

# *Food Plants International*



**Growing good food  
and doing it well**

**Enjoying diversity and  
using agro-ecology**

[www.foodplantsinternational.com](http://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**

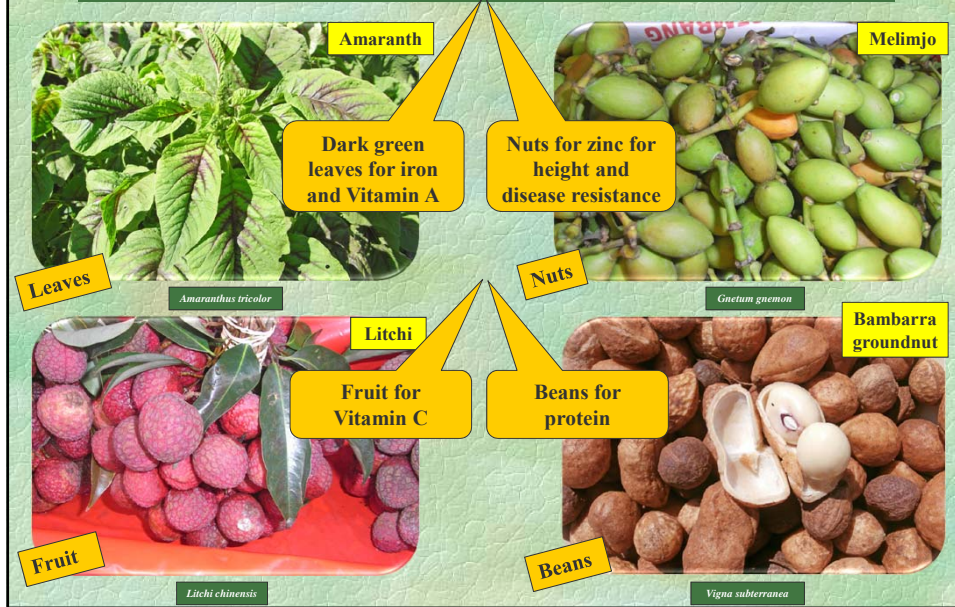
**Choosing plants**

**This approach is now being called the "Evergreen Revolution"!**

**Matching their environments**

**Ecologically sound and sustainable**

# God's amazing resources



# God's amazing resources



## 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



## 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



## 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

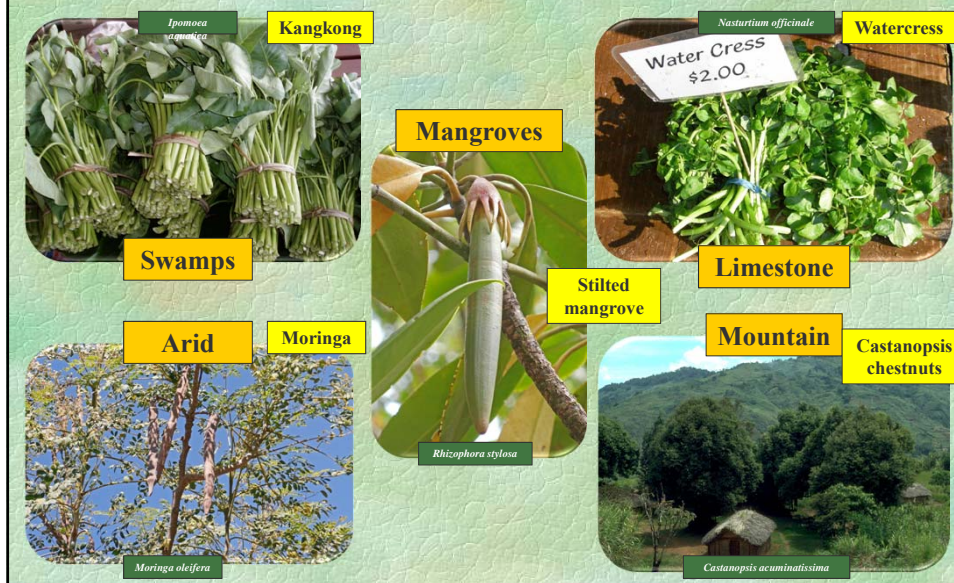
## Family groups and diversity



## 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



## Country distribution Mainland SE Asia

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

## Country distribution Asia

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



## 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
<b>Total</b>	<b>315,104,510</b>

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

**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 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 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 yam with...  
 A tropical plant...  
 Family **Dioscoreaceae**

**Show All | Search**

**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

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  
 Family **Dioscoreaceae**

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

Description  
 If you are unsure of the plant, please find a technical description or specialist  
 A yam with a long angular vine. It can climb 15 m high. The stems are green and have small spines. The stem does not have spines. It is often coloured green or brown. 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 grows 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. It grows in well-drained soil and it has to have reasonable fertility. The optimum temperature is 25-30°C. Rainfall is often seasonal in yam and it needs a minimum to be between 1000 mm and 2000 mm per year. Yams can tolerate drought but they do not yield with high rainfall. The critical rain period is during the first 6 months of the growing season. Yams can tolerate drought but they do not yield with high rainfall. The critical rain period is during the first 6 months of the growing season. A continuous exposure to light significantly reduces tuber yields. Day length - Yams are influenced by photoperiod, or hours of sunlight. Short days (less than 11 hours of sunlight) favours tuber development. It does not suit arid. It suits hardiness zones 10-12.

Family  
 Dioscoreaceae

Edible portion  
 Tubers, Vegetable,

Show All Search Search by Nutritional Value

## Doing a search – tab 1 or layout 1

tree

arid

fruit

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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?

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

Distribution

Family

Edible portion

Show All Search Search by Nutritional Value List Menu Print Edible Menu

## Doing a search – tab 2 or layout 2

Click here to perform search

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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

You could simply browse the results

Click here for Print-Friendly

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Common names  
**Boabab, Cream of tartar tree,**

Scientific name  
***Adansonia digitata***

Authority 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 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 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

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


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Common names

**Bael fruit, Bengal quince,**

Scientific name

Edible portion



**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.

**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.

**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**

**FOOD PLANTS INTERNATIONAL**  *Helping the Hungry Feed Themselves...  
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Common names

Scientific name  Search under "synonyms" if name is not here

Authority  Family



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

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

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

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**One of 3,663 edible species in Mainland SE Asia**

**5,273 edible species in SE Asia**

**All referenced**

**Nutrition can be compared**

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# Continuous problems with naming

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**Common names**  
Waterleaf

**Scientific name**  
Talinum fruticosum

Authority: (L.) Juss. Family: Talinaceae

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

**Other names**

Adwers, Alengalanga, Ama, Ambiko, Amlobhi pui, Boroboro, Buzum-muru, Caylon spinach, Gbure, Gure, Konkolo, Kipame, Lagos Bolog, Makimoron, Matwelekwete, Melelu, Neputu, Ngml-orgmie, Ngolu, Ni-Oke, Pasali, Pinari, Potherb fameflower, Sam dat ba canh, Sese, Surinam purslane, Sweetheart, Tho nhan sam ba canh,

**Synonyms**

*Calandrinia andrewsiji* (Sweet) Sweet;  
*Calandrina lockhartii* Sweet;  
*Calandrina pectinodes* Diels;  
*Crotonia triangularis* (Jacq.) Kuntze;  
*Portulaca crassicaulis* Jacq.;  
*Portulaca crassifolia* Jacq.;  
*Portulaca triangularis* Jacq.;  
*Ruellia triangularis* (Jacq.) Ehrh.;  
*Talinum andrewsiji* Sweet;  
*Talinum attenuatum* Rose & Standley;  
*Talinum grandiflorum* G. Don;  
*Talinum mucronatum* Kunth;  
*Talinum revolutum* Kunth;  
*Talinum triangulare* (Jacq.) Willd.;

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

Show All

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


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

**Synonyms – trying to reflect constant name changes**

## Zinc deficiency causes stunting and reduced disease resistance

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**NUTRITIONAL VALUES LIST**

Scientific name	Edible Part	Moisture	Energy KJ	Energy Kcal	Protein	Provit A	Vit. C	Iron	Zinc
▶ <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>Nyva 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.

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[Detailed info](#)

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**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!**

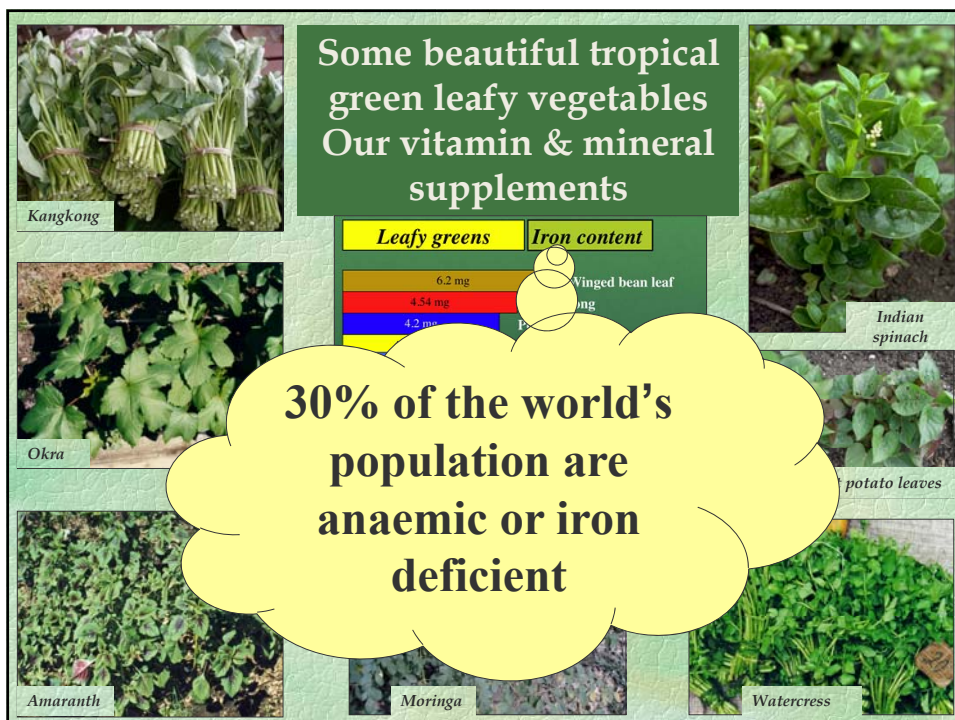
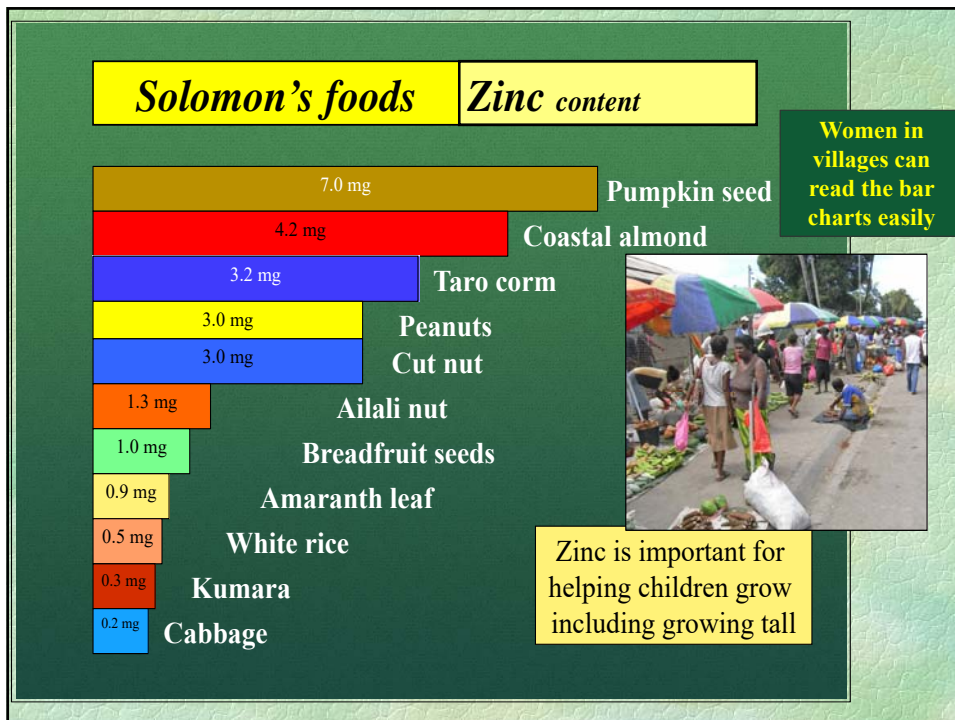
**The right plant in the right place**

## 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!**





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

India - 4 people per hectare – 1.2 billion in total

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

## Current trends

**Low Tech**

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

**High Tech**

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

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

Zimbabwe

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 confusa*

## CADS projects Zimbabwe

80% of Zimbabweans are unemployed

**Enhancing indigenous knowledge to improve food and nutrition security**

**Promoting underutilized crops to eradicate malnutrition**

**Value adding**

**Cooking demonstration**

**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”*!

**Putting faith into action**

*Food Plants International*

**Homeless**

**Hungry**

**Naked**

**Thirsty**

**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*

**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](http://www.foodplantsinternational.com)