", and "Search by Nutritional Value". A yellow callout box points to the "Search" button, indicating that it can be used to search for any words. Another yellow callout box points to the "Show All" button, indicating that it can be used to show the header details. A third yellow callout box points to the search results table, indicating that it indicates the number of species in total and selected. A fourth yellow callout box points to the search function, indicating that it only gives a preselected range of options.

Doing a search – tab 1 or layout 1

Plants World 2013_Aug12

Find Requests 1 Total

New Request Delete Perform Find Cancel Find

Layout: Detailed Information View As: Matching Records Omit Insert: Operators

FOOD PLANTS INTERNATIONAL

Helping the Hungry Feed Themselves...
... through the strategic use of God's amazing natural resources

Common names

Scientific name

Authority Family

What is it? Where does it grow? Growing it Nutrition Photos Drawings References How else is it known?

Description If you are unsure of the plant, please find a technical description or specialist

tree

Distribution

arid

Family

Edible portion **fruit**

Show All Search Search by Nutritional Value List View Print Friendly View Menu

Doing a search – tab 2 or layout 2

Click here to perform search

FOOD PLANTS INTERNATIONAL
*Helping the Hungry Feed Themselves...
... through the strategic use of God's amazing natural resources*

Common names
Scientific name
Authority Family

What is it? **Where does it grow?** Growing it Nutrition Photos Drawings References How else is it known?

Found in: An * indicates the country of origin
Africa


Other Information
Status Notes

Show All Search Search by Nutritional Value List View Print-Friendly View Menu

Search results -fruit trees arid Africa

The 357 trees chosen


Records 357 / 26408 Found (Unsorted)

FOOD PLANTS INTERNATIONAL  Helping the Hungry Feed Themselves...
... through the strategic use of God's amazing natural resources

Common names
Boabab, Cream of tartar tree,

Scientific name
Adansonia digitata

Authority L. Family Bombacaceae



What is it? **Where does it grow?** **Growing it** **Nutrition** **Photos** **Drawings** **References** **How else is it known?**

Description If you are unsure of the plant, please find a technical description or specialist
A large tree. It grows up to 25 m tall. It loses its leaves during the year. The branches are thick, angular and spread out wide. The trunk is short and stout and can be 10-14 m around. Often the trunk has deep grooves or is fluted. The bark is smooth and grey but can be rough and wrinkled. The leaves spread out like fingers on a hand. There are 5-9 leaflets. Often the leaves are crowded near the ends of branches. The flowers are large and 12-15 cm across. The petals are white and the stamens are purple. The fruit hangs singly on a long stalk. The fruit has a woody shell. This can be 20-30 cm long and 10 cm across. On the outside of the fruit are green to brown hairs. Inside the fruit are hard brown seeds. They are about 15 mm long. The seeds are in a yellow white floury pulp. The pulp is edible. The thick roots end in fattened tubers.

Distribution
It is a tropical plant. It grows in the lowlands. It grows in the hot dry regions of tropical Africa. It grows in the Sahel and survives well in dry climates. It grows where rainfall is 100-1,000 mm a year. It can tolerate fire. It grows where annual temperatures are between 20°C and 30°C. In most places it grows below 900 m altitude but occasionally to 1500 m altitude. It requires good drainage. It can grow in arid places. It grows in Miombo woodland in Africa. It suits hardiness zones 11-12. In Brisbane Botanical Gardens.

Family
Bombacaceae

Edible portion Roots, Leaves, Fruit, Seeds, Bark, Sp...

You could simply browse the results

Click here for Print-Friendly

Show All

Search

Search by Nutritional Value

List View

Print-Friendly View



Menu

Print-Friendly view

FOOD PLANTS INTERNATIONAL



Helping the Hungry Feed Themselves...
... through the strategic use of God's amazing natural resources

Bo

Common names

Boabab, Cream of tartar tree,

Scientific name

Adansonia digitata

Edible portion

Roots, Leaves, Fruit, Seeds, Bark, Sprouts, Flowers,

Bombacaceae



Description

A large tree. It grows up to 25 m tall. It loses its leaves during the year. The branches are thick, angular and spread out wide. The trunk is short and stout and can be 10-14 m around. Often the trunk has deep grooves or is fluted. The bark is smooth and grey but can be rough and wrinkled. The leaves spread out like fingers on a hand. There are 5-9 leaflets. Often the leaves are crowded near the ends of branches. The flowers are large and 12-15 cm across. The petals are white and the stamens are purple. The fruit hangs singly on a long stalk. The fruit has a woody shell. This can be 20-30 cm long and 10 cm across. On the outside of the fruit are green to brown hairs. Inside the fruit are hard brown seeds. They are about 15 mm long. The seeds are in a yellow white floury pulp. The pulp is edible. The thick roots end in fattened tubers.

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Found in:

Africa*, Angola, Antigua and Barbuda, Asia, Australia, Bahamas, Barbados, Benin, Botswana, Burkina Faso, Cameroon, Cape Verde, Central Africa, Central African Republic, CAR, Chad, China, Comoros, Congo, Côte d'Ivoire, Cuba, Dominica, Dominican Republic, East Africa, Egypt, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinée, Guinea-Bissau, Guyana, Haiti, Hawaii, India, Indonesia, Ivory Coast, Jamaica, Kenya, Liberia, Madagascar, Malawi, Malaysia, Mali, Martinique, Mauritania, Mauritius, Mozambique, Namibia, Netherlands Antilles, New Caledonia, Niger, Nigeria, Oman, Pacific, Philippines, Puerto Rico, Reunion, Sahel, Sao Tome et Principe, SE Asia, Senegal, Sierra Leone, Singapore, Somalia, South Africa, Southern Africa,

Use

The young leaves are eaten as a cooked vegetable. The dried leaves are also used to thicken soups. The fruit pulp is eaten raw. It is also used for a drink. The flowers are eaten raw or cooked. The seeds can be eaten fresh or dried and ground into flour then added to soups. They yield a cooking oil. The young tender roots are eaten. The fattened root tubers are cooked and eaten. The bark is eaten and the dried leaves are used as flavouring. The shoots of germinating seeds are eaten.

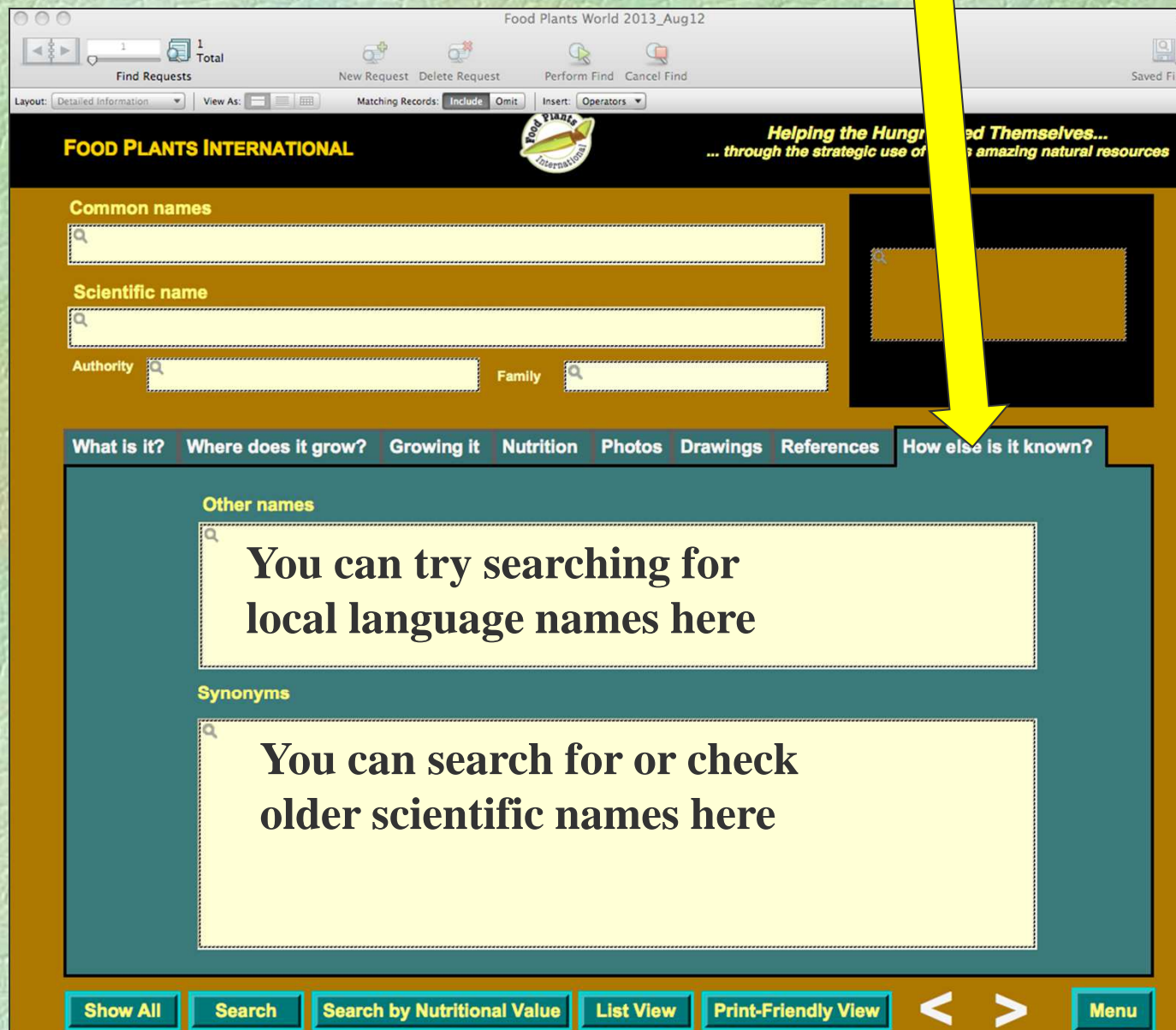
Cultivation

From seed. The seed is viable for several years but before planting the seeds must be treated to break...

You could print this page, or the 714 pages on fruit trees for arid places in Africa!

Or you can go to "Save as" and save it as a pdf book – via "print" mode for windows

Doing a search – tab 8 or layout 8



The screenshot shows the Food Plants International search interface. At the top, there is a navigation bar with the logo and the tagline "Helping the Hungry Feed Themselves... through the strategic use of amazing natural resources". Below this, there are search input fields for "Common names", "Scientific name", "Authority", and "Family". A yellow arrow points to a search results area on the right side of the page. Below the search fields, there is a navigation menu with tabs: "What is it?", "Where does it grow?", "Growing it", "Nutrition", "Photos", "Drawings", "References", and "How else is it known?". The "How else is it known?" tab is selected, and it contains two sections: "Other names" and "Synonyms". The "Other names" section has a text box that says "You can try searching for local language names here". The "Synonyms" section has a text box that says "You can search for or check older scientific names here". At the bottom of the page, there is a navigation bar with buttons for "Show All", "Search", "Search by Nutritional Value", "List View", "Print-Friendly View", and "Menu".

FOOD PLANTS INTERNATIONAL

Helping the Hungry Feed Themselves...
... through the strategic use of amazing natural resources

Common names

Scientific name

Authority Family

What is it? Where does it grow? Growing it Nutrition Photos Drawings References **How else is it known?**

Other names

You can try searching for local language names here

Synonyms

You can search for or check older scientific names here

Show All Search Search by Nutritional Value List View Print-Friendly View < > Menu

Finding other information - tab 7

FOOD PLANTS INTERNATIONAL



Helping the Hungry Feed Themselves
... through the strategic use of God's amazing natural resources

Common names
Purple amaranth, Red amaranth,

Scientific name
Amaranthus cruentus

Authority L. ...aceae



What is it? | **References** | How else is it known?

Click on fields to expand them

...enin. International Foundation for

...gdom of Uganda: etc. Envir

(*Amaranthus paniculatus*)

...ina

...rden

...sula. Ministry of Agriculture an

...er's bible. ABC Books. p 144

Epenhuijsen C.W. van., 1974, Growing Native Vegetables in Nigeria. FAO Rome, p 30

Show All Search Search by Nutritional Value List View Print-Friendly View

Happy searching!

My job is still not yet finished!

Please let me know if you find serious errors

For example

I. H. Burkill described 983 edible plant species for Malaysia and his son H. M. Burkill described 1,710 edible plant species for West Africa

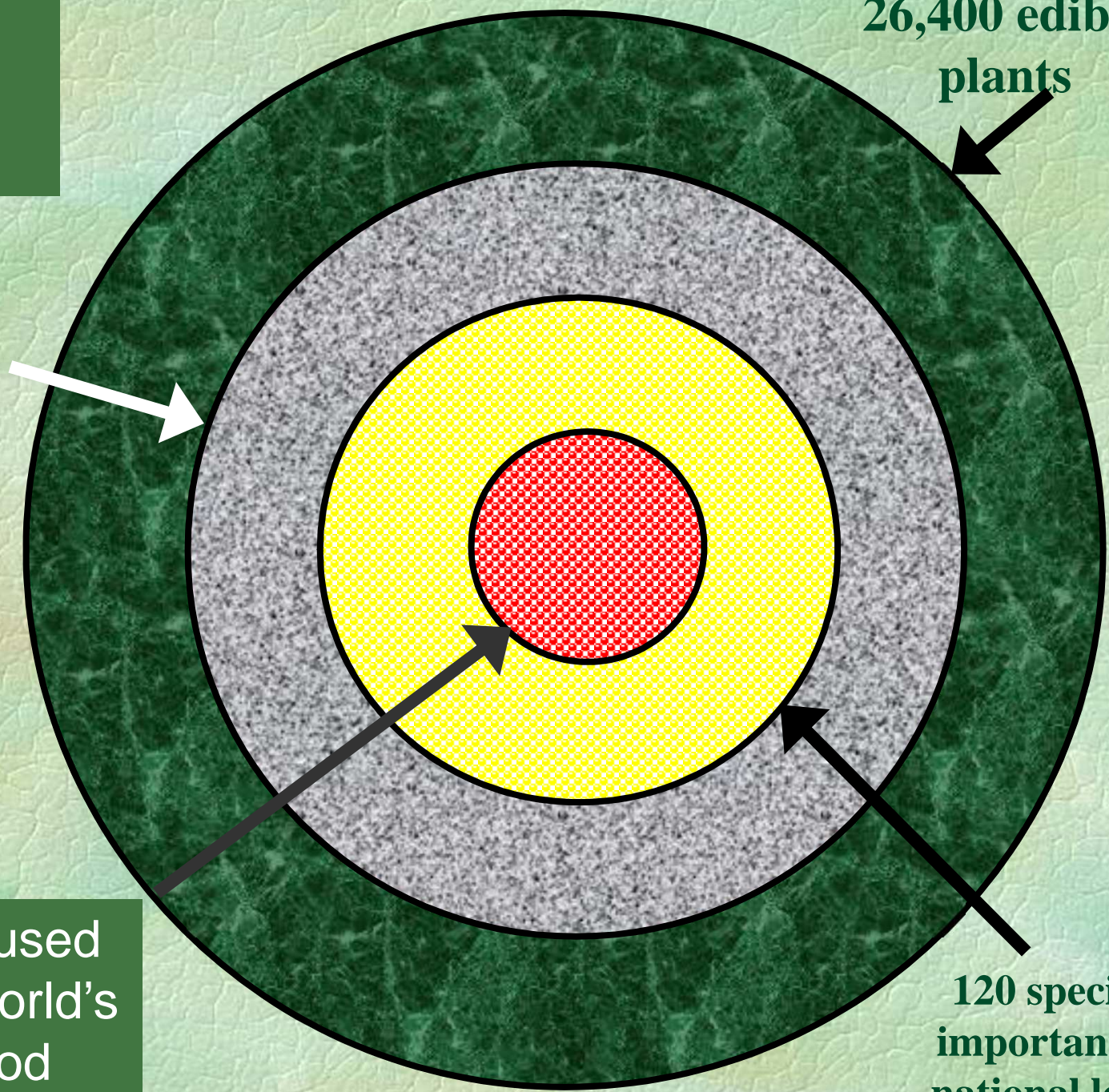
**Total plant species
350,000**

26,400 edible plants

We have narrowed the range to dangerous levels.

30 species used for 90% of world's energy food

120 species important at national level



Publications for Papua New Guinea

FOOD CROPS OF PAPUA NEW GUINEA

Food Plants of Papua New Guinea

FOOD PLANTS OF PAPUA NEW GUINEA
a compendium
Bruce R. French
Available as pdf book on www.papuaweb.org

An introduction to the crops, their importance and distribution in Papua New Guinea
Bruce R. French

Papua New Guinea
A description of the crops, where and how they are grown and some of the problems with their production.
Bruce R. French

Southern Highlands Province of Papua New Guinea
Bruce R. French

Food Plants of Papua New Guinea
PDF Books & Powerpoint Presentations
Always approach wild plants with caution. Members can easily be made in their identification and preparation. Many plants are poisonous unless properly prepared.
Food Plants International
Bruce French

We are increasingly putting publications up on our website – available free!

Available on CD/DVD and also at www.foodplantsinternational.com
or www.learngrow.org

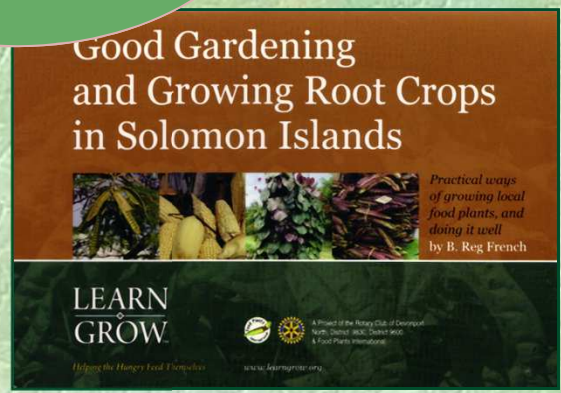
As digital books only

Resources for Solomon Islands

Rotary International
with their RAG “*Food
Plant Solutions*” have
young scientists also
compiling booklets from
this same material!



Fruit and Nuts
in



See www.learngrow.org



Pachira aquatica

Water chestnut

Tropical American foods



Carica papaya

Pawpaw



Blighia sapida

Akee



Cecropia peltata

Trumpet tree



Cnidioscolus chayamansa

Chaya



Bertholletia excelsa

Brazil nut



Malpighia glabra

Barbados cherry

Barbados cherry has 50-60 times the Vitamin C of Citrus



Coupeia polyandra

Sun sapote

Less well known tropical American foods



Eugenia brasiliensis

Grumichama



Pachira insignis

Maranhao nut



Rheedea aristata

Cuban mangosteen



Eugenia stipitata

Araza



Myrciaria jaboticaba

Jacoticaba



Chrysobalanus icaco

Icaco



Eugenia neonitida

Pitangao



Spondias mombin

Red mombin



Azanza garckeana



Hibiscus leaves

Zambia and Malawi



Strychnos



African cereals



Setaria italica

Foxtail millet



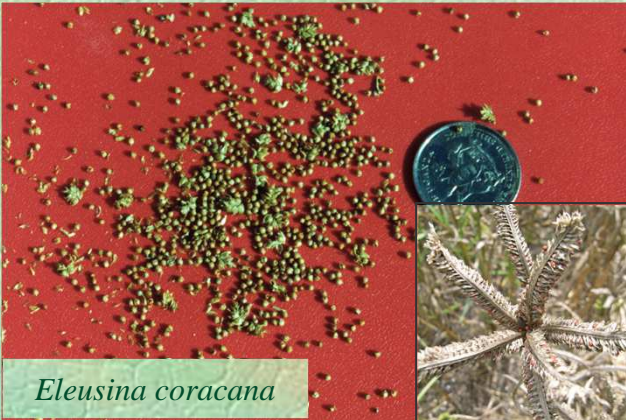
Zea mays

Corn



Sorghum bicolor

Sorghum



Eleusina coracana

Finger millet



Panicum miliaceum

Proso millet



Eleusina coracana

Tef



Triticum turgidum ssp durum

Durum wheat



Oryza glaberrima

African rice

Successful intercropping

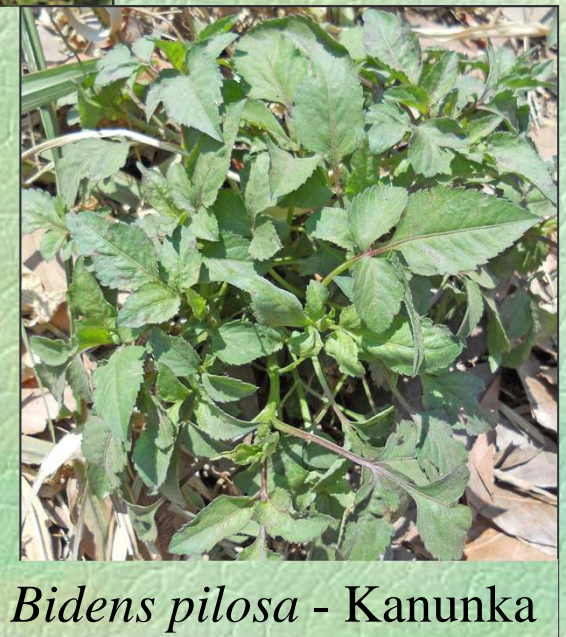
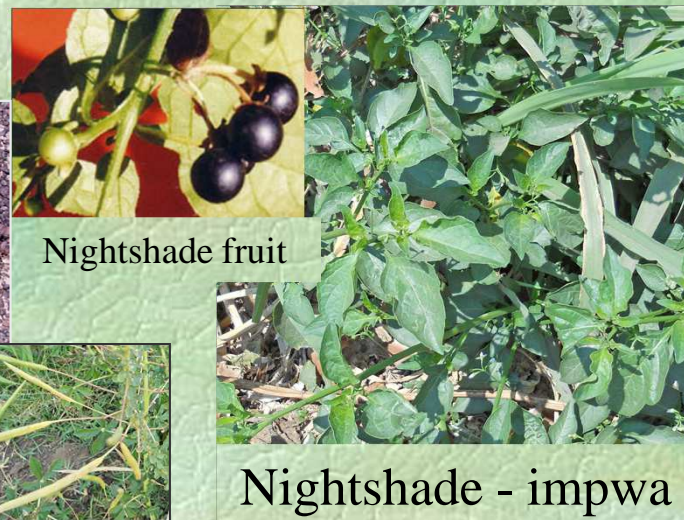
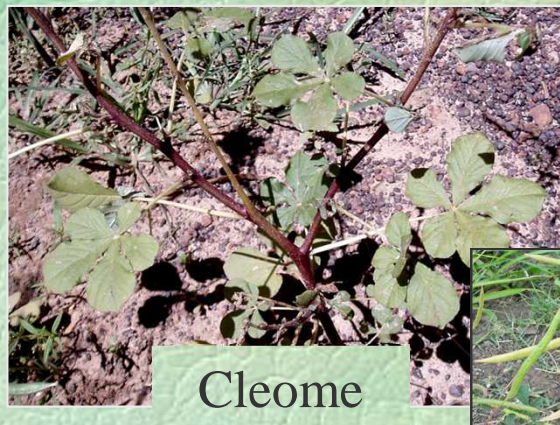
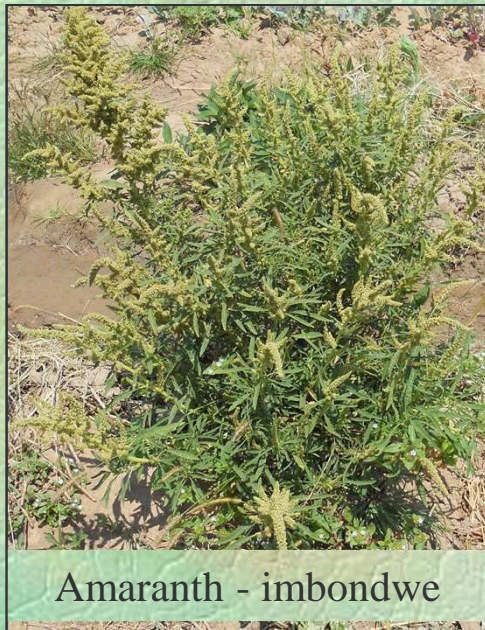


Use a diversity of locally adapted food plants and intercrop them! Keep the soil covered and then don't burn afterwards!

“Helping the hungry feed themselves

Underutilised species for good nutrition

Zambia examples





Momienh

Protein

4 times

Vit A

6-8 times

Vit C

7-20 times

Iron

7-8 times

Zinc

4 times

And it suits the tropics!



?



The right plant in the right place

Less well known green leafy vegetables



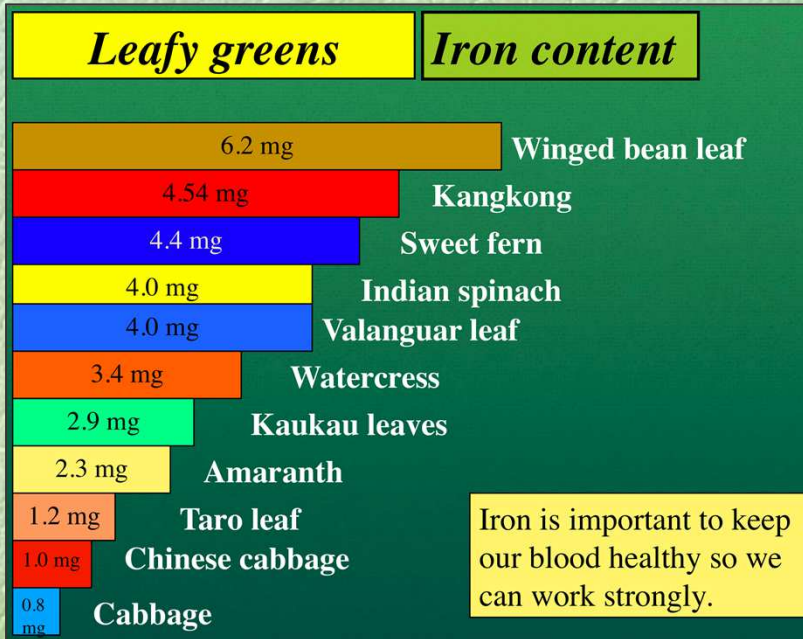
Ipomoea aquatica



Abelmoschus manihot



Amaranthus tricolor



Gnetum gnemon



Diplazium esculentum



Moringa oleifera



Rungia klossii



**Hungry People Feeding
Themselves
by strategic use of God's
amazing natural
resources**

We can make
a difference



Thanks for your time!