

Helping hungry people feed themselves
...by being good stewards of God's amazing
natural resources.



Map from CIA World Factbook

Food plants and good gardening for healthy diets in Malawi



An introduction by Bruce R French - Food Plants International

Loving God's world and living in it with Him

God has provided
thousands of food
plants for people to
enjoy



God Himself
is a gardener



The earth is the Lord's and everything in it

Enjoying the diversity

There are many edible flowers!





The world and all who live in it Psalm 24:1



Feeding children well is very important

Children need protein to grow well

Children need iron to keep their blood good

Children need Vitamin A for good eyesight.

Everybody needs a wide range of food plants to get a balanced diet

A mug only full of maize causes malnutrition!





Nutrition is simple

- eat a wide range
of food plants

**Then if one nutrient is
missing from the first plant
it will be included in other
plants and produce a
balanced diet**

There is good nutrition in diversity!

Food security is simple

- grow a range of local or well adapted plants

Because they are local they will have already survived local conditions and pests

There is
security in
diversity!

Because there is a variety they have different tolerance to adverse conditions



It's God's world after all!



Finger millet

He makes grass grow for the cattle
and plants for people to cultivate –
bringing forth food from the earth

Psalm 104: 14



Greater yam



God has provided lots of good local food plants to grow

Local plants
suit local
conditions and
don't fail



Local plants
are adapted to
local pests and
disease



Our Creation mandate

Gen 1:28

**Subdue
and have
dominion**

Christians enjoy and
use God's world and
also look after and
care for God's world

Gen 2:15

**Serve
and
preserve**

Not just greedy materialists simply
after whatever we can get

Not just people who think nature
is sacred and won't use it

Who Jesus is – Colossians 1:15f

He (Jesus) is the image of the invisible God,
the firstborn over all creation.

For by him *all things* were created:

things in heaven and on earth,

visible and invisible,

whether thrones or powers or rulers or authorities;

all things were created by him

and for him.

Jesus is LORD of all or He is not Lord at all

Religious box ?

- Prayer
- Church
- Bible study
- Evangelism
- Worship
- Personal morality

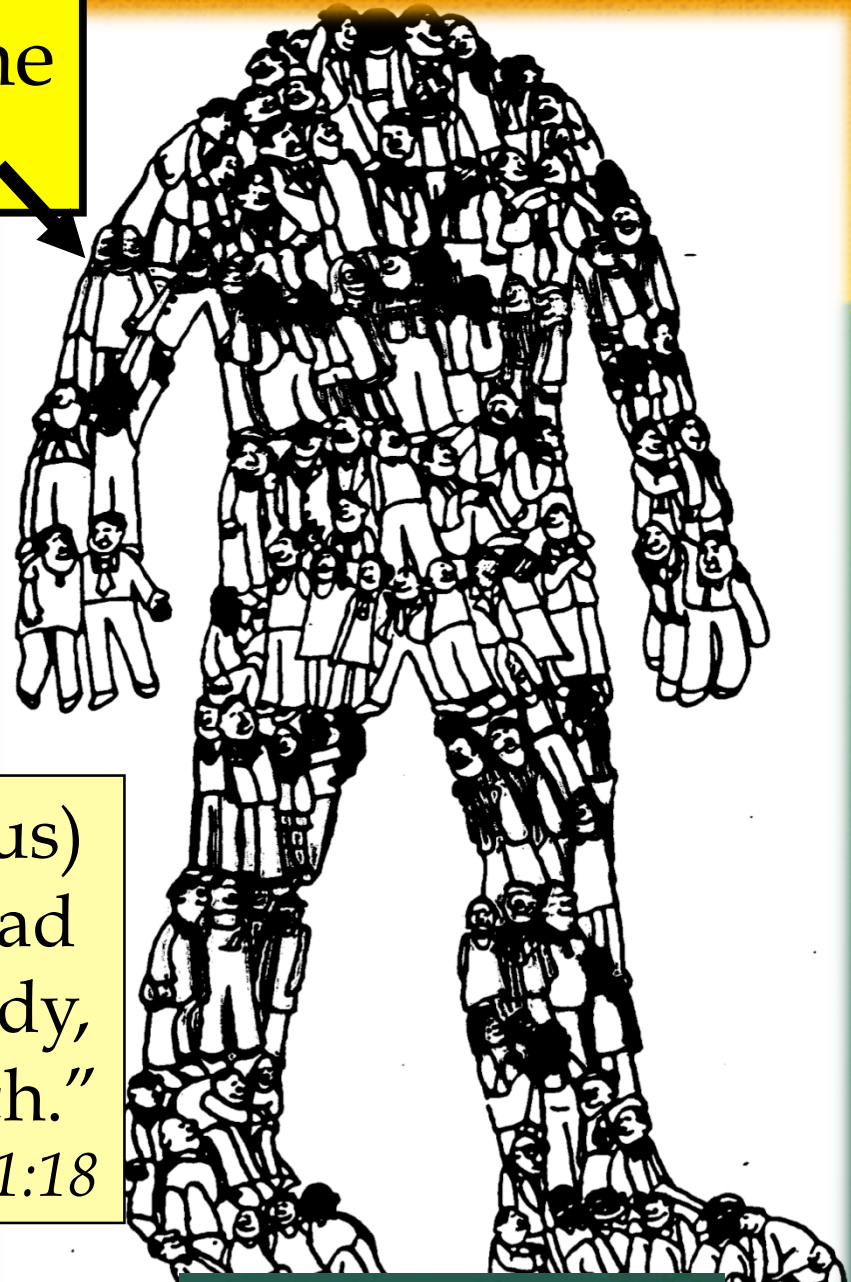
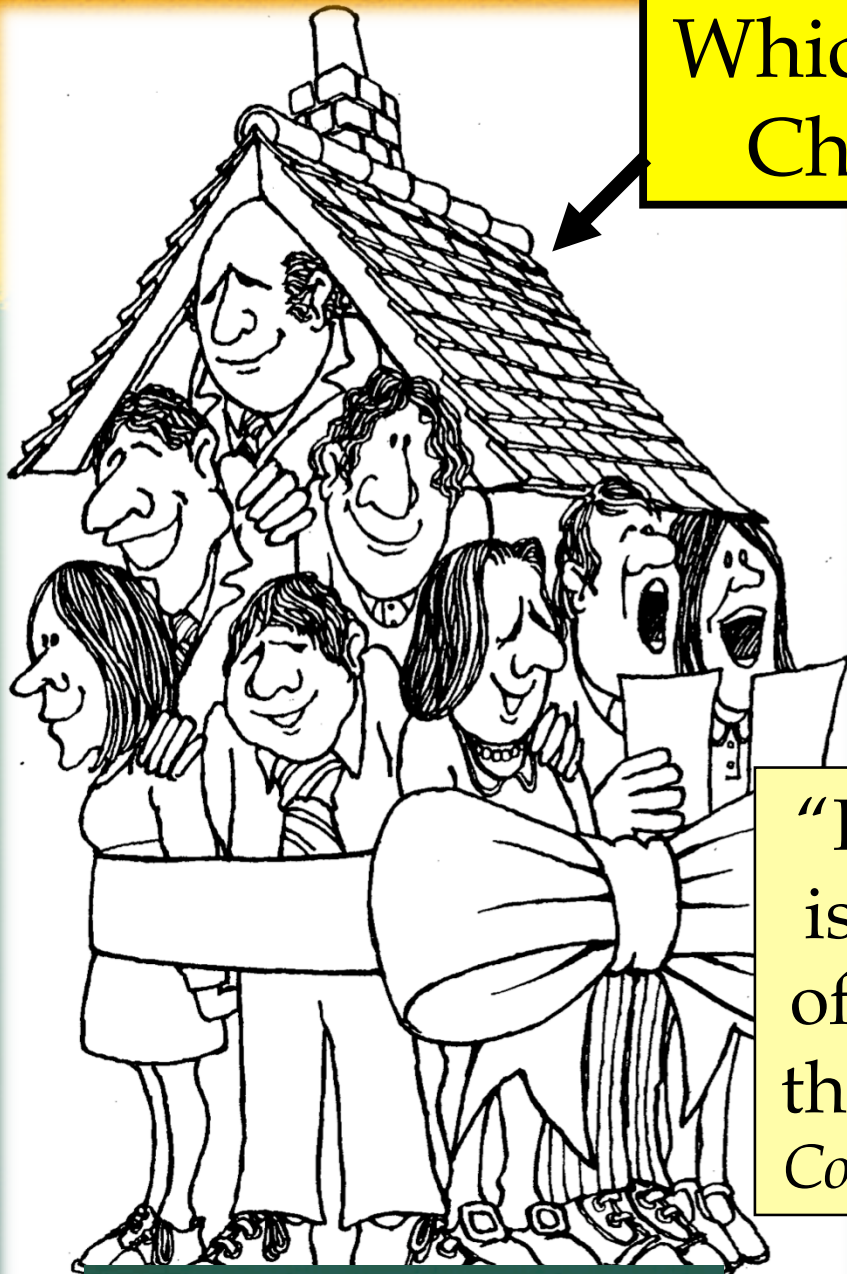
Secular box ?

- Cropping
- Cows
- Cars
- Carpentry
- Cooking
- Conversations

How do all these activities show that we know and love Jesus?

Christians don't have 2 "boxes" because they do everything for Jesus and with Jesus – He is LORD of all.

Which is the Church?



“He (Jesus) is the head of the body, the church.”
Colossians 1:18

Only 1 or 2 hours per week

Or 168 hours per week

Learning from God



Isaiah 28:23-25a

Listen and hear my voice;
pay attention and hear what I say.

When a farmer ploughs for planting,
do they plough continually?

Do they keep on breaking up
and harrowing the soil?

When they have levelled the surface,
do they not sow caraway and scatter cumin?



Caraway



Cumin

The challenge for us is to learn how to grow local plants – not these Mediterranean plants

Everything in its place

Do they not plant wheat in its place,
barley in its plot,
and spelt in its field?

*Their God instructs them
and teaches them the right way.*

Caraway is not threshed with a sledge,
nor is a cartwheel rolled over cumin;
caraway is beaten out with a rod,
and cumin with a stick.

Isaiah 28:25b-27

**These are all Mediterranean plants for where the Bible was written!
We need to learn from God about millets, sorghum and corn!**



Wheat



Barley



Spelt

Wrong plant

Wrong place

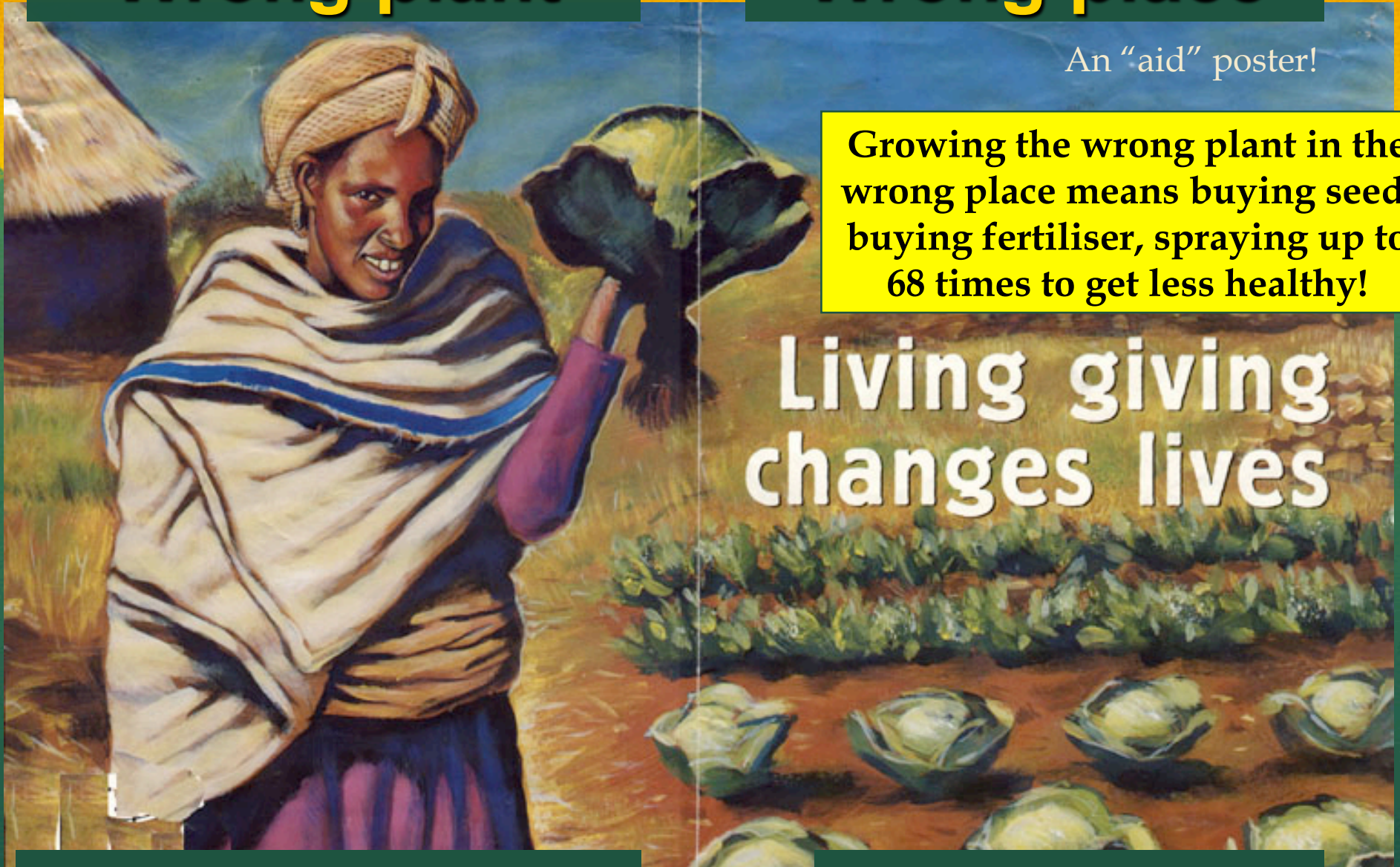
An "aid" poster!

Growing the wrong plant in the wrong place means buying seed, buying fertiliser, spraying up to 68 times to get less healthy!

Living giving changes lives

Wrong methods

Wrong food





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



?

Many local tropical plants are far better food value



Gardening with God

The Bible tells us God
has put “us in charge
with things under our
control”

Genesis 1



The Bible also
tells us to “serve
and preserve”
God’s world

Genesis 2



Learning to garden
by watching and
working with God

In Isaiah 28:23 we are reminded that God teaches
people how to put the right plant in the right place.

God grows plants naturally by using local plants
that suit local conditions.

The Psalmist reminds us in Psalm 104, that God
enjoys his gardening



Some beautiful tropical green leafy vegetables - God's vitamin & mineral supplements



Kangkong



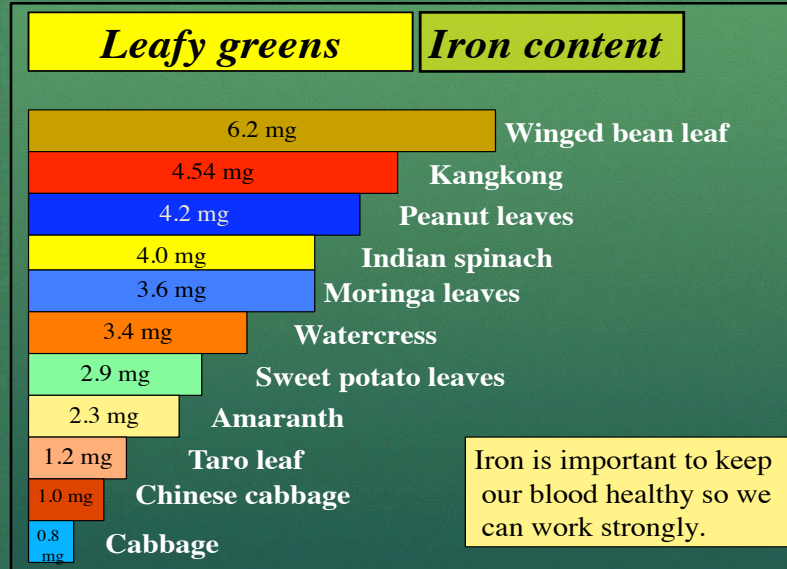
Indian spinach



Okra



Amaranth



Iron is important to keep our blood healthy so we can work strongly.



Sweet potato leaves



Moringa



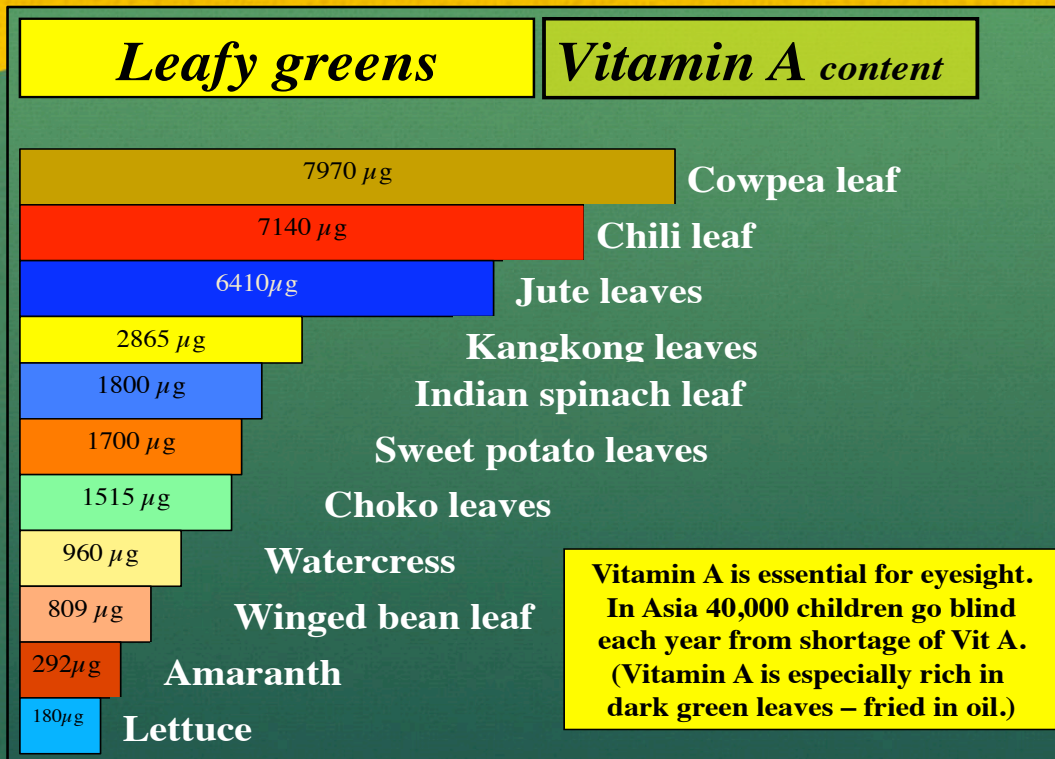
Watercress

Vitamin A for good eyesight

Choose dark green edible leaves



Indian spinach



Vitamin A is essential for eyesight. In Asia 40,000 children go blind each year from shortage of Vit A. (Vitamin A is especially rich in dark green leaves – fried in oil.)

They are best cooked in oil



Cowpea



Choko & Pumpkin



Kangkong



Jute



Chilli leaves

Protein for healthy growth



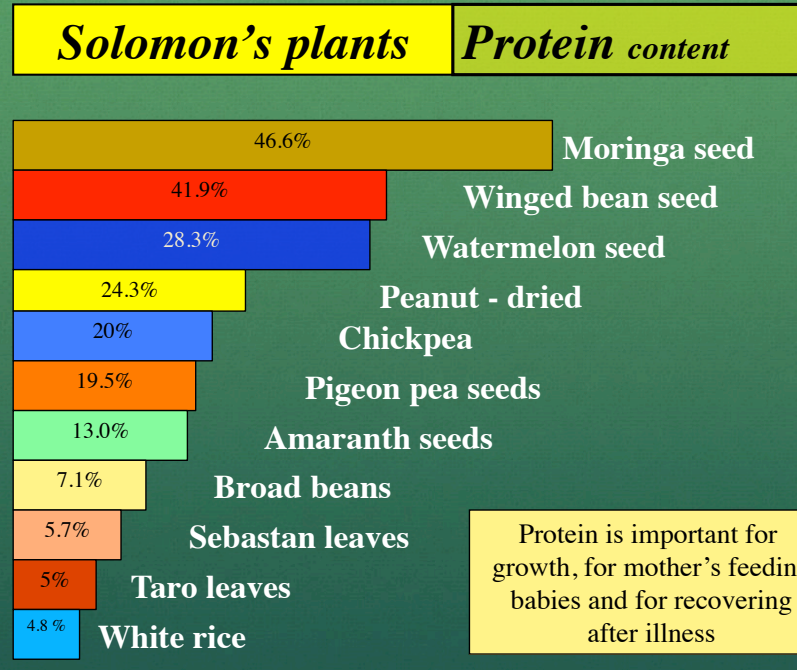
Amaranth



Pigeon pea



Broad bean



Winged bean



Soybean



Chickpea



Peanut

Trees and good soil

When the children of Israel were about to enter the promised land they asked 2 important questions.

Are there any trees on the land?
Is the soil good?

Numbers 13:20

The clue to all good gardening is to look after the soil and to make good use of trees.



A living soil



A dead soil



Some trees can be kept and gardens made underneath. Trees recycle nutrients

Trees are important



Avoid burning when clearing as it loses important nutrients and damages the soil



Soil loss from tree removal

Fruit for flavour and vitamins



Mango



Figs



Doum palm



Avocado



Guava



Pineapple



Key apple



Tamarind



Carob

Plant fruit trees now for your children and grandchildren later

Growing plants well

Plants show us when they are not growing well

Of the 16 main nutrients needed for plants to grow well, this corn leaf is indicating the plant is short of one called nitrogen. It shows a dry V shape down the centre of the oldest leaves. Other grass plants show similar signs. All green leaves need nitrogen.

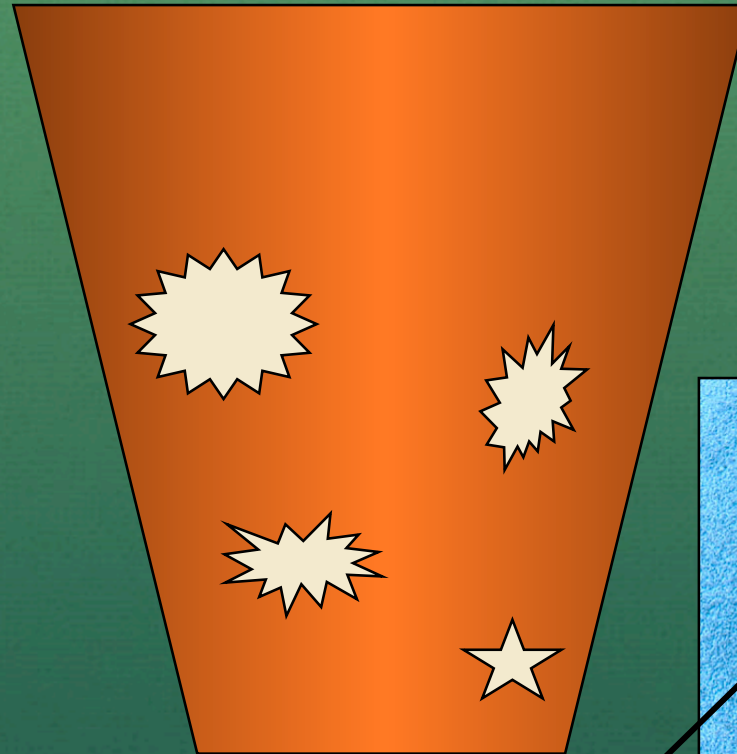
Nitrogen is in the air but plants cannot use it unless small bacteria in the soil and on the roots of bean family plants change it into a form plants can use.

Using compost and plants in the bean family put nitrogen back into the soil



Plants need 16 nutrients to grow

If we imagine soil as being like a bucket of nutrients or plant food that is needed for the plants to grow, then we need to fix the bottom hole, or add the nutrient which is in shortest supply, before the bucket can carry anything more!



Signs shown by plants

Phosphorus



Potash

Nitrogen

By looking at plants carefully we can learn to recognize which things are in shortest supply

Making compost

Compost is too much hard work for large gardens



If it has lived once it can live again



Don't burn rubbish, compost it!

Use green and brown, wet and dry and keep it moist



Compost is perfect for small backyard gardens

How to make compost

The rules for compost making:

- Build a simple, open box to keep animals out
- Mix green leafy and dry plant material
- Allow air to get into the compost
- Keep the compost bed moist
- Add anything that has been living before
- If possible, turn the heap to allow it to heat up and break down properly
- Add some old rotting material to start the process

**Compost allows things
that were alive to live
again!**



Growing more food needs care!



Managing disease



Conserving nutrients



Restoring fertility



Stopping inbreeding

We need to do
the best good
gardening we
can

We need better
knowledge of
food plant
resources

Plant a mixture of plants together



In nature God never plants only one variety of plant. This is a good ecological way to grow plants. It gives more stable production.

Pests and disease always cause less damage in mixed groups of plants



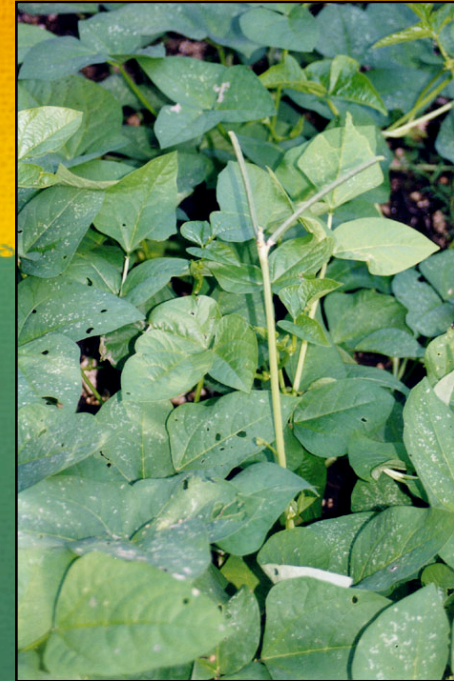
Some of the many food legumes useful to restore soil fertility



Pigeon pea



Leucaena



Cowpea



Peanut



Winged bean



Lablab

All legumes or plants in the bean family can put nitrogen back into the soil

Droughts and famines become more serious when people grow the wrong plants



Rice needs lots of water



Corn needs lots of water



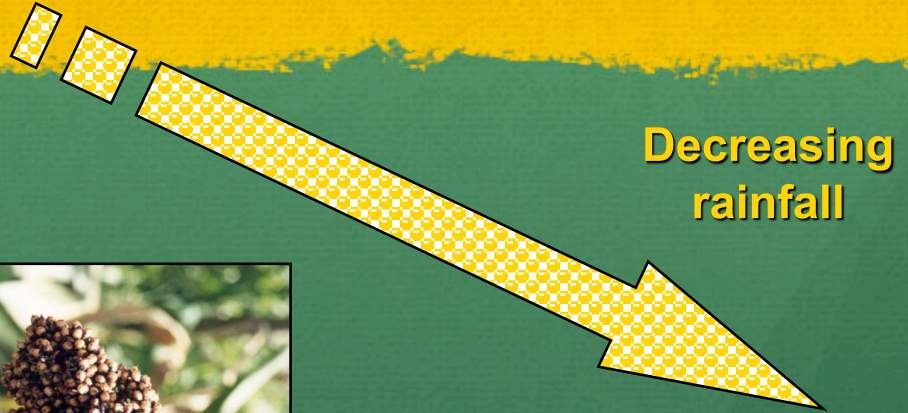
Sorghum needs less water



Finger millet less water



Bulrush millet suits dry areas



Tropical cereal grains

Protect you family by growing a range of different grain crops

Sorghum suits African soils, rainfall and conditions



There are several hundred kinds of sorghum



Grow and keep a range of kinds of sorghum to suit changing conditions



Choose kinds of sorghum to suit soils, climate, pests, disease, birds and other problems



Open kinds get less mould

Sorghum tolerates more soils and drought better than maize



Striga in sorghum fields



A sorghum field

The leaves of both Cock's comb and Cowpea can be cooked and eaten. Cowpea also adds nitrogen to the soil. Its seeds can be eaten.



Photo from Wikipedia

A Striga plant

Sorghum and pearl millet can be damaged by plants called "Striga" that grow on the roots of the plant and damage the crop



Cock's comb

Celosia argentea

It has been found that intercropping sorghum with Cock's comb or Cowpea helps reduce the damage from Striga.



Cowpea

Vigna unguiculata subsp unguiculata

Coping with *Quelea* in sorghum fields



Photo from Wikipedia

Quelea are the most common bird in the world and can devastate sorghum crops

Apart from trying to watch sorghum crops for days on end, the only known control is to try to catch the birds in nets in their resting places in the evening – then eating them of course!

A *Quelea* bird



Photo from South Africa tours and travel



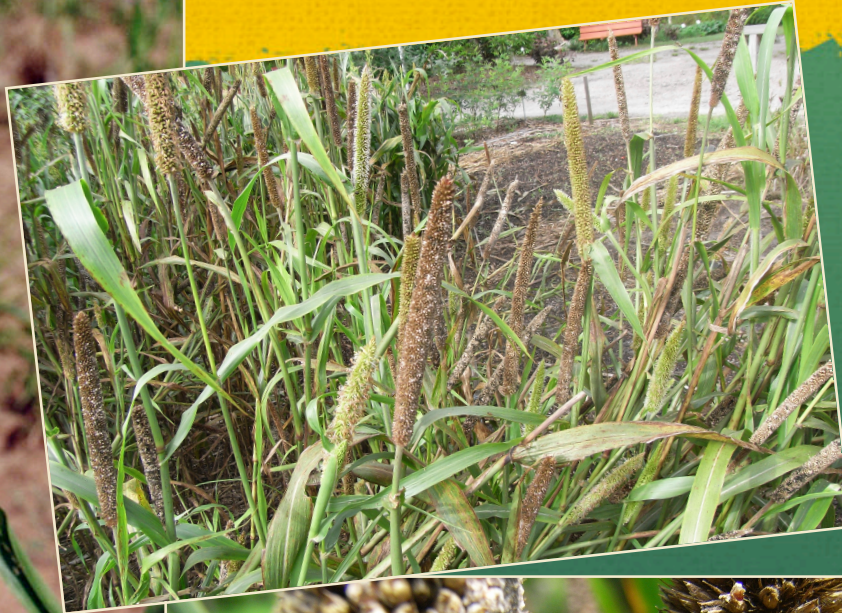
Light coloured sorghum gets more bird damage but is also the more nutritious kind of sorghum

Dark coloured sorghums have antinutrients and tannin and are less well liked by people and also birds!



Pearl millet

Pennisetum glaucum



Suits very arid
regions

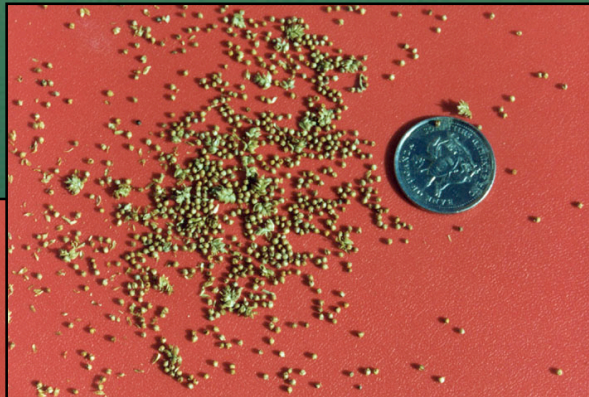


Finger millet



Eleusine corocana

Suits arid regions



Saving your own seed

In many small gardens, corn plants and cobs are small, because the seed is inbred.



You can't save your own seed from hybrid corn



If you get all the seed off one cob, these are all related and will become inbred and small.

Seed from a range of cobs, or better still, from a range of gardens, should be mixed together to stop inbreeding.



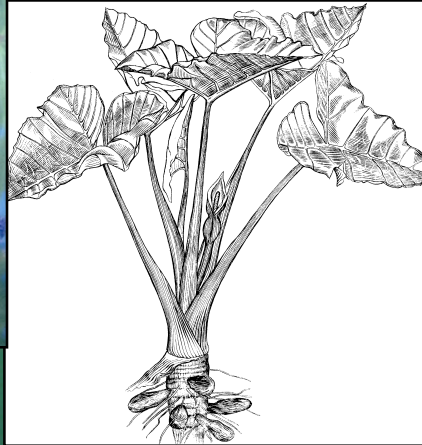
Changing plants to grow on poorer and poorer soils is “mining” the ground



Yams need fertile soil



Taros need good soil



Xanthosoma taro survives on poorer soils



Sweet potato can grow on moderate soils

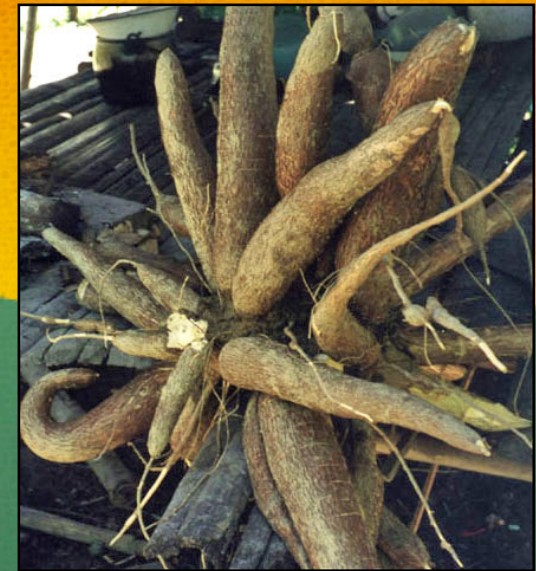


Cassava will still produce on poor soils

Decreasing soil fertility

Tropical root crops

Cassava - the most common tropical root crop



Cassava can survive drought and will grow in poor soils but must be well cooked

Young leaves can be cooked and eaten



Needs cooking to remove cyanide



Virus affected in Africa

Traditional leafy vegetables

“The use of traditional leafy vegetables in communities has been noted in several studies. These studies highlighted concerns about the loss of knowledge. The aim of this work was to enhance the role of African leafy vegetables in the nutrition of vulnerable groups in South Africa through improved preparation, promotion of consumption, processing, landrace improvement program, and management of their genetic diversity.”

Quote in Eden project UK

"When I first started farming, I grew vegetables such as cabbages, Kales and tomatoes. We used to think that modern crops were better than the foods we grew up eating. Now I grow crops like spinach, nightshade, spiderplants, amaranthus, jute plants, sweet potatoes and pumpkins. They suit Kenya's climate and soils and are rich in important micronutrients. Most are sold from supermarkets in Nairobi.

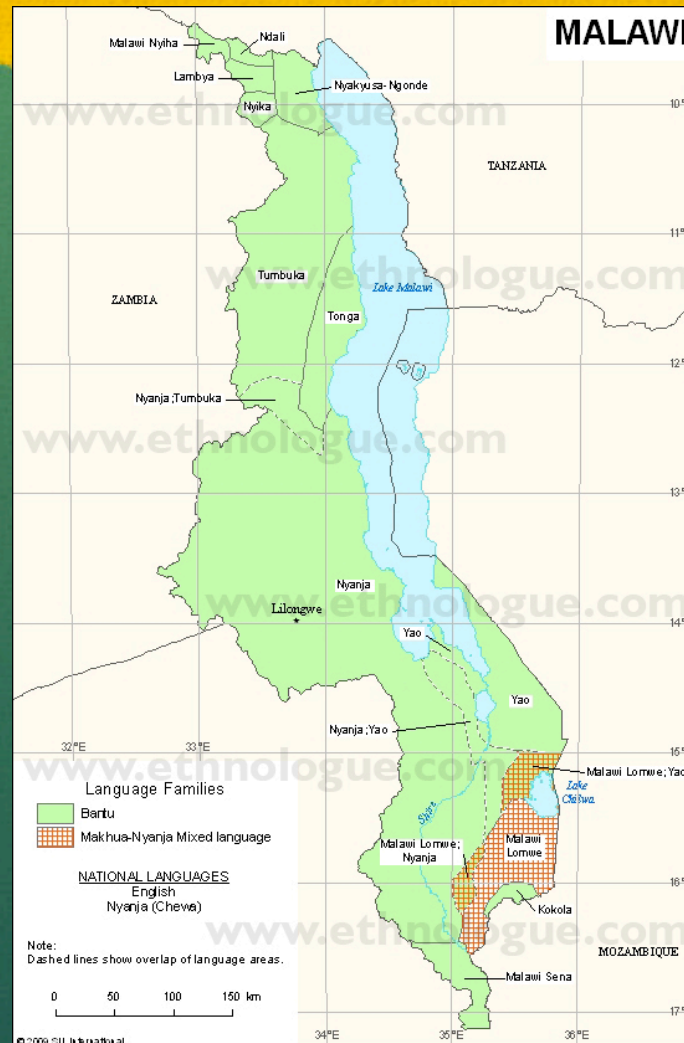
Stephen Kimondo, Kenyan Farmer

Naming plants in Malawi

Local plants have local language names. Because of the large number of languages in the world, scientists have given every plant a name in the Latin language and this remains the same whatever local language the person is speaking or writing. It is like a reference or link to the same plant somewhere else.

An older book called “Useful Plants of Malawi” by Jessie Williamson lists many of the common language names for plants in Malawi.

Williamson, J., Third Edition (2005) Published by Mbadzi Book Trust



Food Plants International

Compiling information on food plants of the world and getting the information back to those who need it most

- For other information see the Food Plants International website www.foodplantsinternational.com
- Information and pictures in this book may be used freely without any need for acknowledgement.
- A powerpoint copy can be supplied for people who wish to translate it into other languages in Zambia
- For contact Bruce R French, 38 West St, Burnie Tasmania, 7320 Australia. Email:bfrench@vision.net.au