

Food Plants International



**Growing good food
and doing it well**

***Enjoying diversity and
using agro-ecology***

www.foodplantsinternational.com

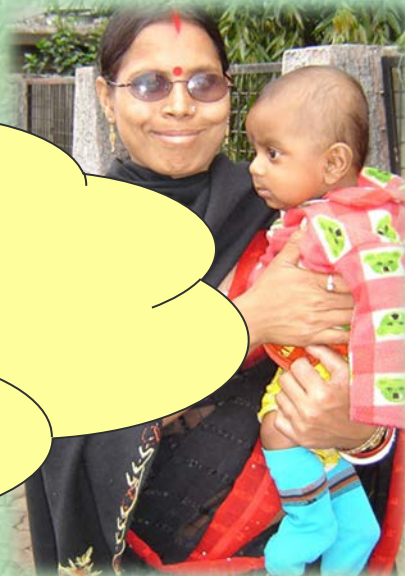
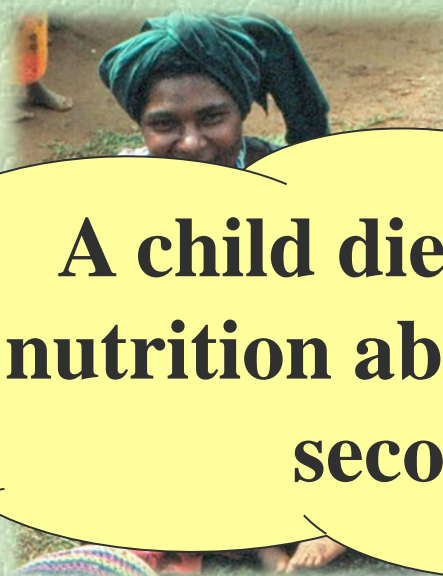
**ECHO Conference
Chiang Mai Thailand
October 6-9, 2015**



“Helping hungry people feed themselves”



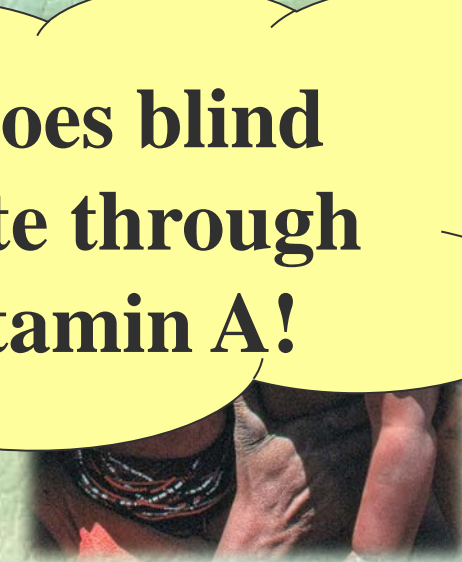
A child dies of under-nutrition about every 10 seconds!



Helping the under-nourished children of the world



Someone goes blind every minute through lack of Vitamin A!





It's mostly about caring for children



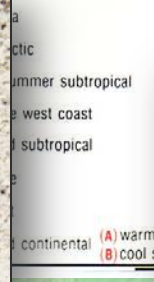
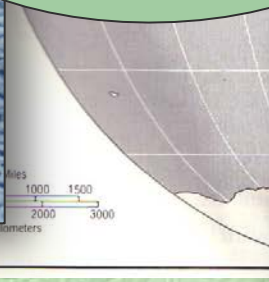
Food Plants International's agro-ecological approach

Choosing plants

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

Matching their environments

Ecologically sound and sustainable



God's amazing resources



Amaranth

**Dark green
leaves for iron
and Vitamin A**

Leaves

Amaranthus tricolor



Melimjo

**Nuts for zinc for
height and
disease resistance**

Nuts

Gnetum gnemon



Litchi

**Fruit for
Vitamin C**

Fruit

Litchi chinensis



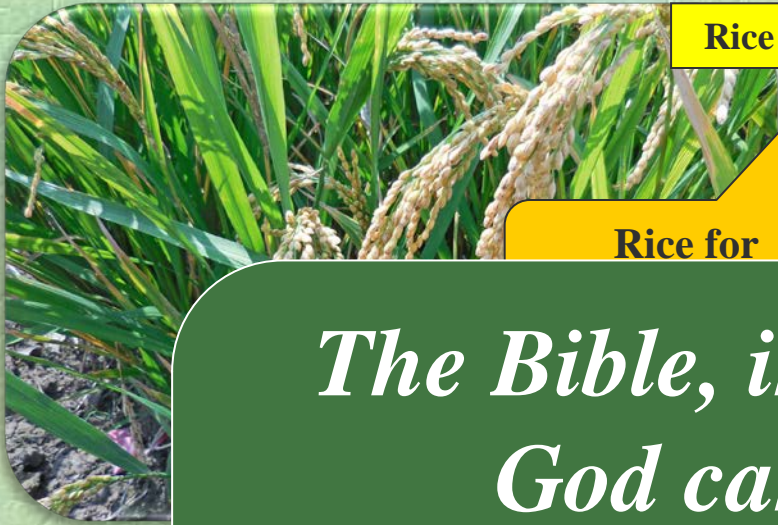
**Bambarra
groundnut**

**Beans for
protein**

Beans

Vigna subterranea

God's amazing resources



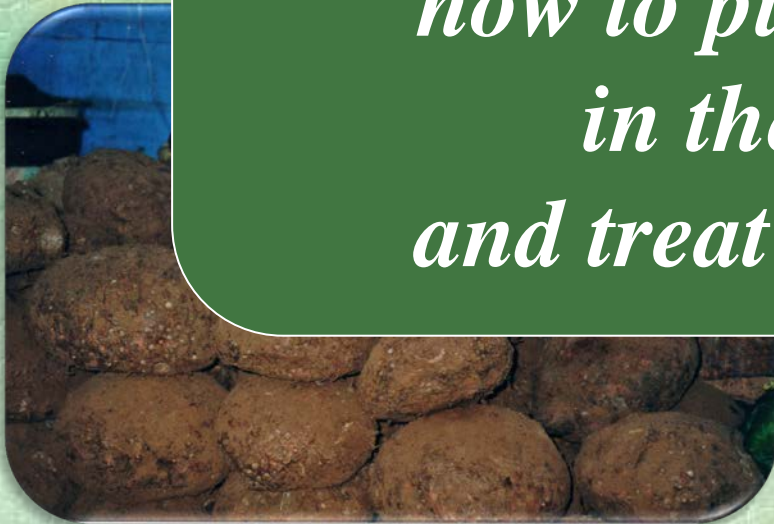
Rice

Rice for



Maize

*The Bible, in Isaiah 28, claims
God can teach people
how to put the right plant
in the right place
and treat it the right way!*



Amorphophallus paeoniifolius



Eleusine corocana

Finger
millet

Food resources in Mainland SE Asia

Edible food type	Number of species
Leaves	1622
Fruit	1488
Seeds	756
Flowers	515
Nuts	129
Root	388
Shoots	218
Rhizome	82

Different plant parts

Turmeric



Curcuma longa

Rhizomes

Sesbania



Sesbania grandiflora

Flowers

Bamboo shoots



Bambusa sp

Shoots

Watermelon seeds



Citrullus lanatus

Seeds

Food resources in Mainland SE Asia

Plant type	Number of species
Tree	1297
Herb	845
Shrub	836
Vine	152
Grass	88
Bamboo	75
Mushroom	82

Use various plant types

Jackfruit



Trees

Artocarpus heterophyllus

Stimulate
s milk
supply

Parsley
panax



Shrubs

Polyscias fruticosa

Amaranth



Herbs

Amaranthus hybridus

Food resources in Mainland SE Asia

Plant group	Number of species
Legumes	303
Palms	100
Ginger family	82
Ferns	87
Taro family	52
Pumpkin family	43
Soursop family	44

Family groups and diversity



303 species

Legumes

Psophocarpus tetragonolobus



52 species

Taro family

Colocasia esculenta



43 species

Antiviral
properties

Pumpkin family

Momordica charantia



44 species

Anticancer
properties

Soursop family

Annona muricata

Food resources in Mainland SE Asia

Location	Number of species
Mangroves	69
Limestone	138
Arid areas	281
Swamps	175
Near streams	224
Mountain areas	205
Sea (Sea vegetables)	79

Right plant in right place

Ipomoea aquatica

Kangkong



Swamps

Nasturtium officinale

Watercress



Limestone

Mangroves

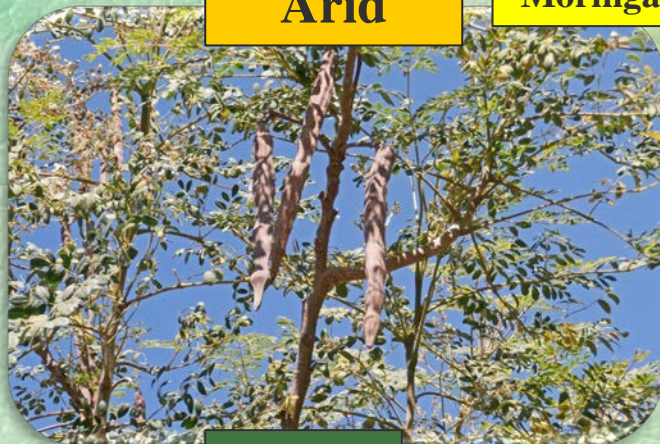


Stilted mangrove

Rhizophora stylosa

Arid

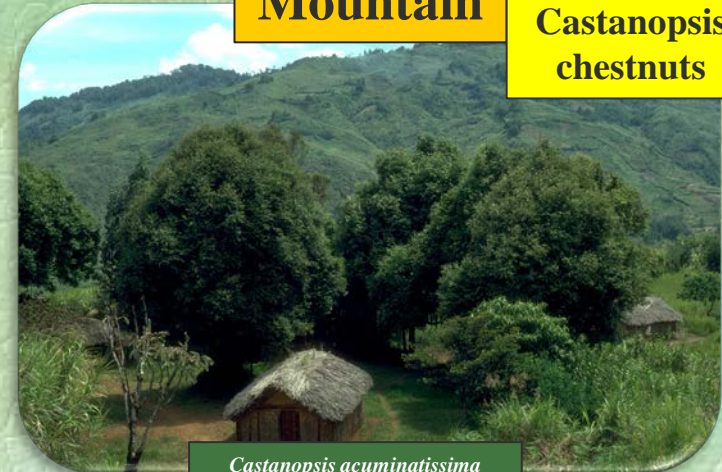
Moringa



Moringa oleifera

Mountain

Castanopsis chestnuts



Castanopsis acuminatissima

Country distribution Mainland SE Asia

Country	Number food species
Thailand	2517
Vietnam	2349
Yunnan - China	2178
Myanmar	1943
Laos	1883
Malaysia - peninsula	1782
Cambodia	1062

Country distribution Asia

Country	Number food species
Bangladesh	784
Northeastern India	1425
Philippines	1898
Nepal	1846
Taiwan	1550
Malaysia	2613
Indonesia	2725
India	4992

Fruit and nut groups in SE Asia

Genus	No. edible globally	No. edible SE Asia
Canarium	46	11
Gnetum	24	9
Castanopsis	57	34
Sterculia	47	24
Strychnos	28	23
Syzygium	162	67
Terminalia	54	15
Garcinia	126	58

Country Population Mainland SE Asia

Country	Population
Vietnam	92,372, 450
Thailand	68,203, 650
Myanmar	54,954,200
Yunnan - China	45,700,000
Malaysia	30,983, 460
Cambodia	15,821,120
Laos	7,069, 630
Total	315,104,510



Common names

Bael fruit, Bengal quince,

Scientific name

Search under "synonyms" if name is not here

Aegle marmelos

Authority (L.) Correa ex Roxb.

Family Rutaceae



27,500
edible
species

Every
country in
the world

In easy to
understand
English

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 medium sized tree. It loses its leaves. It grows to 3-6-12 m tall and spreads 2 m across. The stem is erect and thorny. The leaves are green and with 3 leaflets and generally sword shaped. They are aromatic. The flowers are yellowish-white. They have a strong sweet smell. They contain both sexes and occur in clusters. The fruit is large and with a hard shell about 3 mm thick. It is 8-10 cm across. The fruit is yellow-green when ripe. The pulp is reddish or orange. The pulp of the fruit is edible. The fruit is made up of small cells (about 15) each with woolly seeds.

Distribution

A tropical plant. It prefers rich well drained soils in an open sunny position. It suits tropical or warm places. It appears to do best where there is a distinct dry season. It is drought and frost tender. It grows in Nepal to about 1100 m altitude. A hot dry summer is best. It can tolerate some alkalinity and saline soils. It can tolerate alkalinity. It can grow in arid places. In Yunnan.

Family

Rutaceae

Edible portion

Fruit, Leaves condiment, Spice, Vegetable,

Show All

Search

Search by Nutritional Value

List View

Print-Friendly View



Menu

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.

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

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

Family
Dioscoreaceae

What is it? Where

References **How else is it known?**

Show All **Search**

CC BY NC ND

150 Browse

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!

Records

8645

26436
Total (Sorted)

Show All

New Record

Layout: Detailed Information

View As: [Table Icon] [List Icon] [Grid Icon]

Preview

[Dropdown Arrow]


[Dropdown Arrow]

[Black Box]

B I U

[List Icon] [List Icon] [List Icon]

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. Family Dioscoreaceae

What is it? Where does it grow? Growing it Nutrition Photos


Description If you are unsure of the plant, please find a picture
A yam with a long angular vine. It can climb 15 m high. The stems are green sticks. The stem does not have spines. It is often coloured green or brown in pairs along the vine. The leaves vary in shape, size and colour with 5-20 cm wide. The leaf stalk is 6-12 cm long. The flowers occur in small heads along branched stalks. These can be 25 cm long and many cultivated varieties do not produce fertile seed. The fruit when they occur have wings right around them. One large but very large number of different varieties occur. The tubers are

Distribution
A tropical plant. It grows from sea level up to about 1800 m in Yams drained soil and it has to have reasonable fertility. The temperature range is 25-30°C. Rainfall is often seasonal in yam areas. Maximum rainfall needs 14-20 weeks rain with an optimum of 1,100 mm during the growing season. Yams can tolerate drought but maximum yields with high rainfall. The critical rain period is during the first 5 months. Light influences tuber growth. A continuous exposure to light significantly reduces tuber yields. Day length - Yams are influenced by photoperiod, or hours of sunlight. Short days (less than 10-11 hours of sunlight) favours tuber development. It does not suit atolls. It suits hardiness zones 10-12.

Family
Dioscoreaceae

Edible portion Tubers, Vegetable,

FOOD PLANTS INTERNATIONAL



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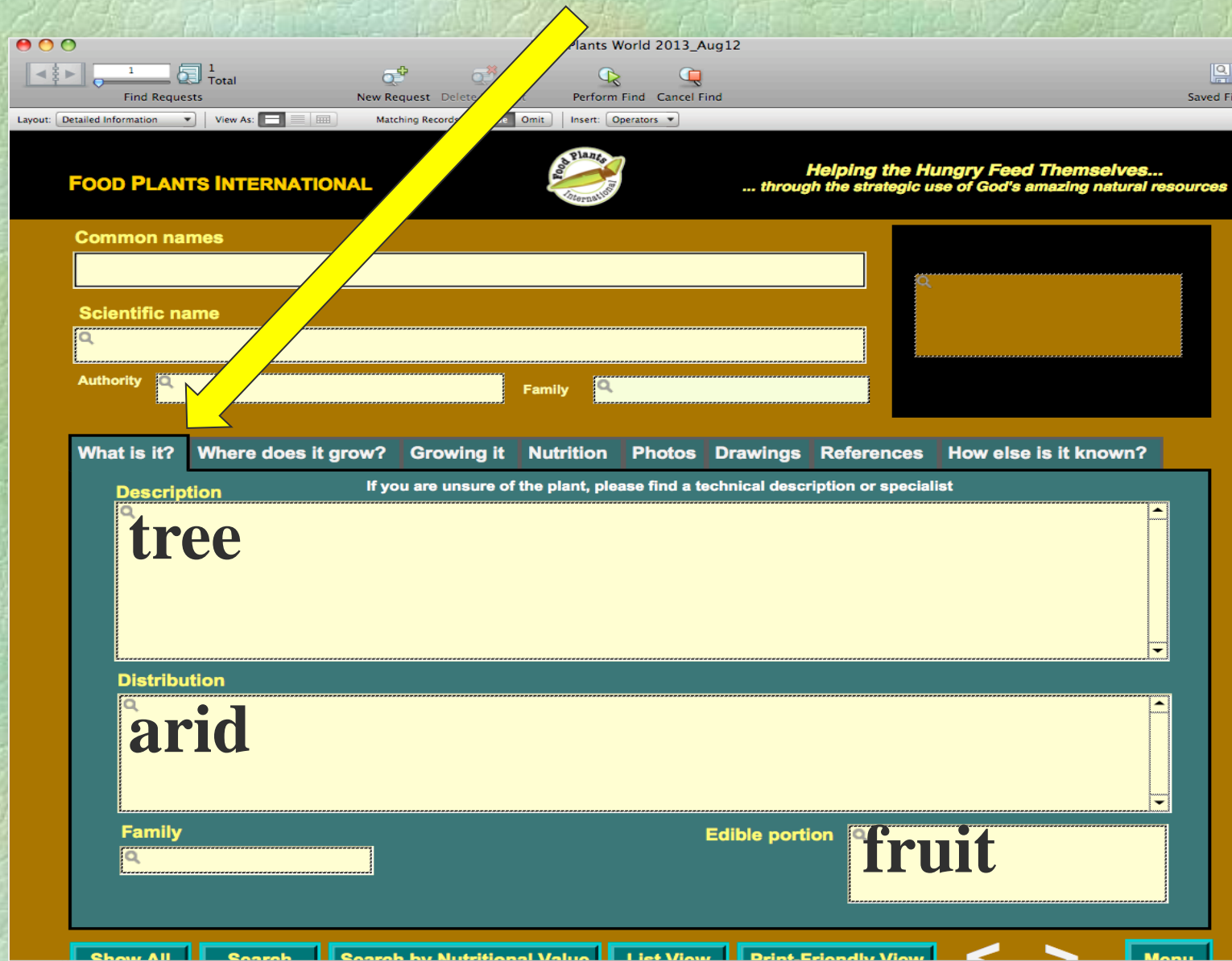
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Family
Dioscoreaceae

Edible portion Tubers, Vegetable,

Please Note: Except where otherwise noted

Doing a search – tab 1 or layout 1



The screenshot shows the Food Plants International search interface. A yellow arrow points to the 'Authority' field in the search form. The interface includes a header with the organization's name and logo, a search bar, and a navigation menu. The search results are displayed in a table with columns for Description, Distribution, Family, and Edible portion.

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

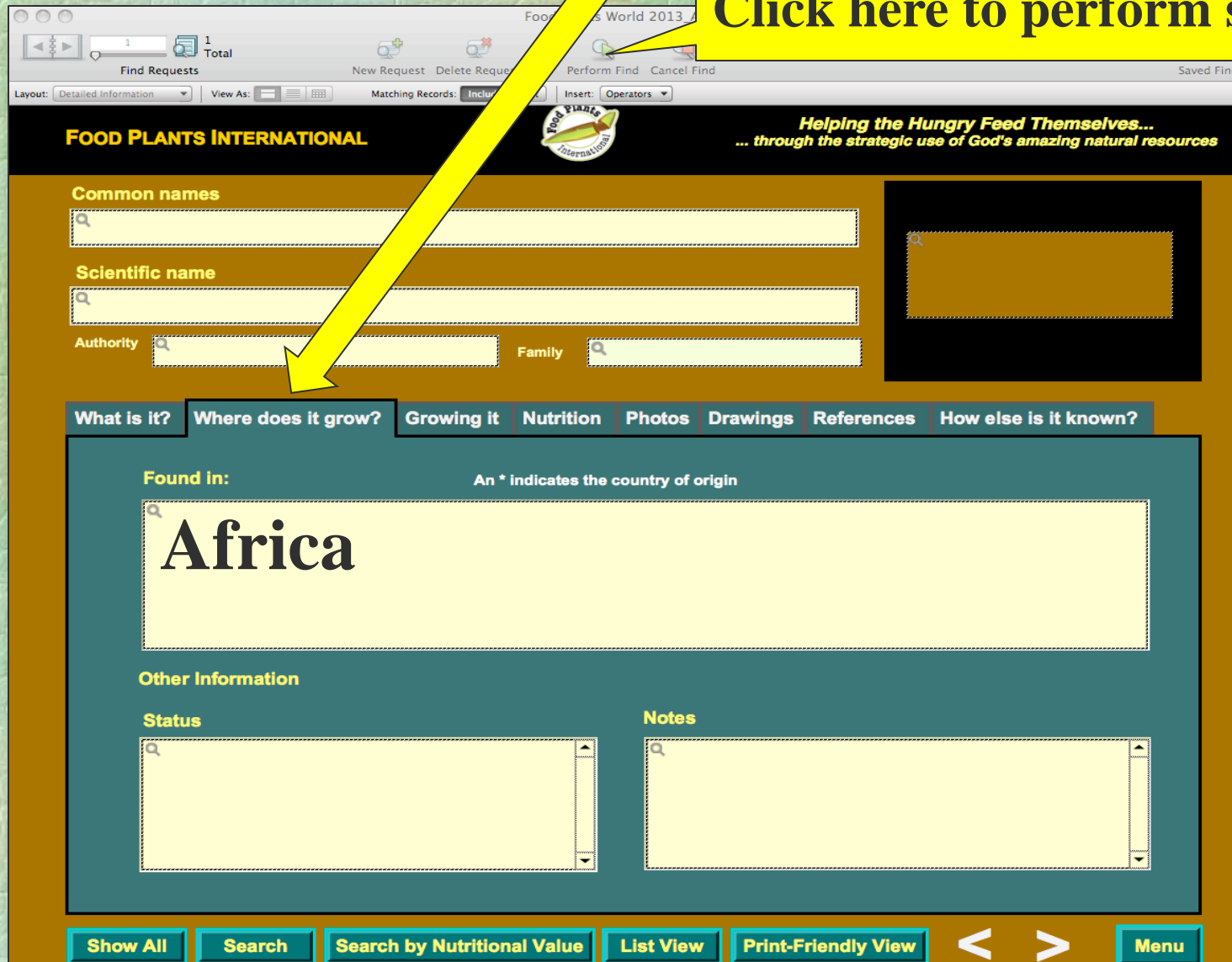
Distribution
arid

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

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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)

Layout: Detailed Information View As: Preview

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

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

Common names

Bael fruit, Bengal quince,

Rutaceae

Scientific name

Aegle marmelos

Edible portion

Fruit, Leaves condiment, Spice, Vegetable,

**Description**

A medium sized tree. It loses its leaves. It grows to 3-6-12 m tall and spreads 2 m across. The stem is erect and thorny. The leaves are green and with 3 leaflets and generally sword shaped. They are aromatic. The flowers are yellowish-white. They have a strong sweet smell. They contain both sexes and occur in clusters. The fruit is large and with a hard shell about 3 mm thick. It is 8-10 cm across. The fruit is yellow-green when ripe. The pulp is reddish or orange. The pulp of the fruit is edible. The fruit is made up of small cells (about 15) each with woolly seeds.

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A tropical plant. It prefers rich well drained soils in an open sunny position. It suits tropical or warm places. It appears to do best where there is a distinct dry season. It is drought and frost tender. It grows in Nepal to about 1100 m altitude. A hot dry summer is best. It can tolerate some alkalinity and saline soils. It can tolerate alkalinity. It can grow in arid places. In Yunnan.

Found in:

Africa, Andamans, Asia, Australia, Bangladesh*, Bhutan, Brazil, Cambodia, China, East Africa, East Timor, Fiji, Hawaii, Himalayas, India*, Indochina, Indonesia, Laos, Malaysia, Myanmar, Nepal, Nigeria, North America, Northeastern India, Pacific, Pakistan*, Papua New Guinea, PNG, Philippines, SE Asia, Singapore, South America, Sri Lanka, Suriname, Taiwan, Tanzania, Thailand, Timor-Leste, Uganda, USA, Vietnam, West Africa,

Use

The ripe fruit are eaten raw. They are also used to make drinks. The fruit are often sliced and dried. Marmalade can be made from ripe pulp. They can also be pickled or used in jams and jellies. The young shoots and leaves can be eaten raw in salad. They are also used in chutneys. The flowers are used to make a drink. CAUTION: There are reports that leaves make women sterile or cause abortions.

Cultivation

**Print
friendly
version**



Common names

Bael fruit, Bengal quince,

Scientific name

Search under "synonyms" if name is not here

Aegle marmelos

Authority (L.) Correa ex Roxb.

Family Rutaceae

One of
3,663 edible
species in
Mainland
SE Asia

What is it?

Where does it grow?

Growing it

Nutrition

Photos

Drawings

References

How else is it known?

References

References in bold print mention edibility

Click on fields to expand them

Ambasta S.P. (Ed.), 2000, The Useful Plants of India. CSIR India. p 16

Arinathan, V., et al, 2007, Wild edibles used by Palliyars of the western Ghats, Tamil Nadu. Indian Journal of Traditional Knowledge. 6(1) pp 163-168

Aryal, K. P. et al, 2009, Uncultivated Plants and Livelihood Support - A case study from the Chepang people of Nepal. Ethnobotany Research and Applications. 7:409-422

Ashton, M. S., et al 1997, A Field Guide to the Common Trees and Shrubs of Sri Lanka. WHT Publications Ltd. pdf p 343

Barwick, M., 2004, Tropical and Subtropical Trees. A Worldwide Encyclopedic Guide. Thames and Hudson p 12

Behera, K. K. et al, 2008, Wild Edible Plants of Mayurbhanj District, Orissa, India. J. Econ. Taxon. Bot. Vol. 32 (Suppl.) pp 305-314

Bircher, A. G. & Bircher, W. H., 2000, Encyclopedia of Fruit Trees and Edible Flowering Plants in Egypt and the Subtropics. AUC Press. p 10

Bodkin, F., 1991, Encyclopedia Botanica. Cornstalk publishing, p 51

5,273 edible
species in
SE AsiaAll
referencedNutrition
can be
compared

Show All

Search

Search by Nutritional Value

List View

Print-Friendly View



Menu

Continuous problems with naming

FOOD PLANTS INTERNATIONAL



Helping the Hungry Feed Themselves...
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Common names

Waterleaf,

Scientific name

Search under "synonyms" if name is not here

Talinum fruticosum

Authority (L.) Juss.

Family Talinaceae

This frame is blank because
we don't have any pictures for
this species yet.

With 7,000
languages in
the world, this
is a challenge!

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

Other names

Adwera, Alengalenga, Ama, Ambioko, Amlotshi pui, Boroboro, Busum-muru, Ceylon spinach, Gbure, Gure, Konkolo, Kpame, Lagos Bologi, Makilmoron, Makwelewele, Melelu, Neputu, Ngml-ongmle, Ngolu, Nti-Oke, Pasali, Pinari, Potherb fameflower, Sam dat ba canh, Sese, Surinam purslane, Sweetheart, Tho nhan sam ba canh,

Local language names
that can be searched –
in Roman script!

Synonyms

Calandrinia andrewsii (Sweet) Sweet;
Caladrina lockhartii Sweet;
Caladrina pachypoda Diels;
Claytonia triangularis (Jacq.) Kuntze;
Portulaca crassicaulis Jacq.;
Portulaca crassifolia Jacq.;
Portulaca triangularis Jacq.;
Ruelingia triangularis (Jacq.) Ehrh.;
Talinum andrewsii Sweet;
Talinum attentuatum Rose & Standley;
Talinum grandiflorum G. Don;
Talinum mucronatum Kunth;
Talinum revolutum Kunth;
Talinum triangulare (Jacq.) Willd.;

Synonyms – trying
to reflect constant
name changes

Show All

Menu

Zinc deficiency causes stunting and reduced disease resistance

FOOD PLANTS INTERNATIONAL



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... through the strategic use of God's amazing natural resources*

NUTRITIONAL VALUES LIST

Scientific name	Edible Part	Moisture	<u>Energy</u> KJ	<u>Energy</u> Kcal	<u>Protein</u>	<u>Provit A</u>	<u>Vit. C</u>	<u>Iron</u>	<u>Zinc</u>
▶ <i>Terminalia catappa</i>	nut dried	4.2	2987	715	20.0	0	2	6.3	41.0
▶ <i>Pangium edule</i>	Leaves	71.2	443	106	6.2			7.3	25.0
▶ <i>Gnetum gnemon</i>	Fruit	72.6	385	92	5.2		2.9	15.6	11.8
▶ <i>Citrullus lanatus</i>	seed	5.1	2330	557	28.3	0	0	7.3	10.2
▶ <i>Sonneratia caseolaris</i>	Fruit	79.2	380	91	2.3		0.6	0.9	8.7
▶ <i>Elettaria cardamomum</i>	seed	8.3	1303	312	10.8	0	21.0	14.0	7.5
▶ <i>Cucurbita maxima</i>	seeds - dry	6.9	2264	542	24.5	38	1.9	14.9	7.5
▶ <i>Ocimum basilicum</i>	seed	6.4	1051	251	14.4	938	61.2	42.0	5.8
▶ <i>Cordia subcordata</i>	leaves	70	292	70	3.7	459	10.0	1.5	5.0
▶ <i>Terminalia catappa</i>	nut	31	1810	433	15.9	0	4	4.6	4.9
▶ <i>Anacardium occidentale</i>	nut	4.0	2478	593	17.5			2.8	4.8
▶ <i>Zingiber officinale</i>	root- dried	9.4	1452	347	9.1	15	7.0	11.5	4.7
▶ <i>Psophocarpus tetragonolobus</i>	seed	8.5	1764	422	41.9	0	Tr	15.0	4.5
▶ <i>Nyssa fruticans</i>	Shoots	94.1	59	14	0.7		0	0.6	4.5

Click on the heading (where underlined) to sort the lists. View as 'table' for more sort and filter functions.

[Print Friendly Version](#)

[Comparative](#)

[Detailed Info](#)

[Find All](#)

[Menu](#)



Momienh

Protein

Vit A

Vit C

Iron

Zinc

4 times

6-8 times

7-20 times

7-8 times

4 times



And it suits the tropics!



?



The right plant in the right place

Alternate trends

A child goes blind every minute due to Vitamin A deficiency



With GMO “Golden rice” and all its accompanying chemicals and fertilisers and new seed each year, it is currently necessary for a child to eat 5.5 kg per day!

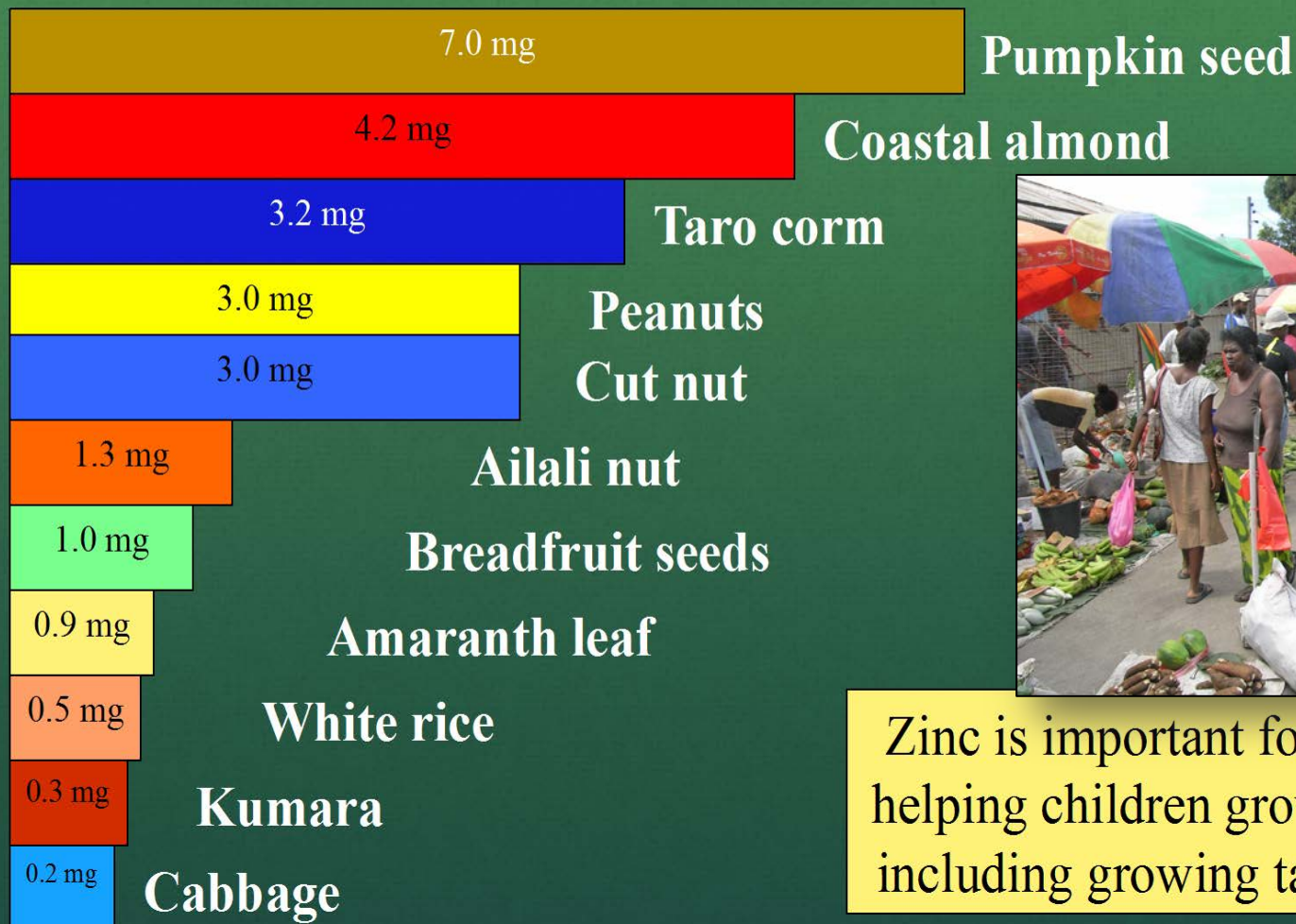
Or eat 1 taro leaf to get enough Vit A for 3 children!



Solomon's foods

Zinc content

Women in villages can read the bar charts easily



Zinc is important for helping children grow including growing tall

Some beautiful tropical green leafy vegetables Our vitamin & mineral supplements



Kangkong



Indian spinach



Okra

Leafy greens	Iron content
Winged bean leaf	6.2 mg
Kangkong	4.54 mg
Potato leaves	4.2 mg

30% of the world's population are anaemic or iron deficient



Amaranth




Moringa



Watercress



potato leaves

A photograph of a rural landscape featuring a dirt road, some small buildings, and green fields under a cloudy sky. A large yellow speech bubble is overlaid on the image.

Many neglected and underutilised species are adapted to local conditions and are often nutrient rich

A photograph of a rural landscape with a dirt road, some buildings, and green fields. A grey rectangular text box is overlaid on the image.

India - 4 people per hectare – 1.2 billion in total

A photograph of a rural landscape showing a river, a dirt road, and some buildings. A large yellow speech bubble is overlaid on the image.

IFAD says that 500 million smallholders feed 2 billion people in the 81 most undernourished countries

Current trends

High Tech

Low Tech



UNFAO's latest policy manual for smallholders promoting a diversity of local plants grown as mixtures of plants



Dr Swaminathan the "Father of the Green Revolution in India"

now recommends an "Evergreen revolution" to end world hunger - that is sustainable, provides food security and preserves biodiversity

Mixed gardens



Zimbabwe

**It reduces pest and
disease, protects soil
and maintains
diversity!**



Indonesia



Vanuatu

Slimy leaves

Abelmoschus manihot



*Basella
alba*



Abelmoschus esculentus

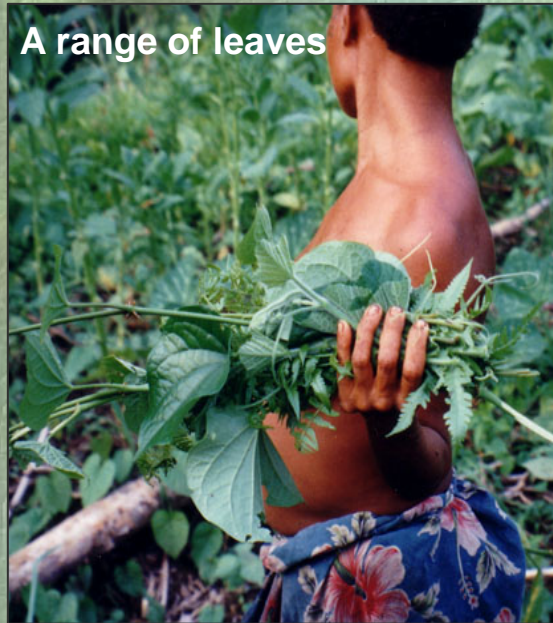


Creative cooking



Indigenous foods

A range of leaves



Drier leaves

Manihot esculentum



Cucurbita moschata



*Ficus
copiosa*



CADS projects Zimbabwe

80% of Zimbabweans are unemployed

Enhancing indigenous knowledge to improve food and nutrition security

CADS
Cluster Agricultural Development Services
Building the Capacities of Smallholder Farmers' Organisations for Sustainable Livelihoods

Promoting underutilized crops to eradicate malnutrition

CADS
Cluster Agricultural Development Services
Building the Capacities of Smallholder Farmers' Organisations for Sustainable Livelihoods


Cooking demonstration

Value adding

Indigenous foods



Can we make a difference?



There are over 27,000
underutilized food
plants!

Many specialists are
saying we need to
“re-discover lost plants”!



Homeless

Putting faith into action



Naked



Jesus said if we were not doing something about the homeless, hungry, thirsty and naked then we are not disciples of his.

Sheep or goats Mt 25



The apostle James said, If someone is without clothes and daily food and you say, "Go in peace, keep warm and well fed", and do nothing, such a faith is useless.

Food Plants International



Hungry



Thirsty

Thanks for your time

- § Please collect a disk of the database, if enough are available, or else copy the files
- § Copy the appropriate folder onto your hard-drive to get it to work more efficiently
- § Share copies with friends
- § There is a Powerpoint to show how to use the database
- § A copy of this talk and this Powerpoint are included on the disk
- § Check out our website:

www.foodplantsinternational.com