GOOD GARDENING AND GROWING ROOT AND GRAIN CROPS IN GHANA

PRACTICAL WAYS OF GROWING LOCAL FOOD PLANTS AND DOING IT WELL

Rotary

FOOD PLANT SOLUTIONS
ROTARY ACTION GROUP
Solutions to Malnutrition and Food Security

A project of the Rotary Club of Devonport North and District 9830

www.foodplantsolutions.org

REGISTERED CHARITY

Good gardening and growing root and grain crops in Ghana

Rotary FOOD PLANT SOLUTIONS ROTARY ACTION GROUP Solutions to Malnutrition and Food Security

Food Plant Solutions produces educational materials to enable people to understand the nutritional value of local food plants and increase awareness of highly nutritious plants that are adapted to the local environment. Some of these plants are under-utilised species and many are superior to imported foods and plants. Food Plant Solutions produces these materials because every minute of every day, five children under the age of five die from malnutrition.

We welcome and encourage your support.

Food Plant Solutions - A project of the Rotary Club of Devonport North & Rotary District 9830.

Thisbookletisbased on information fromtheFoodPlants International (FPI) database

developed by Tasmanian agricultural scientist Bruce French, AO.

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Good nutrition is simple

Grow and eat a wide range of food plants.
Then if a nutrient is missing from one plant, it will be included in other plants and produce a balanced diet.

Mango

Cassava

Healthy Diets

All people, and especially children, should eat a wide range of food plants to stay healthy. This should include some plants from each of the food groups – energy foods, growth foods and health foods. Then each of the nutrients required by our bodies will be met in a balanced manner.

Health Food

Moringa

Energy Food

Purple amaranth

Growth Food

Sweet potato

Local plants give a regular food supply

Use a range of local or well adapted plants to get a regular supply of food.

Lesser yam

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

Lima bean

They each have different ways to survive poor conditions or seasons.

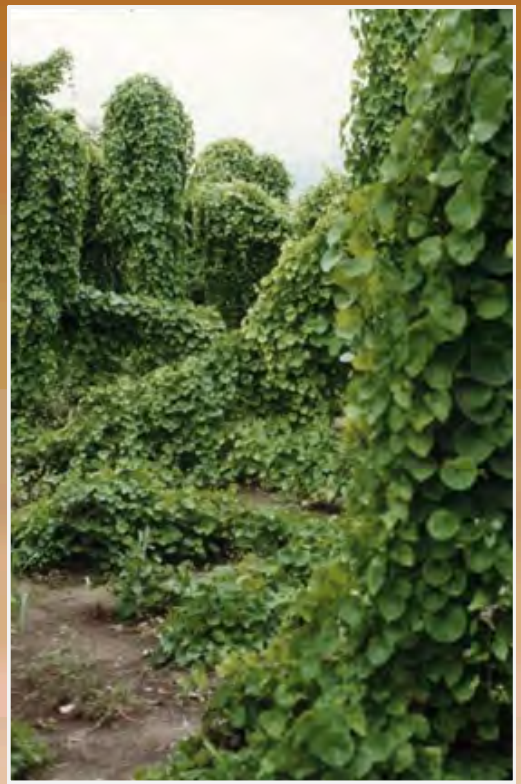
Sweet potato

Good gardening practices

Good practices can help grow productive plants and avoid pests and diseases:

- **Grow the right plants in the right places**
- **Grow local, resistant varieties**
- **Grow them well, so they stay healthy**
- **Use a mix of varieties and crops**
- **Avoid using diseased plants for planting material**
- **Improve the soil with compost, cover crops and nutrients**

Agroecology - growing plants a natural way



Growing foods in a mixed garden is a good and simple way to reduce pests and disease.

Agroecology - how plants grow in nature

Plants don’t grow in rows in nature.

Growing only one type of plant is not used in nature.

Lots of varieties are maintained in nature.

In nature, the right plant grows in the right place.

In nature, fruit is produced in season.

Nutrients are recycled in nature.

Natural systems are sustainable.

In nature, the soil remains alive and humus rich.

Mixed cropping is good

Yams, bananas & vegetables.

Amaranth and maize mixed.

Plants for garden beds

Sweet potato

Jute

Shallots

Plants for garden edges

Chickpea

Larger plants can be grown around the edges of gardens.

Purple amaranth

Peanut

Fruit and nut trees for around houses

- Fruit to be enjoyed by all.
- Some need to be planted for the future.
- Many fruit are seasonal.
- Some grow quickly.

Mango

Papaya

Moringa

Plants to climb on fences

Many plants can be grown on fences around houses and gardens.

Lesser yam

Lima bean

Choko

Information on gardening

Deficiencies

We all need to learn together and share what we know.

Seed-saving

Pests

Diseases

Are your plants healthy?

Plants show special signs when they are not growing well.

This maize leaf is indicating the plant is short of a nutrient called nitrogen. It shows a dry 'V' shape down the centre of the oldest leaves. Other grass plants show similar signs.

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.

A bucket of nutrients!

If we imagine soil as being like a bucket of nutrients, then we need to fix the lowest hole, (or add the nutrient which is in shortest supply), before the bucket can carry anything more.

We can learn to recognize which nutrients are in shortest supply by looking at plants carefully.

Phosphorus

Potash

Nitrogen

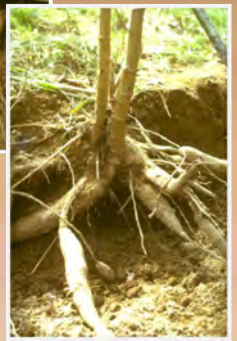
Different plants grow on different soils

Yams need fertile soil

Taros need good soil

Chinese taro can grow on moderate soils

Sweet potato grows on poorer soils



Cassava will produce on poor soils

Decreasing soil fertility

Most root crops produce more food if the soils are rich in potash. Ashes from fires have potash.

When nitrogen is short…

Pineapple plants turn red.

Nitrogen is important for plants to grow healthy leaves.

Grass plants have a dead ‘V’ shape in the old leaves.

Old leaves go yellow.

Beans and peas provide protein and restore soils

Beans and peas have special bacteria attached to their roots that allow them to take nitrogen from the air and put it into the soil for plants to use. It is free fertiliser!

Lablab bean

Chickpea

Climbing beans can be allowed to climb up maize in gardens and still get good crops of both beans and maize.

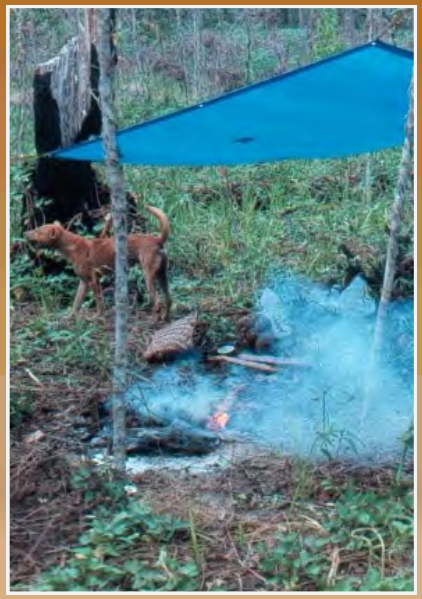
Burning loses nutrients and destroys soils

Burning is a quick and easy way to clear up a garden site, but wherever possible, plant material should be left to rot back into the soil.

This provides nutrients and helps the bacteria and other living things in the soil that are so important for plant growth.

A soil with humus, or rotted plant material, does not lose nutrients during heavy rain.

Nitrogen (and Sulphur) get lost into the air as plant material is burnt. Other plant nutrients, like potash, remain in the ashes.



Making compost

Don’t burn rubbish - compost it!

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.**
- **Add some old rotting material to start the process.**
- **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.**

The compost process

Small bacteria and other living things work hard to break down old plants and other living things into compost.

Because the bacteria are living, they need continual air and water, and a balanced diet of green and dry waste, or they die.

Living things already have plant nutrients in perfect balance for new plant growth, so compost is the perfect fertiliser.

To stay healthy, soil needs lots of compost and organic matter to do all the amazing work that goes on unseen within the soil.

Compost should become hot enough to kill weeds and pests.

Air-layering

Air-layering is a special way of taking cuttings. A shallow cut is made around a small branch while it is still on the tree. Some soil and mulch is wrapped around this and covered with plastic. It soon forms roots. It can then be cut off and planted.

If a sweeter or preferred fruit or nut is found, it is best to grow it from cuttings, or air-layering, so the new tree is the same as the old.

Save your own seed

Plants grown from seed that is saved locally usually get a lot less disease, as they are adapted to the area.

Root and grain crops in Ghana

Many root and grain crops suit the climate of Ghana. These foods are the backbone of the country, so we need to get to know them very well.

Maize

Cassava

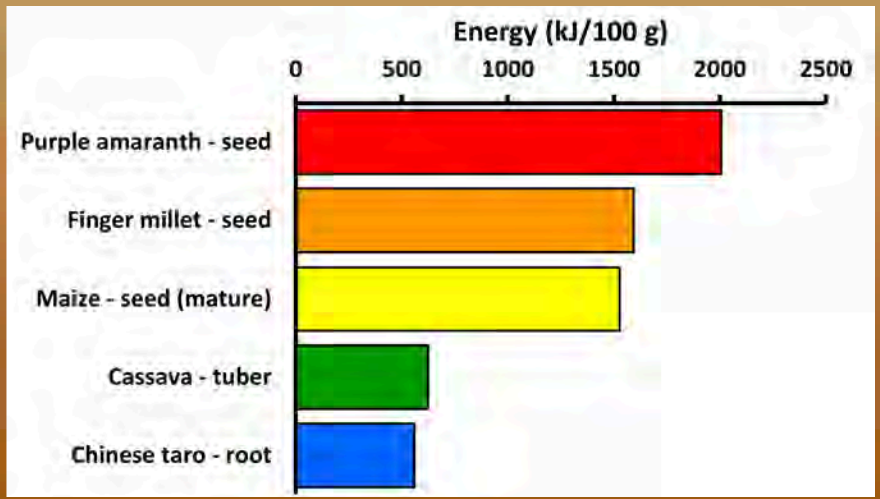
Cocoyam

Root and grain crops provide energy

Purple amaranth

Finger millet

Root and grain crops are important foods for energy.



Growing purple amaranth

- An annual erect plant.
- It grows to 2 m high.
- The leaves and young plant are eaten cooked. They are also dried and stored.
- The seeds are ground into flour and used to make bread.

Plants can be harvested by pulling up the entire plant or by removing leaves over several harvests.

Growing maize

- A single stemmed annual plant that grows 2-3 m tall.
- Maize is sweetest eaten soon after harvesting.
- Cobs commonly have 300-1000 grains.
- Normally only one or two cobs develop per plant.

The cobs are eaten cooked. The dried grains can be crushed and the meal can be used for breads, cake, soups, or stews.

Finger millet

- An annual millet grass. It is robust and forms many tillers or young shoots from the base.
- Often plants are grown mixed with sorghum or maize.
- Millet seed stores very well and can be stored without damage for 10 years.

The seed are eaten either roasted or ground into flour. This is used for porridge and flat bread. Alcohol is brewed from the grain. The leaves are also edible.

Growing cassava

- Cassava is a root crop that is easy to grow, can be stored in the ground, will grow in poor soils and survive dry times.
- Plant woody sections of the stem (about 15 cm long) in the ground at any angle.
- If the soil is loose, it does not have to be dug first. Crops are usually harvested 10 - 14 months after planting.
- Yields of roots are lower in very acid soils and in shady places.

Cassava should always be well cooked as it contains a bitter poison called cyanide that can build up in the body and damage nerves. Cooking removes this.
Leaves can be cooked and eaten.

Growing cocoyam

- A herb that grows up to 2 m tall with a short stem and large leaves at the top.
- The top piece of the main central corm or stem is normally planted.
- Crops can be planted at any time of the year, but are often planted to make best use of natural rainfall.

Cormels, or small corms, are eaten roasted or boiled.

Acknowledgements

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Review, layout and formatting - Alexandra Lindsay, John McPhee

For further details contact us at: info@foodplantsolutions.org, website: www.foodplantsolutions.org

Image acknowledgements

Most images used in this publication are from the Food Plants International database (Welcome - Food Plants International). Acknowledgement is given for images of the following plants sourced from the internet.

Scientific name	Common name	Image URL
Eleusine coracana	Finger millet	https://world-crops.com/wp-content/uploads/Finger-Millet-by-DFID-6721454911_25204fcd9b_z.jpg

Notes

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