Potentially Important Food Plants of Equatorial Guinea




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

Potentially Important Food Plants of Equatorial Guinea

Dedication

This book is dedicated to the 3 billion hard working farmers and families around the world who cultivate these, and other, food plants for their own subsistence, and who help conserve them in their rich diversity for other people to enjoy.

Food Plant Solutions Field Guide – Equatorial Guinea, Version 2, January 2022

Preface

This guide is based on information from the Food Plants International (FPI) database developed by Tasmanian agricultural scientist Bruce French. The source material and guidance for the preparation of the book has been made possible through the support of Food Plants International, the Rotary Clubs of District 9830, particularly the Rotary Club of Devonport North who founded Food Plant Solutions, (previously the Learn◊Grow project), and many volunteers who have assisted in various ways.

The selection of plants included in this guide has been developed by Lyndie Kite working in a voluntary capacity using the selection criteria developed by Food Plant Solutions. These selection criteria focus on the local plants from each of the main food groups with the highest levels of nutrients important to human nutrition and alleviation of malnutrition. It is intended as a **Draft Guide only** to indicate some important food plants that serve as examples for this purpose. Other important nutritious plants may be equally useful, and it is recommended that the FPI database be used to source information on the full range of plants known to occur in Equatorial Guinea. This guide has been developed with the best intention to create interest and improve understanding of the important local food plants of Equatorial Guinea, and on the understanding that it will be further edited and augmented by local specialists with appropriate knowledge and understanding of local food plants.

Food Plant Solutions was initiated by the Rotary Club of Devonport North to assist in creating awareness of the edible plant database developed by Food Plants International, and its potential in addressing malnutrition and food security in any country of the world. In June 2007, Food Plant Solutions was established as a project of Rotary District 9830, the Rotary Club of Devonport North and Food Plants International. The primary objective of the project is to increase awareness and understanding of the vast food resource that exists in the form of local plants, well adapted to the prevailing conditions where they naturally occur, and how this resource may be used to address hunger, malnutrition and food security. For more information, visit the website www.foodplantsolutions.org. More detailed or specific information on plants, including references to material by other authors, is available on DVD on request.

Disclaimer: This Field Guide has been produced using information from the "Edible Plants of the World" database compiled by Bruce French of Food Plants International. Although great care has been taken by Food Plants International and Food Plant Solutions, neither organisation, or the people involved in the compilation of the database or this Field Guide:

- makes any expressed or implied representation as to the accuracy of the information contained in the database or the Field Guide, and cannot be held legally responsible or accept liability for any errors or omissions
- can be held responsible for claims arising from the mistaken identity of plants or their inappropriate use
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Always be sure you have the correct plant, and undertake proper preparation methods, by consulting with specialist scientists or local users of the plant. The Food Plants International database, from which the information in this Field Guide is drawn, is a work in progress and is regularly being amended and updated.

Contents

Introduction

Potentially Important Food Plants of Equatorial Guinea has been produced to provide information on approximately 40 edible plants that are known to grow in Equatorial Guinea. These plants come from all the major food groups and have been chosen because of their high nutritional value. Many of the plants in this book may be neglected and under-utilised plants. This means they may not be well known. However, because they are high in many beneficial nutrients, and they are already adapted to the environment, and therefore likely to require minimal inputs, they could be important food plants that are likely to be superior to imported foods and plants. Commercially grown plants may also be included in the book, but only if they are significant foods for household consumption. It is hoped people will become confident and informed about how to grow and use these plants as many local food plants provide very good quality food.

Growing food

Growing food to feed a family is, without doubt, one of the most important things anyone can do. The more interest you take in your garden and the more you learn about plants and how to grow them well, the more interesting and fun food gardening becomes.

A country with very special plants

The local food plants of most countries have not been promoted and highlighted in the way they deserve. Visiting a local food market will quickly show what a rich variety of food plants can be grown in this country. Good information about these plants is often still in the minds and experience of local farmers, and has not been written down in books. This can make it hard for the next generation of young people to find out how to grow them.

In many countries, some of the traditional food plants are only harvested from the wild and others are only known in small areas. Others have hundreds of varieties and are the main food for people in different regions. Information on all these plants, their food value and the pest and diseases that damage them is available in the Food Plants International database.

Getting to know plants

People who spend time in gardens and with their food plants get to know them very well. It is a good idea to learn from someone who grows plants well. Each plant grows best in certain conditions and there are often special techniques in getting it to grow well. For example, sweet potato will not form tubers if the soil is too wet, but it may still grow lots of green leaves. Taro will grow in light shade, but sweet potato will not. Ginger can grow in fairly heavy shade. Pruning the tips of betel leaf or pepper vines will cause more side branches to grow and therefore, produce more fruit. Stored yam tubers need special treatment if you want them to put out shoots early. There are lots of unique things about every plant and learning about these helps a good gardener produce more food.

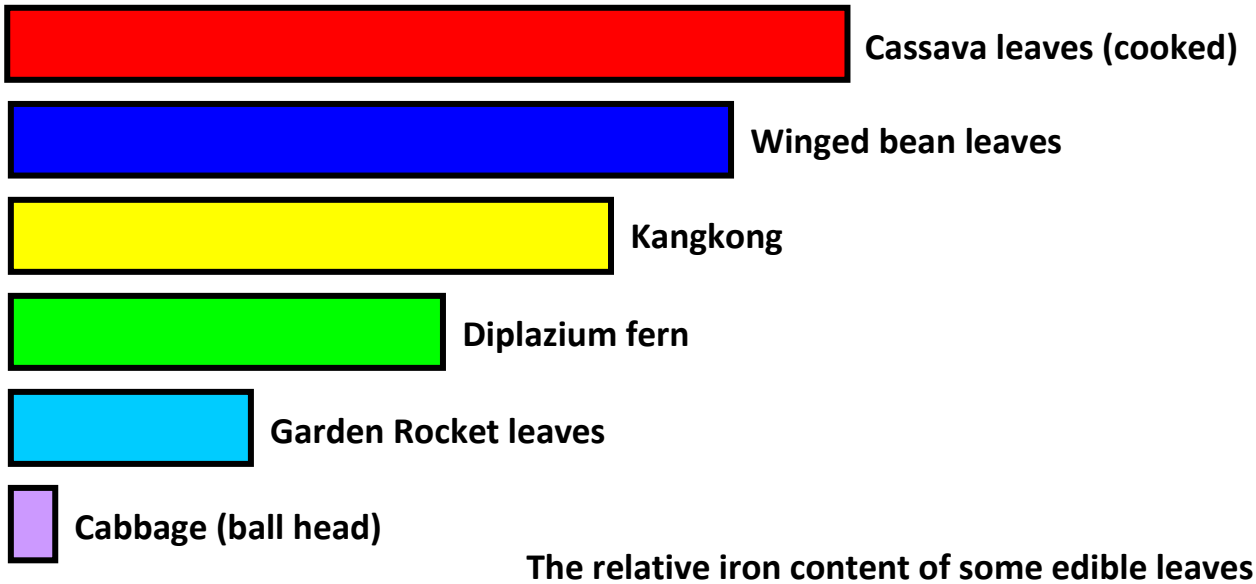
Naming of plants

Many food plants have local names, as well as a common English name. Every type of plant also has its own scientific name. Although the scientific name might not be widely recognised, this is the link by which people in different countries and with different languages can recognise the same plant. We know that many plants are grown in many different countries, but relying on local or common names, we might not recognise the same plant grown in different places. By using scientific names to accurately identify plants, we can get useful information from people in other countries. Wherever possible, plants in this book are named by their common English name and their scientific name.

Local food plants are often very good

People sometimes think that local food plants are not very special and that any food plant that is new or comes from another country must be a lot better. This is often not true. Many of the newer or introduced food plants, such as the round or ballhead cabbages, have very little food value. Many traditional tropical green, leafy vegetables and ferns have 10 times or more food value as ballhead cabbage or lettuce. It is important to find out more information about the food value of different foods if we want to eat well. Citrus fruit, such as lemons and oranges, are often grown for vitamin C that helps keep people healthy. These fruits do not grow well in the tropics-the common guava fruit has three times as much vitamin C and is loved by children. This is just one example that there are often much better choices of local foods with higher levels of important nutrients.

Our bodies need a variety of food plants to enable us to grow, stay healthy and have enough energy to work. Different foods are needed to provide energy, protein, vitamins and minerals. The following diagram highlights the iron content value of some traditional edible, tropical plant leaves, compared with cabbage. Iron is a nutrient that is very important for our bodies and especially our blood. People who are short of iron become anaemic and lack energy.



The relative iron content of some edible leaves

A healthy balanced diet

Good nutrition, or eating a healthy balanced diet, is really very simple. If people eat a wide range of food plants, their bodies will normally get a balanced amount of all the different nutrients they require. If a nutrient is lacking in one food plant, then they are likely to get it from another plant if they are eating a range of food plants. For this reason, everybody should eat a range of different food plants every day. The food group that is especially important for young people is the dark green leaves. Everyone should eat a good serving of dark green leaves every day. They have many vitamins and minerals, as well as protein. There are many spices or flavouring plants that can improve the taste of foods, but taste should be considered separately from food value.

Learning to cook well

Even though some nutrients in food can lose some of their value during cooking, it is normally much safer to cook all food plants, at least for a short time. Bacteria, which cause diarrhoea, can occur in gardens and on food plants. These are killed during cooking. Many plants in the tropics develop cyanide, a chemical that makes them bitter and poisonous. This happens often with cassava (tapioca, manioc) and beans, but can also occur in many other plants. Boiling the food for two

minutes normally destroys cyanide and makes the food safe to eat. Some of the nutrients our bodies need (such as vitamin A for good eyesight) only become available when food is cooked in oil.

Learning to grow "wild" food plants

Many plants grow wild in the bush and are not cultivated by people. We can normally find someone who has taken an interest in them and has learned to grow them. This may be people from a different language group. It may be that in their area they have found better types than the ones that simply grow wild.

Saving better types of plants

If we simply allow plants to grow from seed, the improvements that have been made in finding sweeter or better types may get lost. Some fruit trees are like this and the fruit produced may not be sweet at all. It is often necessary to take cuttings from a tree to be sure the new plant is exactly the same as the old one. If the plants won't easily grow from cuttings simply by sticking a piece of the branch in the ground, there are other ways of helping these plants to form roots and start to grow. One good way is to make a small cut in the bark of a young branch and then wrap soil around the cut and cover it with plastic. With plants like guava, new roots will start to grow from this cut and grow into the soil wrapped around the branch. It can then be cut off and planted. This is called air-layering. A similar method is used with the roots of breadfruit. A shallow root is uncovered and a small cut made from which a new sucker will start to grow. This can be cut off and replanted.

Growing from cuttings and suckers

Many food plants are grown from cuttings and suckers. This is very important, as it allows all the different kinds of yams, taros, bananas, sweet potato and sugarcane to be continually grown and ensures the varieties are preserved. Each plant has its own special propagation method. It is important to use healthy planting material, as diseases can be spread in planting material.

Saving seed

Some food plants are grown from seed. Sometimes this is very easy as the seeds are large, store well, grow easily and grow the same as the original plant. It is more difficult with other plants. Many large fleshy seeds, such as breadfruit, need to be planted while still fresh as they do not store easily. Other seeds do not "breed true" or do not grow into new plants that are the same as the original plants. For example, the fruit may not be as large or sweet or have the same colour or taste. With many of these plants, it may be necessary to find ways of growing them from cuttings or other methods such as grafting. Some plants "inbreed" and get smaller or poorer. This happens when a plant self-pollinates or receives pollen from a close relative. Corn grown in small plots normally does this and the plants grown from seed grown in this situation get smaller and smaller each year. The seed needs to be saved from several different plants with different history and then mixed together before sowing. All the seeds on one cob are related and will inbreed. Some seeds develop a hard seed coat and need to be scratched, soaked in water, or even put into hot water, before they will start to grow. Saving local seeds is often a good idea as they are already adapted to local conditions. For example, seed saved from pumpkins grown locally will produce plants with less pest and disease damage than those grown from imported seed. *If you can't get seeds or planting material from local gardens – it is probably not a suitable local plant!*

Growing a garden of mixed plants

In nature, one variety of one plant never grows alone. There are always lots of different plants of different kinds and sizes, all growing together. Anyone who has ever walked into a tropical jungle will know this very well. The reason people all over the world want to save the rainforest is because it has so many different kinds of plants all growing together. Growing plants in a food garden in a

way similar to how they grow in nature, as a mixed group of plants, is very good agriculture. Mixing plants in a garden usually gives more reliable food production, as any disease from one plant will wash off in the rain onto a different plant, where it cannot survive. Small plants fill the gaps and reduce the need for weeding.

Different types of plants for food security

There is another reason for growing a range of food plants in a local garden or around a village. If something goes wrong, like extreme insect damage to plants, some disease occurring in the garden, or a poor growing season, some plants will be more damaged than others. With a variety of plants, there will still be some food to eat until the other plants recover and grow again. Also, a wide variety of plants will mean that different ones will be maturing at different times, which helps ensure a continuous supply of food. There are shrubs that can be planted as edible hedges around houses, and fruit and nut trees that need to be planted as a gift for your children, several years before they will be able to enjoy them. Some nuts can be stored and eaten when other foods are not available. Most yams will store well for a few months.

Looking after the soil

Gardeners in traditional tropical agriculture usually move their gardens often by shifting to a new piece of land. There are usually three reasons for this:

- In the tropical lowlands, weeds can become a very big problem. There are usually a lot fewer weeds in the first year or two after clearing and burning the land, but weeds increase in the following years.
- Some of the nutrients in the soil are used each year and the soil becomes poorer and plants do not grow as well. There are ways of reducing this loss of nutrients.
- Very small worms called nematodes build up in the soil after a few years and get into the roots, especially of annual vegetable plants, and stop their roots working properly. For example, root knot nematode will cause the roots of plants like tomatoes and beans to become twisted resulting in poor growth of the plant.

Building up the soil

When a new garden has been cleared, it has lots of leaf mulch and other old plant material. This provides plant nutrients for new plants to grow. There is a simple rule for growing plants and improving the soil-“If it has lived once, it can live again.” Any old plant material can provide nutrients for new plants to grow, but it must be allowed to rot into mulch or compost for this to happen. If this plant material is burnt, some nutrients, especially phosphorus and potassium (“potash”), get left behind in the ashes for new plants to use, although it also allows these important nutrients to be lost by being washed away by rain. But with burning other important nutrients, such as nitrogen and sulphur, get lost in the smoke and disappear from the garden and soil. These last two plant nutrients are especially important for growing green leaves and when their levels are low, plants grow small or pale green. When nitrogen is lacking, the old leaves of the plant go pale and fall off early, and when sulphur is lacking, the young leaves go pale. Wherever possible, old plant material should be covered with some soil to allow it to rot down and not simply dry out or get burnt.

Poor soils where crops won’t grow

When soils are very acid (or sour), plants cannot get the necessary nutrients. Natural chemicals in the soil that are toxic to plants when present at higher levels become soluble, get into plants, and stop them growing. Adding limestone to these soils can improve them. Using compost will not make them less acid, but will keep the plant nutrients in the soil in a more readily available form that plants can use.

Soil nutrients

Plants need 16 different kinds of plant food or nutrients in different amounts to grow properly. A plant that has already been growing will have these nutrients in them and probably even have them in a balanced amount. That is why composting old plant material is so important. Plants usually show some signs or symptoms if any of these nutrients is running out.

One of the most common and important nutrients for plant growth is nitrogen, which actually comes from the air, but gets into plants through the soil. When plants are short of nitrogen, their older leaves often become yellow or pale. When grass family plants, like sugarcane and corn, are short of nitrogen, the centre of the oldest (lowest) leaves starts to develop a dry or dead V-shape. The plant cannot find enough nitrogen in the soil so it gets it from an old leaf to grow a new leaf. This causes the old leaf to die, forming a characteristic V-shape in the centre of the leaf. The plant does not get any bigger as an old leaf dies each time a new leaf is produced. Village farmers often walk through grassland before they clear it for gardens, looking to see if the grass leaves are dry and dead, because they know gardens on this soil won't grow well. It is necessary to use compost or legumes (such as beans) to put nitrogen back into the soil. Growing plants from the bean family (legumes) is the most efficient way to increase the level of nitrogen in the soil.

Corn is a good plant for indicating which nutrients are running short in the soil. If the older leaves go dry along the edges, the soil is running out of potash. If leaves that are normally green develop a bluish colour, the soil is short of phosphorus. Generally, leafy crops need lots of nitrogen, and root crops need lots of potash.

Making compost

Compost is old plant material that has been allowed to rot down into a fine, sweet smelling mulch that is full of nutrients that can be put back on the soil to grow new plants. Making good compost is very simple. A simple heap of plant material can be made in the corner of a garden or near a house. The composting process is carried out by small bacteria that live in the soil and feed on decaying plants. They break down old plant material into compost. These bacteria are living, so they need air, water and food. A good compost heap must have air, so don't cover it with plastic or put it in a container. This makes a foul smelling compost, as different bacteria that don't need air turn it into an acid mixture that preserves it. Good compost must have moisture, so keep the heap damp, but not too wet. The compost bacteria like a balanced diet, which means that both green material and dried material is needed to balance the carbon and nitrogen in the compost pile. If the compost material gets too dry and brown, it will not break down, and if it gets too green, it will go slimy. Using a little bit of compost from an old heap will make sure the right bacteria are there to start the whole process off. As soon as the plant material is broken down to a fine mulch it can be put onto the garden. It is best if it is dug in, but if it is regularly put onto the surface of the garden, worms will mix it into the soil.

Pests

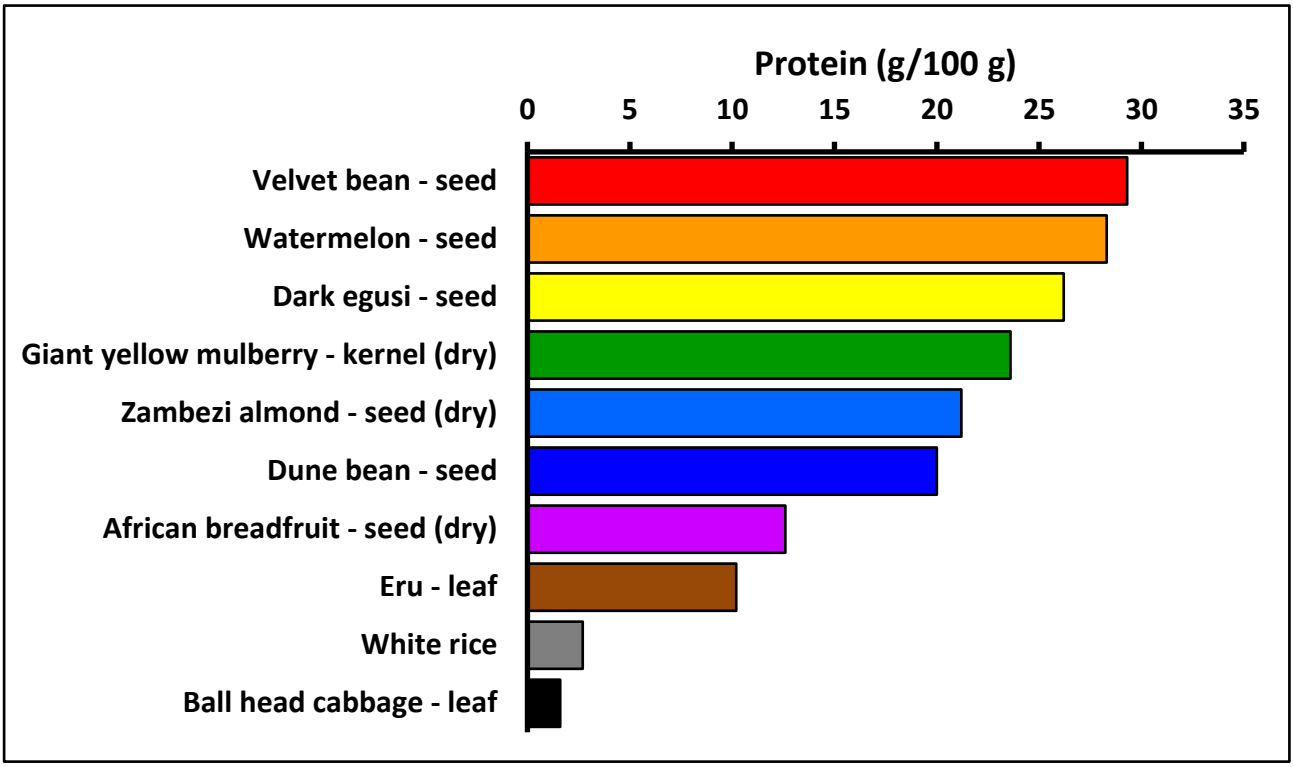
There are a large number of insects that enjoy sharing our food with us! We should not try to kill all these insects as they have an important role to play in keeping everything in nature in balance. What we need to do is to learn to manage these insects so we can all get some food to eat! Some insects are attracted to lights, and if the garden is near village lights some insects can cause a lot of damage. If large areas of one particular crop are planted, insects can breed more quickly and cause a lot of damage. As an example, insects called armyworms can breed up in large numbers on the shade trees of cacao and then move "like an army" into gardens. Some insects are large and breed slowly and can be picked off and removed. The large, green grubs with pointy tips that hide under taro leaves are best controlled by simply picking them off. Some insects, like taro beetles, can be a

serious problem, but the young curl grubs of this insect are tasty if you catch and cook them. Some insects do not like sunlight. The very small moth than damages banana fruit is like this. Simply pulling off the leafy bracts over the banana fruit reduces the damage, as this lets sunlight in and the insect flies away. The best rule for reducing pest damage is to grow healthy plants, as they suffer less damage.

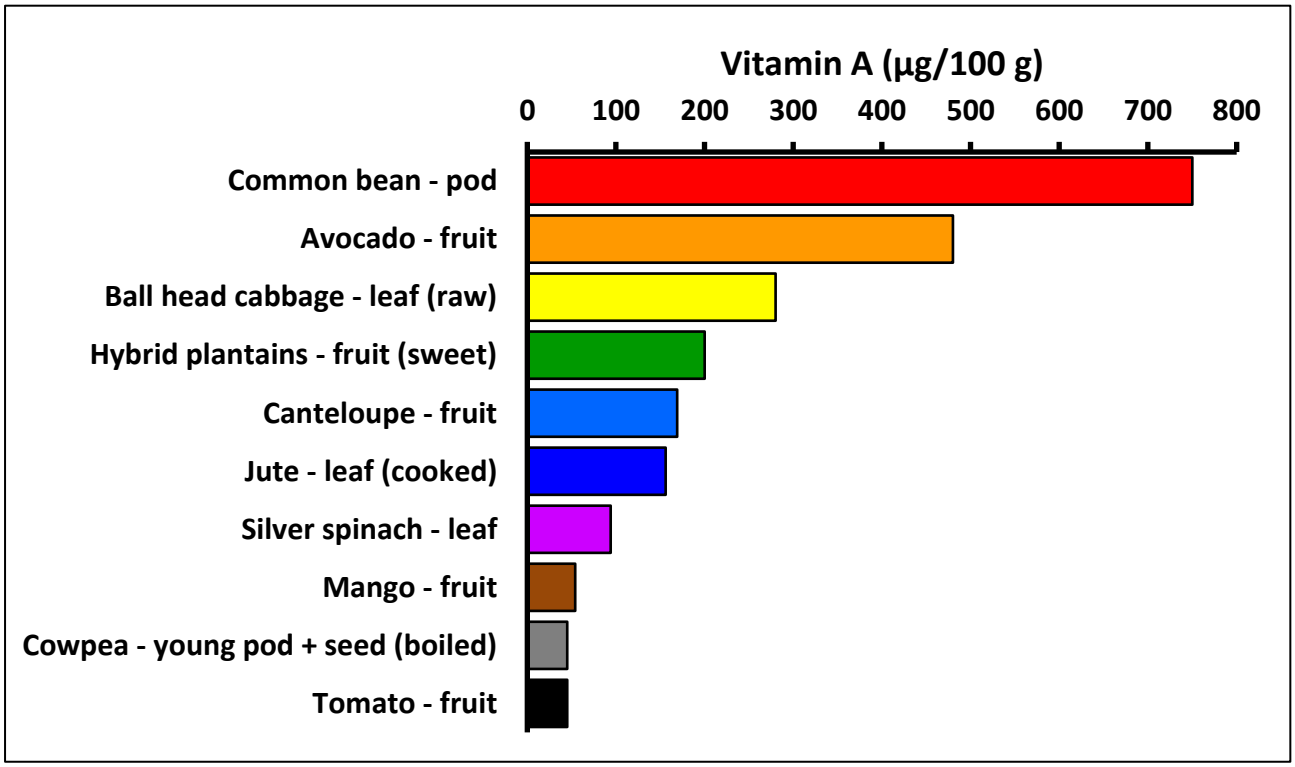
Diseases

The living organisms that cause disease are much smaller than insects. These disease organisms can often only be seen with a microscope. There are three main kinds of disease organisms-fungi, bacteria and viruses. Fungi are like the mushrooms we eat, only very much smaller. They usually make distinct dry spots on leaves and other plant parts. Fungi have spores that often blow in the wind. Bacteria are often smaller and live in damp places. They usually make plants go soft and squashy, and they may cause a smell. Bacteria are mostly spread with rain and in water. Viruses are very, very small and usually make irregular stripes and patterns on leaves and other plant parts. Viruses usually spread in planting material or in the mouths of small sucking insects. One common fungus disease on sweet potato causes the leaves to become wrinkled and twisted. It usually gets worse in old gardens and where soils are running out of nutrients. It doesn't affect all kinds of sweet potato to the same extent. The answer is not to stop the disease, but to improve the soil. The general rule is that healthy plants that are growing well will suffer less damage from disease.

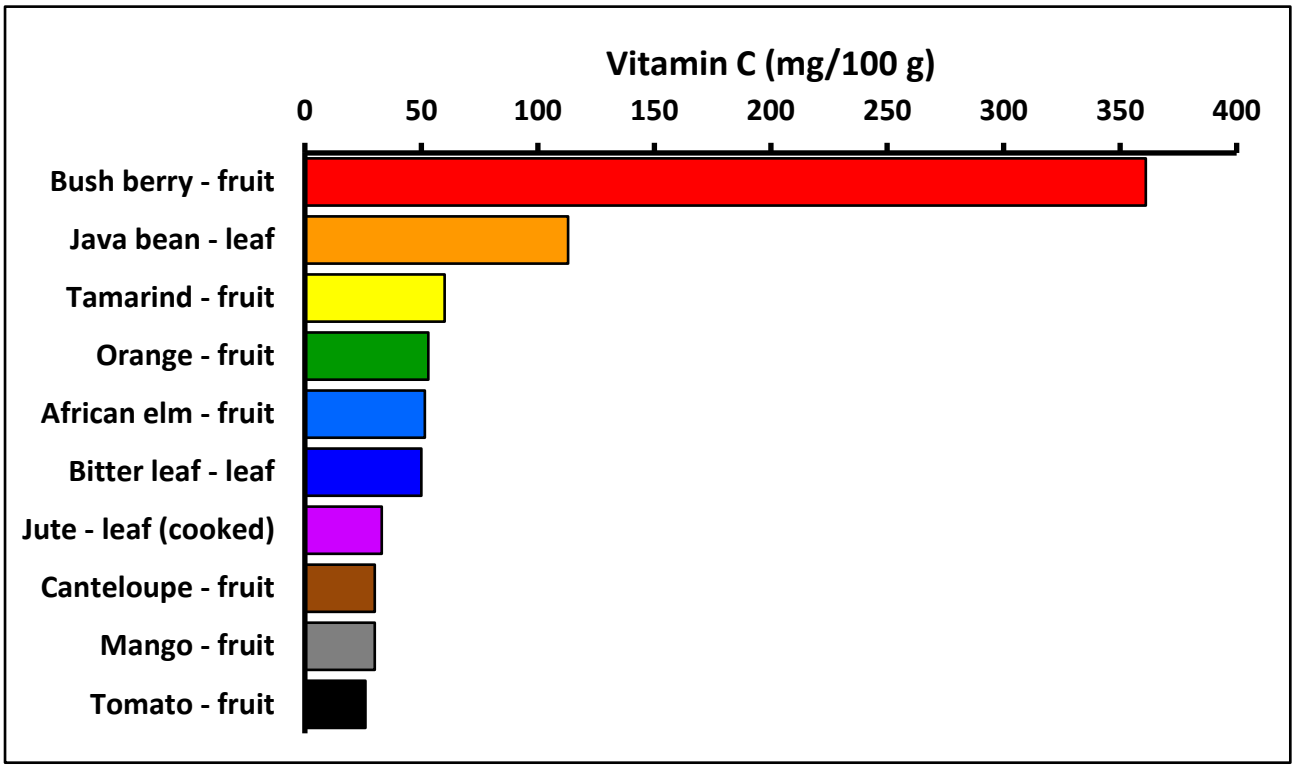
Food value charts for a selection of plants from Equatorial Guinea



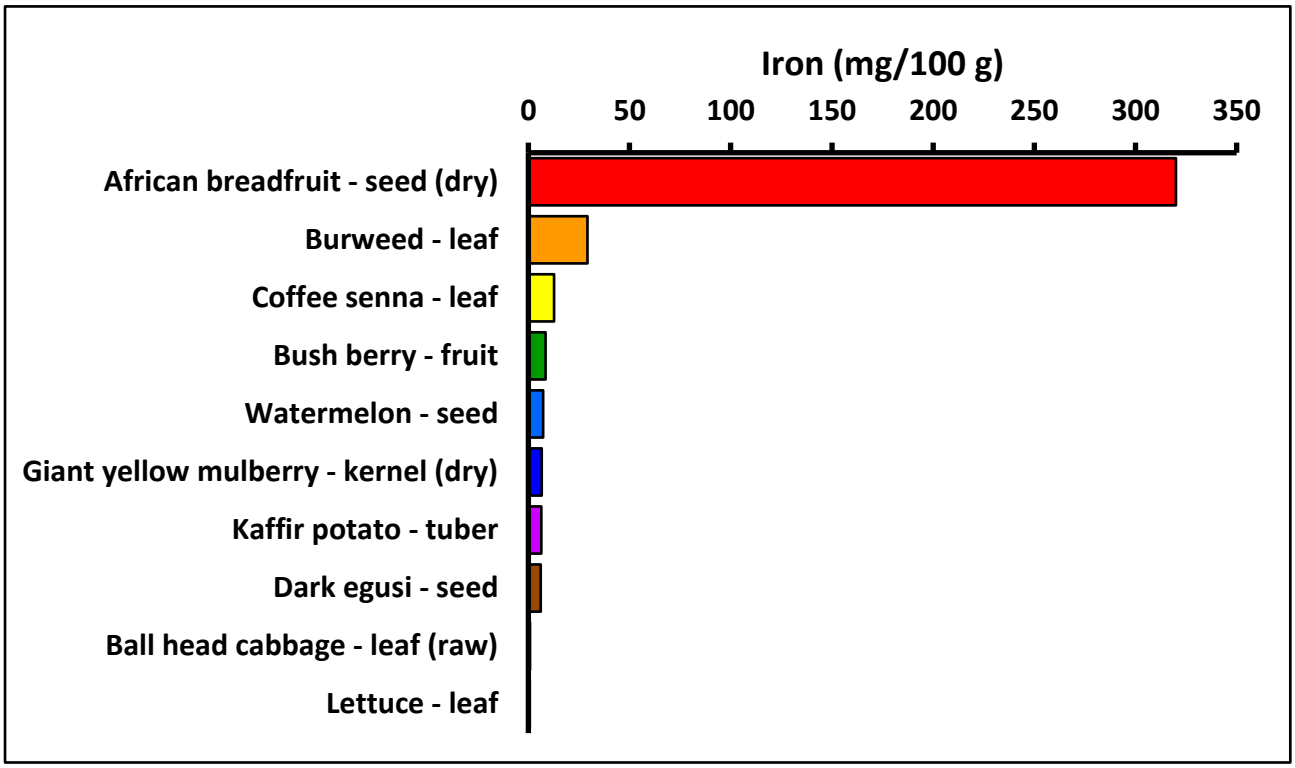
Protein helps the body repair cells and make new ones. Protein is also important for growth and development in children, teens, and pregnant women. Symptoms of protein deficiency include wasting and shrinkage of muscle tissue, and slow growth (in children).



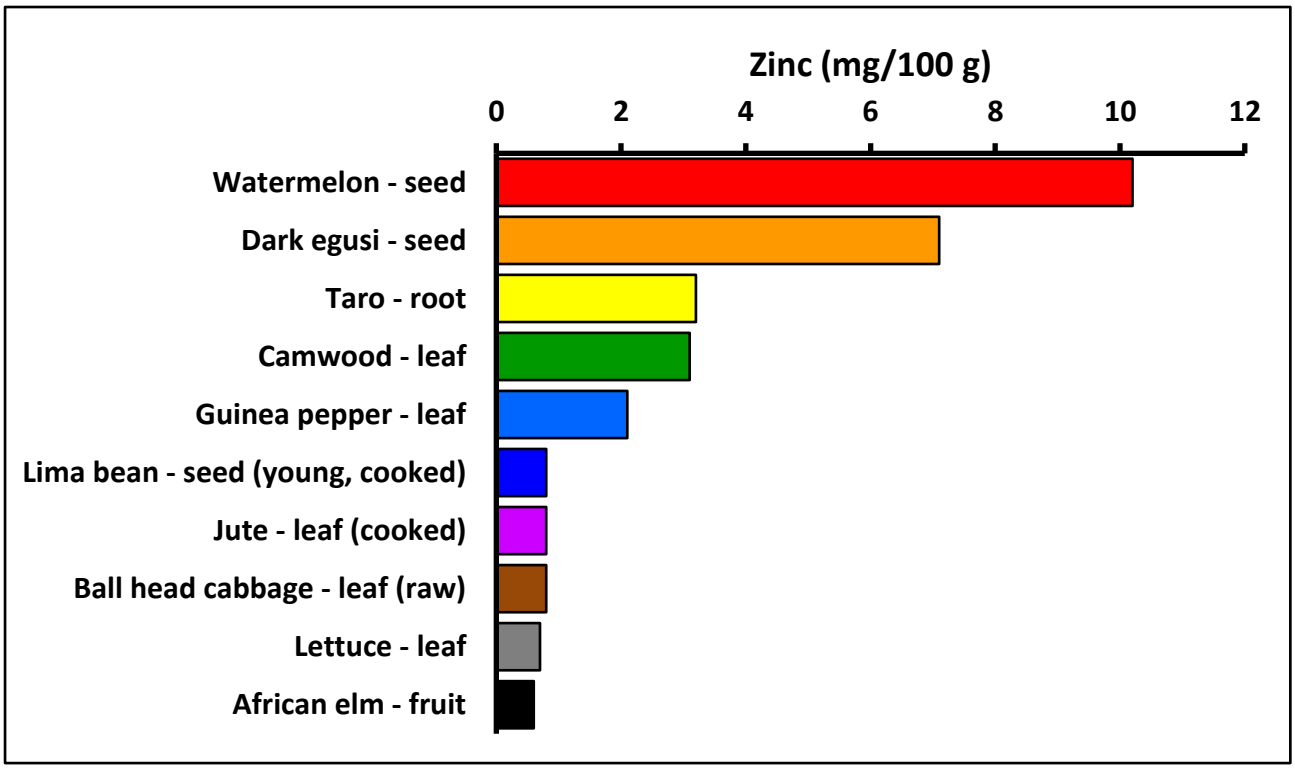
Vitamin A is very important for eyesight and fighting disease, particularly in infants, young children and pregnant women. People who are short of Vitamin A have trouble seeing at night.



Vitamin C helps us avoid sickness, heal wounds, prevent infections and absorb iron from food. Severe vitamin C deficiency increases the risk of scurvy with symptoms such as inflammation of the gums, scaly skin, nosebleed and painful joints.



Iron is important because it helps red blood cells carry oxygen from the lungs to the rest of the body. Low levels of iron cause anaemia, which makes us feel fatigued. Iron is also important to maintain healthy cells, skin, hair and nails. Iron is more available when Vitamin C is also present.



Zinc is particularly important for the health of young children and teenagers, and to help recovery from illness. It is needed for the body's immune system to work properly. It plays a role in cell division, cell growth, wound healing, and the breakdown of carbohydrates. Zinc is also needed for the senses of smell and taste. Zinc deficiency is characterized by stunted growth, loss of appetite, and impaired immune function.

Note regarding plant selection: In compiling these field guides, we acknowledge that some staple foods and commercial crops which are grown widely in the target country may be omitted. Such foods are often in the starchy staple category (e.g. rice, corn). This does not mean that they are not useful, but merely reflects a desire for the Food Plant Solutions project to concentrate on plants that are less well known and/or underutilised.

Starchy staples

English: Taro
Local:

Scientific name: *Colocasia esculenta*
Plant family: ARACEAE

Description: This plant has large flat leaves on the end of upright leaf stalks. It grows up to 1 m high. The leaf stalk or petiole joins the leaf towards the centre of the leaf. The leaves are 20-50 cm long. Near the ground a thickened rounded corm is produced. Around this plant their is normally a ring of small plants called suckers. Many different varieties occur. If left to maturity, a lily type flower is produced in the centre of the plant. It has a spathe 15-30 cm long which is rolled inwards. The flowers are yellow and fused along the stalk. There are many named cultivated varieties. Taro comes in two basic forms. The Dasheen type *Colocasia esculenta* var. *esculenta* and *Colocasia esculenta* var. *antiquorum* or the Eddoe type. The basic difference is the adaptation of the Eddoe type to storage and survival in seasonally dry places, while the dasheen type needs to be maintained in a more or less continuously growing vegetative stage.

Distribution: It is a tropical plant. Taro grows from sea level up to about 2300 m altitude in the tropics. It grows well in humid places. It can stand damp soil and grow under light shade. It suits hardiness zones 9-12.

Use: The corms, petioles and leaves are all edible after cooking. The leaves are also dried and stored. Fresh leaves can be stored for 4-5 days. **Caution:** Some varieties burn the throat due to oxalate crystals.

Cultivation: Taro can be planted from cormels or from the top of the central corm. Other sections of the corm could also be used but this is not commonly done. Flowering of taro and seed production can lead to new cultivars. Flowering can be promoted by the use of gibberellic acid. The general growth pattern is for an increase in top growth, in terms of leaf number, leaf area and petiole length, to continue for about 6 months under tropical lowland conditions then for each of these to decrease and tuber storage to continue to increase. Corm weight increases significantly from 5-11 months. Starch content also increases with time but protein content declines over the corm development period.

Taro can be grown under flooded conditions but root rots develop if the water becomes stagnant. For flooded cultivation, the land is cleared, ploughed, cultivated and puddled. The aim is to get a field that is flat with embankments allowing the impounding of water. Planting is done into 2-5 cm of standing water.

For dryland taro, the soil is prepared by digging, unless a fresh bush fallow is used where the natural friability of the soil allows plants to be put into the undug soil in a small hole that is prepared. Plants are put into a hole 5-7 cm deep or deeper. Mulching to conserve moisture and reduce weed growth in beneficial. Setts from corms normally give higher yield than that from cormels. The greater leaf area and root production may be responsible for this. Setts of about 150 g are optimum.

The time of planting is primarily determined by the availability of moisture. Planting is done shortly after the rainfall has become regular, if seasonally distinct wet and dry occur. Higher rainfall, higher temperatures, and higher hours of sunlight, enhance production and determine seasonality of production.

Evapotranspiration for flooded taro averages about 4 mm per day, ranging from 1.5-7.2 mm, with a total of about 1200 mm for the crop. Intermittent moisture can result in irregular shaped corms. Flooding has been found to be more effective than sprinkler irrigation, or furrow irrigation. Increased suckering, giving greater leaf area, seems to be the reason for this.

Taro is sensitive to weed competition throughout most of its growth, but it is more critical during early growth up to 3-4 months. About 7-9 weedings are required, to keep the crop clean under tropical lowland conditions, where flooding is not used. Due to the decrease in height and leaf area towards the end of the growth cycle when starch accumulation in the corms is maximum, weed competition and weed control are again significant. Mechanical weeding needs to be shallow to avoid damaging the superficial taro roots. A range of herbicides have been recommended in various situations.

Taro produces the highest dry matter yield under full sunlight, but it can still grow under moderate shade. Under shaded conditions it grows more slowly and develops fewer cormels. They require good moisture conditions and have little tolerance for drought. Taro residue has an allelopathic factor which can reduce the germination and growth of other plants, for example, beans.

Taro tends to demand high fertility, and is responsive to additional NPK fertiliser. Higher doses of K increases starch content and higher doses of N increases protein content. Both N and K applications increase oxalic acid content of the tubers.

Spacing affects total yield, and marketable, harvestable yield, of corms. Close spacing increases the corm yield per area, and the shoot yield per area, but decreases the corm yield per plant, and the contribution of sucker corms, to the yield. Where spacings of 30 cm x 30 cm are used, giving about 110,000 plants per hectare, a very large amount of planting material is required, which reduces the net return per unit of planting material. A spacing of 60 cm x 60 cm in more common. Wider spacings of 90 cm x 90 cm reduces overall yield.

Production: Crops mature in 6-18 months. Yields of 5-15 tonnes per hectare are probably average.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
root	66.8	1231	1.96	3	5	0.68	3.2
leaf	85.0	210	5.0	57	90	0.62	0.7
leaf stalk	93.0	101	0.5	180	13	0.9	-
leaf (cooked)	92.2	100	2.7	424	35.5	1.2	0.2

Starchy staples

English: Dark egusi
Local:

Scientific name: *Cucumeropsis mannii*
Plant family: CUCURBITACEAE

Description: A pumpkin family plant, like a cucumber, that lies along the ground. The vines can be 5 m or more long. The leaves are 9-18 cm long and 7-15 cm wide, alternate and simple. They are heart shaped at the base and have 3-5 lobes arranged like fingers on a hand. There are teeth around the edge. The flowers are yellow and are of separate sexes. The male flowers are in groups in the axils of leaves and female flowers occur singly. The fruit are about 25 cm long and 8 cm across. They are pale yellow and have many oval and flattened seeds. They are 1-2 cm long by 0.5-1 cm wide and are smooth and white.

Distribution: A tropical plant that grows in forests in tropical Africa. It grows up to 1150 m altitude.

Use: The seeds are parched and pounded to remove the seed coat. The kernels are crushed and added to soups and stews. The seeds are roasted and eaten as a snack. The flesh of the fruit is edible but not commonly used.

Cultivation: Plants are grown from seed. Often 3-4 seeds are planted in a hole. The seedlings appear within 6-8 days. It is often intercropped and allowed to climb stakes.

Production: Fruit are collected when the stems have dried and the fruit have changed from green to pale yellow or white. Seed yields can be 300-900 kg per hectare. After harvest, fruit are cracked or split open and allowed to rot for 14-20 days to help remove the seed from the pulp. (This creates a smell so is done away from houses.) The seeds are washed and covered with sand to prevent sticking. They are then dried and stored.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed	8.3	2278	26.2	-	-	6.1	7.1

Image sourced from: https://live.staticflickr.com/3320/3620865165_471a9879d5_b.jpg

Starchy staples

English: Egyptian water lily
Local:

Scientific name: *Nymphaea lotus*
Plant family: NYMPHAEACEAE

Description: It is a herb that grows in water. It grows 10-40 cm high and spreads 0.9-3.5 m wide. The stem or rhizome is stuck in the mud. The leaf stalks and flower stalks arise directly from this root. The leaves float on the surface of the water. The leaves are toothed around the edge. The flowers are reddish and white. They are large and with 12-14 pointed petals. There are 4 fleshy outer segments of deep green.

Distribution: It is a tropical plant that grows in warm and temperate places. It grows in pools in hot arid places. It grows in still water 0.5-2.5 m deep. It grows between sea level and 1500 m above sea level. It can grow in arid places. It suits hardiness zones 11-12.

Use: The young flower receptacle is eaten raw, or cooked, as a vegetable. It is also pickled and used in curries. The young seeds are edible. They are pickled, put in curries, roasts or ground into flour for cakes. The root tuber is roasted or dried and ground into flour. The flour can be stored for several months. The tubers are also boiled and eaten. They are cooked with tamarind pulp.

Cultivation: Plants can be grown using seed, suckers or rhizomes.

Production: Tubers are collected all year round.

Food Value: Per 100 g edible portion

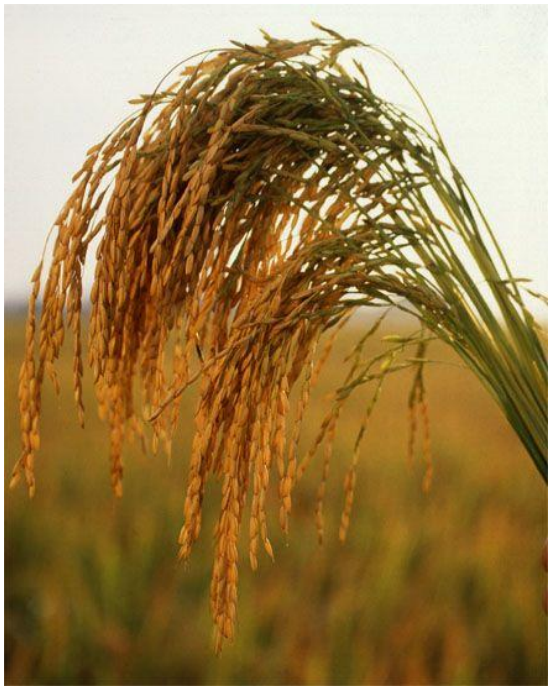
Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
root	64.0	502	5.2				
fruit	14.1	342	1.2				
stem	96	55	0.8			0.6	0.3

Image sourced from:
https://upload.wikimedia.org/wikipedia/commons/thumb/5/51/Nymphaea_lotus1XMATT.jpg/220px-Nymphaea_lotus1XMATT.jpg

Starchy staples

Common name: Floating rice
Local:

Scientific name: *Oryza glaberrima*
Plant family: POACEAE



Description: An annual grass. Most varieties have a reddish colour. It grows to 1.5 m tall but can be up to 5 m in some floating kinds. Dryland types often form tufts and floating rice often branches. The leaves are alternate and simple. The leaf sheath is 25 cm long. The leaf blade is 20-25 cm long and 6 -9 mm wide. The flowers are in a compact group 25 cm long at the top of the plant. The fruit is a grain 9 mm long by 3 mm wide.

Distribution: It is a tropical plant that grows in swamps and on flood plains of savanna regions. It does best with temperatures of 30-35°C. It grows from sea level to 1700 m altitude and can tolerate low soil fertility.

Use: The grain can be cooked and eaten, or ground into flour. This is sweetened with rice flour and honey for bread. It is fermented for beer.

Cultivation: Plants are grown from seed. Usually seeds remain dormant for a few months after harvesting. Seed usually emerge after 4-5 days. Seed are usually broadcast without using a nursery. The juvenile stage lasts for 3 weeks then tillering occurs for 3-4 weeks.

Production:

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed	11.3	1538	7.4	-	-	3.4	-

Image sourced from: https://i.pinimg.com/474x/77/48/1f/77481fb8134243595c851b56ac63ea4c--natural-resources-mali.jpg

Starchy staples

Common name: Kaffir potato
Local:

Scientific name: *Plectranthus esculentus*
Plant family: LAMIACEAE

Description: A herb or small shrub that keeps growing from year to year. It grows 60 cm high and can lie along the ground. It loses it leaves during the year. The leaves are fleshy and opposite. They are 5-8 cm long by 1-3 cm wide. They are narrowly oval with rounded teeth along the edge. The stems are angular. Some of the branches near the base bend down and grow into the ground to form long tubers. They grow from a central point like fingers on a hand. The tubers grow in clusters and are large. They can be 10 cm long and 2 cm wide. The flowers are yellow. They have a faint smell of tar.

Distribution: A tropical plant that grows naturally in southern tropical Africa. It grows in dry rocky and sandy soils between 600-1900 m above sea level. It is hardy and needs frost free conditions. The best conditions for growth are 15-28°C. They need an annual rainfall of 700-1100 mm. A soil pH of 6.5-7 is suitable. It can grow in arid places.

Use: The tubers are boiled and often added to other vegetables in soups. The tubers are washed then boiled in their skins. They can be dried and stored. They can also be pickled.

Cultivation: Plants are normally grown from cuttings. They can be grown from tubers and small bulbils in the axils.

Production: Tubers are harvested 180-200 days after planting. Yields of 2-6 tonnes per hectare have been recorded. A tuber can weigh 1.8 kg.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
tuber	78.0	351	1.9	-	-	6.4	-

Image sourced from: http://africanorphancrops.org/plectranthus-esculentus/

Starchy staples

English: Pencil yam
Local:

Scientific name: *Vigna vexillata*
Plant family: FABACEAE

Description: A variable climbing herb that keeps growing from year to year. It has a narrow woody rootstock that is dull white and wrinkled. The hairy vines are 30 cm to 3 m long. The leaves have 3 leaflets and these are oval or long. They can be 3-16 cm long by 0.4-8 cm wide. They taper towards the tip and are rounded at the base. The leaf stalk is 2-11 cm long. The flowering stalks are in the axils of leaves and have 2-6 flowers. The flowering stalk is 5-36 cm long. The pea like flower has a standard which is 2-3 cm long and not the same on both sides. Flowers are pink or purple. The keel is paler with a beak curved back at the end and twisted to one side. The fruit are pods which are held erect. They are 4-14 cm long by 3-4 mm wide and covered with short brown hairs. There are 10-18 seeds. The seeds are light brown to black. They are kidney shaped and 3-4 mm long by 2 mm wide.

Distribution: It is a tropical plant that mostly grows naturally in open woodland on sandstone soils. It will grow in dry, acid and high aluminium soils that are infertile. It can grow in arid places.

Use: The tuberous roots are eaten raw or cooked. They can be boiled or roasted. The seeds are cooked and eaten.

Cultivation: Plants can be grown from seed or tubers.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
tuber	79.6	302	2.1	-	11.6	0.8	0.5
root	68.9	287	2.3	-	-	10.0	1.7

Image accessed from: http://farm3.static.flickr.com/2347/1651731806_c282f57a3c.jpg%3Fv%3D0

Starchy staples

English: Fluted pumpkin
Local:

Scientific name: *Telfairia occidentalis*
Plant family: CUCURBITACEAE

Description: A pumpkin family plant with a strong vine that loses its leaves during the year. Stems can be 10 m long. The leaves have 3-5 leaflets which look like claws. They are arranged like fingers on a hand. The stalk of the leaflets is about 2.5 cm long. The leaflets have teeth on the edge of the top part of them. They are often rough underneath. The vine has tendrils which are branched and with coiled tips which clasp objects. Plants are separately male and female. Male plants have tougher shoots and smaller leaves. The male flowers are on flower stalks 5-25 cm long. Female flowers occur singly and are on short stalks. Female flowers are in the axils of leaves. Male flowers are small, pink and in clusters. The fruit are pale green and covered with a white waxy layer that rubs off easily. Fruit are strongly ribbed at maturity. They can be 25 cm long and weigh 3-6 kg. The flesh is light yellow and fibrous. The seeds are flattened, round and 3.5 cm across. There are 30-70 seeds in each fruit.

Distribution: It is a tropical plant that grows in forest zones in Africa. It can grow in shade or bright sunlight. It can survive moderate droughts. It can grow in arid places.

Use: The thick shoots of the female plant are chopped and used in soups. The seeds are stripped of their coat then ground and used in soups. The seeds are also boiled in their seed coats then shelled and eaten. The seeds yield a cooking oil. The young shoots and leaves are used as a potherb. They are also added to soups and stews. They can also be dried and stored. **Caution**: The roots are poisonous.

Cultivation: Plants are grown from seed which can be sown directly or put in a nursery then transplanted. Seedlings appear within 12-15 days. The vines need a trellis to climb over. Male plants flower in 3 months while female plants take 4-5 months to flower. Seed can be stored for 3-4 months if kept dry and cool but the seeds must not be dried.

Production: The first leaf harvest can occur 12 weeks after planting. Seed harvest takes 8-10 months. Shoots can be picked 10-15 times over 4-5 months.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed	6.0	2280	20.5	-	-	-	-
leaf	86.0	197	2.9	-	-	-	-

Image sourced from: http://tropical.theferns.info/plantimages/1/7/179df45655f8ba2d0cf9ef4c29c97cf298f55729.jpg

Legumes

Common name: Java bean
Local:

Scientific name: *Senna obtusifolia*
Plant family: FABACEAE

Description: An annual or perennial herb that grows 0.6-2.5 m tall. The leaf has leaflets in 3 pairs that are oval and 1-6 cm long by 0.5-3.9 cm wide. The top of the leaf is rounded but with a sharp tip. It is wedge shaped at the base. The flower stalks have 1 or 2 flowers. The stalk for the flower cluster is very short, but the stalk for the individual flowers is 1-3.5 cm long. The flower petals are orange-yellow and 1-2 cm long. The fruits are thin, slightly curved and tapering pods. They are 13-23 cm long and 4-7 mm wide. The seeds are brown. They are 4.5-6.5 cm long by 2-4mm wide.

Distribution: A tropical plant that grows throughout the tropics. It is mostly a weed of roadsides and waste places. It grows from sea level to 2000 m altitude. It grows along rivers and near lakes. In Africa it grows up to 1700 m altitude. It can grow in arid places.

Use: The young leaves are cooked and used as a vegetable. The leaves are fermented into a high protein supplement to meat. The juice during fermentation is made into a stew with okra, beef and salt. The seeds are occasionally dried and ground into powder and cooked and eaten. Seeds are also roasted and used as a coffee substitute. **Caution:** Older leaves can cause diarrhoea. The seeds are possibly poisonous and should be well cooked.

Cultivation: It can be grown from seed.

Production:

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
leaf	79.7	251	5.6	-	113	5.9	-

Image accessed from: https://tse2.mm.bing.net/th?id=OIP.ZJkno9RQyqSH5azcrmABAwHaFj&pid=Api

Legumes

English: Velvet bean
Local:

Scientific name: *Mucuna pruriens*
Plant family: FABACEAE

Description: An evergreen herb or shrub. It is a climbing vine. It climbs to 6 m high. It can re-grow each year or live for a few years. The stems are slender with long, slender branches. They are very hairy when young. The leaves are alternate with sword shaped leaves. The leaf stalks are hairy. There are 3 leaflets. The leaflets are 5-19 cm long and 4-16 cm wide. The leaflets are rounded at the base and the side leaflets are unequal in shape. The flowers are large and white with bluish butterfly shaped petals. They occur in clusters of 2 or 3. The flowers are 2-4 cm long. The fruit are thick, leathery pods covered with hairs. They are 10 cm long and contain 4-6 seeds. The pods are dark brown.

Distribution: It is a tropical plant. It does best in a rich, moist, well-drained soil. It needs a protected, sunny position. It is damaged by drought and frost. It grows from sea level to 900 m above sea level. They need a temperature above 8°C. It can grow in arid places.

Use: The pods are burnt over a fire to remove the prickles then the beans are soaked until they sprout and then washed and boiled or pounded. The young leaves are cooked as a vegetable. The ripe seeds are roasted and eaten. **Caution:** The seeds need special preparation.

Cultivation: Plants are grown from seed. The seeds need treatment to assist them to germinate.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed	7.3	-	29.3	-	4.8	-	-

Legumes

English: Lima bean
Local:

Scientific name: *Phaseolus lunatus*
Plant family: FABACEAE

Description: A perennial climbing bean. It is often a tall, vigorously climbing plant which can keep growing for some years. The leaves are slightly rounded at the base and pointed at the tip. The flower is white or yellow. The keel of the flower is twisted which helps tell the difference between this bean and Lablab bean. The pods are long (10 cm), flattened and curved and have 3-4 seeds which are highly variable in colour. The seeds are large. The seeds have a short round hilum where the seed is attached to the pod. The seeds also have lines going out from this point across the bean seed.

Distribution: It suits warm and subtropical areas. In the tropics it is common from 500-2100 m altitude but grows to the limit of cultivation (2700 m). For germination it must have a soil temperature above 15.5°C and cannot withstand frost. In very hot weather seeds often do not set. It does best in a temperature range 14-21°C. It is sensitive to a pH less than 6. It can grow in arid places.

Use: The leaves, young pods and seeds are all eaten. The seeds are eaten fresh or after drying. They are also fried in oil. Dried beans are boiled or baked. They can be used in soups and stews. The seeds are sometimes grown as bean sprouts then cooked and eaten. **Caution:** Some kinds have poison (hydrocyanic acid). This is destroyed by thorough cooking. The beans contain a protein inhibitor but this is also destroyed by cooking.

Cultivation: It is grown from seed. Coloured seeds are often hard to get to grow but white seeded kinds start growing easily. Sow 3-4 seeds in a hill and put a stick 2-3 m tall in the middle. Hills should be about 1 m apart. Seeds should be 2-4 cm deep.

Production: Harvesting can begin after about 100 days. Dried beans can be stored for several months. Yields of 0.12kg of seed per square metre have been obtained. The yield of pods can be 1kg per square metre.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed	12.0	1407	19.8	-	-	5.6	-
seed (young, cooked)	67.2	515	6.8	37	10.1	2.5	0.8
seed (young, raw)	70.2	473	6.8	30	23.4	3.1	0.8

Legumes

English: Common bean
Local:

Scientific name: *Phaseolus vulgaris*
Plant family: FABACEAE

Description: There are many bush and climbing varieties of this bean. Climbing forms can be 2-3 m tall. Bush types are 20-60 cm tall. The leaves have three leaflets, one after another along the stem. The leaf stalk has a groove on the top. The side leaflets are unequal in shape, and can be 8-15 cm by 5-10 cm. The flowers are in the axils of leaves (where the leaves join the stem) and occur in a loose form. Flowers are white to purple. Pods are smooth, slender and 8-20 cm long by 1-1.5 cm wide. They are straight or slightly curved with a beak at the end and often have 10-12 coloured, kidney-shaped and seeds.

Distribution: It is a temperate plant that grows in many temperate and subtropical countries, including Solomon Islands. It mostly grows from 700-2000 m altitude in the tropics. It suffers from pest and disease damage in the lowlands, but can be grown to sea level. It is not suited to the wet tropics. It is shallow-rooted and damaged by excess moisture near the roots. A crop lifecycle needs about 350 mm of water. It is sensitive to frost and high temperatures. Flowers will not form below 9.5°C. Night temperatures above 37°C cause flowers to drop. The best temperature range is 15-21°C. It does not suit very acid soils. It suits hardiness zones 8-11.

Use: The young pods, leaves and mature seeds are edible. Dry seeds are soaked in water and boiled until soft.

Cultivation: Plants are grown from seed, preferably sown in raised beds. Seeds remain viable for 2 years. Germination is normally good if seed has been well stored. Climbing types need stakes. Plants are self-fertilised. These beans are intercropped with other plants in many places. If grown on their own, bush types can be spaced at 25 cm x 25 cm. They can be sown closer together in rows wider apart to make weeding and harvesting easier. For dried beans, once the pods are mature and turning yellow, the whole plants are pulled, then dried and threshed. About 50-75 kg of seed will sow a hectare. Flowering in most French bean varieties is not affected by day length.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed (dry)	10.0	1386	25.0	10	1	8.0	2.8
seed (young)	92.0	142	3.0	-	20	0.8	0.2
pod	88.0	151	2.5	750	27	1.4	0.2
sprout	90.7	121	4.2	-	38.7	0.8	0.4

Legumes

English: Tamarind
Local:

Scientific name: *Tamarindus indica*
Plant family: FABACEAE

Description: A large spreading tree up to 24 m tall. It has a broad, dense, evergreen crown. The trunk can be 1 m across. The bark is rough and grey with a checkered pattern. The tree can lose its leaves in dry areas. The leaves are carried one after another along the branch. The whole leaf is 6-12 cm long and it is divided into 10-17 pairs of leaflets. These are oblong and without stalks. The whole leaf has a leaf stalk about 15 cm long. The leaflets are 1-2.5 cm long and 4-9 mm wide. They are a dull dark green with a rounded tip. The flowers are pale yellow with brown markings. The flowers are about 2.5 cm across and hang on long, many flowered stalks. The fruit is an oblong, thin-skinned, fleshy capsule. The brown seeds are inside this long rough surfaced, sausage-like fruit. This pod is 6-8 cm long and about 2 cm wide and contracted between the seeds. The pod cracks when mature. The seeds are shiny and hard. The edible pulp is date like and reddish brown.

Distribution: A tropical legume. The tree is cultivated in a number of coastal towns in the tropics as a street tree. It is probably best grown below 800 m altitude in the tropics. It is drought resistant and cannot stand water-logging. It does well on coastal dunes above high water level. It suits semi-arid areas. It grows in the Sahel and must be in frost free locations. In Kenya it grows from sea level to 1600 m altitude. It suits hardiness zones 11-12.

Use: The pulp of the fruit is edible and is also used for drinks. The seeds are also edible when cooked. They can be roasted and ground into flour. The outer skin is removed. The young leaves, flowers and young pods are also edible and are eaten in curries. They are used to make dishes acid. They are used in sauces and chutneys. The young seedlings are also edible.

Cultivation: It can be grown by seeds or cuttings. It is best to sow seedlings in pots then transplant them, but seed can be sown direct. There are about 1,400 seeds per kg. Seed should be soaked in hot water or the seed coat nicked before sowing. Seed can be stored for 2 years if kept dry, cool and away from insects. Trees can be topped or cut back and allowed to re-grow. Nothing grows under the trees due to the acidity of the leaves. Trees can be grown by air layering or cuttings.

Production: Trees are long-lived and grow very slowly. Fruiting is seasonal from April to June. It takes 8-9 months from flowering to ripe fruit. If plants are grown for shoots, they are planted close together.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
fruit	38.7	995	2.3	20	60	1.1	0.7
flower	80.0	314	2.5	-	-	1.4	-
leaf	78.0	305	3.1	20	2.0	2.0	-

Legumes

English: Dune bean
Local:

Scientific name: *Vigna marina*
Plant family: FABACEAE

Description: A climbing or scrambling herb that can grow several metres long. The stems can be hairy. The leaflets are rounded. They are 3.5-9.5 cm long by 2.5-7.5 cm wide. The leaf stalks are 2-11 cm long. The flowering stems are erect. They can be 4-10 cm long. The flower is yellow but often green when young. The flowers are 1.2 cm long. The fruit are narrow pods which are slightly curved. They are 4-6 cm long and 8-9 mm wide. They are constricted between the seeds. There are 2-6 seeds. The seeds are brown or red. They are oblong and 6-7 mm long by 5-6 mm wide.

Distribution: A tropical plant that grows just above high tide mark on sandy beaches. It occurs throughout the tropics. It is salt tolerant.

Use: The roots can be eaten cooked and probably raw. The young leaves are sometimes eaten cooked with other food. The young pods are cooked as a vegetable. The seeds are boiled and eaten.

Food Value: Per 100 g edible portion

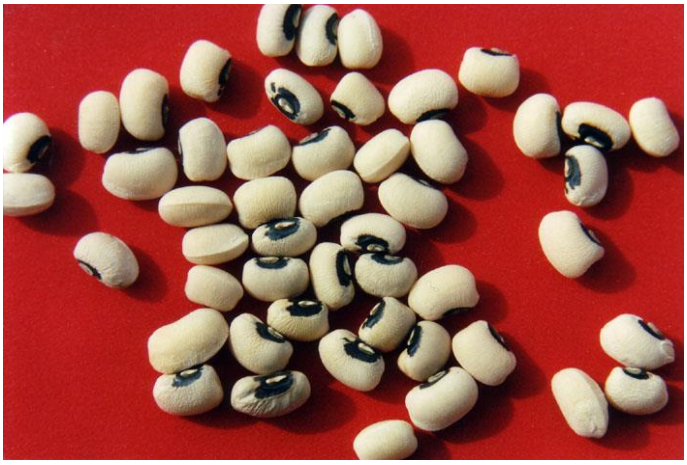
Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed	12.0	1363	20.0			6.0	

Image sourced from: https://upload.wikimedia.org/wikipedia/commons/thumb/a/af/Starr_010818-0012_Vigna_marina.jpg/1200px-Starr_010818-0012_Vigna_marina.jpg

Legumes

English: Cowpea
Local:

Scientific name: *Vigna unguiculata*
Plant family: FABACEAE



Description: A creeping bean type plant with straight firm pods. There is a deep tap root and many branches occur from it in the surface of the soil. The root nodules are large and round. The leaves have 3 leaflets. The end leaflet can be 12-16 cm long. The side leaflets are asymmetrical. The stipules at the base of the leaf are large and with spurs at their base. Flowers occur often in pairs on the end of long flowering shoots. Only 2-4 flowers in each stalk produce pods. Flowers are white, yellow or blue. They are large and showy. The pods are about 15 cm long. The seeds are white except for a dark scar.

Distribution: It grows in tropical and subtropical climates. It grows from sea level to 1800 metres altitude in the tropics. Plants can stand high temperatures. Some kinds can tolerate drought. They are sensitive to cold and killed by frost. Plants germinate with a temperature between 11.5-15.5°C. The best growth occurs between 20-35°C. They can grow on a range of soils providing they are well drained. They are a short day plant. They do well in the semiarid tropics. It will not tolerate acid or alkaline soils. It grows in areas with an annual rainfall between 280-410 mm. It can grow in arid places.

Use: The young leaves, young pods and ripe seeds are all eaten. They can be steamed, boiled, stir-fried etc. The leaves can be dried and stored. The dried seeds are used in soups and stews. They are ground into flour or fermented. The seeds are also used for bean sprouts. Roasted seeds are used as a coffee substitute.

Cultivation: It is grown from seeds. Seeds remain viable for several years if carefully stored. A seeding rate of about 20 kg per ha is suitable and seed are sometimes broadcast then thinned.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed (dry)	11.2	1189	23.5	-	1.5	6.4	-
seed (young, boiled)	75.5	406	3.2	79	2.2	1.1	1.0
leaf	88.4	143	4.2	36	35	4.7	0.3
young pod + seed (boiled)	89.5	142	2.6	45	17.0	0.7	0.2
leaf (boiled)	91.3	92	4.7	29	18	1.1	0.2

Leafy greens

English: Silver spinach
Local:

Scientific name: *Celosia trigyna*
Plant family: AMARANTHACEAE

Description: A branched and straggling herb that grows 25-120 cm tall. The lower leaves have long leaf stalks. The plant looks like *Amaranthus hybridus* until it starts to flower. Where the leaf stalk joins the stem there is a pair of small moon-shaped leaflets that lie around the stem. The small white or silvery flowers are crowded together in separate clusters. The fruit is a capsule which is almost round and has several seeds.

Distribution: A tropical plant that grows in tropical lowlands and highlands in Africa. It is often along the coast but grows from sea level to 1960 m above sea level. It needs an annual rainfall of up to 2500 mm and an average temperature of 25-30°C. It cannot tolerate a temperature below 15°C. It grows best on fertile, well drained soils.

Use: The young shoots and leaves are cooked and eaten. They are finely cut and used in soups, stews and sauces. Because they can be bitter, they need extensive cooking or mixing with other foods.

Cultivation: Plants are grown from seeds which germinate in 4-5 days. It grows for 90-120 days. Because the seeds are small, they are best mixed with sand to give a more even distribution when sowing.

Production: Plants can be uprooted and harvested or leaves removed. Harvests of 4-5 t/ha can be achieved from weekly harvests over 2 months.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
leaf	89.0	139	2.7	94	10	5.0	-

Image accessed from http://www.flickr.com/photos/36517976@N06/5063937939

Leafy greens

English: Cat's-whiskers
Local:

Scientific name: *Cleome gynandra*
Plant family: CLEOMACEAE

Description: An annual herb with a long tap root that grows 60-90 cm tall. It is erect and somewhat hairy. It usually has purple stems. The leaves occur one after another along a long stalk. There are 5-7 leaflets which are unequal and spread out at the end. They are oblong and about 2.5-6 cm long by 1.4-3.2 cm wide. The leaflets are pointed at the base with a rounder point at the tip. There are fine teeth along the edges of the leaves. The flowers are white or purple and occur in long flower clusters at the end of branches. These are 30 cm long. The flower clusters are showy with a spidery like appearance. The fruit are a slender capsule with 2 valves and many small seeds. They are 5-10 cm long and very narrow. The seeds are kidney shaped and rough. They are brown and have fine lines along them. They are 1-1.5 mm across.

Distribution: A widespread tropical plant. It commonly occurs as a self sown weed on cultivated land. It grows in warm or tropical regions at a range of elevations but especially above 600 m altitude. It will grow from semi arid to wet humid climates. It will grow on many soil types, but needs fertile soil for good leaf production. A temperature of 18-25°C seems best. Plants need plenty of sunlight. They are not drought resistant but can produce a crop with short periods of rain. Plants cannot withstand flooding. It is often abundant near the sea. It can grow in arid places.

Use: The leaves are eaten. If they are cooked, the bitter taste is reduced. They are also used in flavouring sauces. The leaves are also blanched, dried and stored. The flowers can be eaten. Young pods are also eaten. The oil from the seeds is edible without needing to be refined. The leaves can be candied in vinegar or in salt water, then eaten with fish. The seeds are used as a spice in curries. **Caution:** Fresh plants can contain hydrocyanic acid and should be cooked.

Cultivation: The plant is grown from seed that are broadcast. Fertile soil is needed to get plants with good leaf coverage. The seed germinate erratically, because the seed have a rest period after harvest. Seed germinate best 6 months after harvest. Once they are ready to grow, they germinate in 4-5 days. Leaves or whole plants can be harvested when 15 cm high. Picking out the tops encourages side growth and longer leaf production. Removing flowers extends the harvest period.

Production: Leaves can be harvested 4-5 weeks after planting. Seeds reach maturity about 5 months after sowing.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
leaf	86.6	142	4.8	-	26	6.0	-

Leafy greens

English: Jute
Local:

Scientific name: *Corchorus olitorius*
Plant family: MALVACEAE

Description: An annual plant. It is upright, branching, and slightly woody. Plants vary in height, shape, leafiness and hairiness. Plants grown for leaves are usually only 30 cm tall. They also have many branches. Leaves are shiny and have leaf stalks. The leaves have teeth along the edge. The tips of the lowest leaves in each side, have long bristle like structures. Small clusters of yellow flowers grow in the axils of the leaves. The fruit are ridged capsules. They can be 7 cm long. These have partitions across them between the seeds. A ripe capsules contains 180-230 seeds. The seeds are dull grey and with four faces and one long point. Each seed has one pale line along it.

Distribution: A tropical plant. It is mostly coastal, below 250 m altitude. Temperatures of 22°-35°C are suitable. It can stand both drought (2-3 weeks) and water-logging, except when young. A well-drained soil is best. They require humus-rich soils. A soil pH of 5.5-7.0 is best, but they can grow in soils with pH up to 8.5. They also need adequate moisture for good leaf production. A rainfall of 1,000 mm is suitable. A high relative humidity (80-90%) is best. It produces seeds when day lengths are short. It grows in most African and Asian countries.

Use: The young leaves and stem tops are eaten cooked. They are slimy unless fried. They are also used to make a thick soup. Leaves can be sun dried, pounded to flour, then stored for a long time.

Cultivation: Plants grow from seed, and they can be transplanted. Seeds are often broadcast into fine seed beds at the beginning of the wet season. Mixing the small seeds with sand makes it easier to sow them evenly. Often seeds are slow to start growing. This can be overcome by soaking them in hot water. A spacing of 20-30 cm between plants is suitable. For vigorous varieties this could be increases to 45-50 cm. Seeds are saved from pods for re-sowing.

Production: First leaves can be harvested after 5-6 weeks. Tips about 20-30 cm long are picked. Production of edible green tips, is not large. 7-8 kg of leaf tips can be harvested from 3-8 pickings over 3-4 months. Seeds can be collected after 13-15 weeks. If seeds of a particular variety are desired, it is necessary to grow these plants 16 m away from other plants, to avoid cross pollination. Seeds can be stored for 8-12 months in well-sealed jars.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
leaf (raw)	80.4	244	4.5	574	80	7.2	-
leaf (cooked)	87.2	155	3.4	156	33.0	3.1	0.8

Leafy greens

English:
Local:

Scientific name: *Momordica foetida*
Plant family: CUCURBITACEAE

Description: A creeping herb from the pumpkin family. It has a stout root. It can re-grow from this root. The vine can climb 7 m high. The leaves have a bad smell when crushed. The male flowers are in groups and female flowers occur singly on long stalks. The flowers are pale yellow. The fruit are 8 cm long and covered with soft prickles. They turn yellow or orange when ripe. They burst open exposing the seeds. The pulp is red.

Distribution: A tropical plant that grows in open clearings in forest in West Africa. It grows from 350-2250 m above sea level. It can grow in arid places.

Use: The young leaves are cooked and eaten. They are bitter and are often cooked with pumpkin leaves. They are also added to maize porridge. The pulp of the fruit is eaten. The aril or fleshy layer around the seeds is eaten.

Cultivation: Plants can be grown from seeds.

Production: Leaves are collected in the dry season. In Central African Republic, it flowers and fruits in October.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
leaf		92	3.3		20.6	3.4	0.4

Image sourced from:
https://upload.wikimedia.org/wikipedia/commons/thumb/7/71/Momordica_foetida_%40_SSW_of_Morogoro.JPG/1200px-Momordica_foetida_%40_SSW_of_Morogoro.JPG

Leafy greens

English: Guinea pepper
Local:

Scientific name: *Piper guineense*
Plant family: PIPERACEAE

Description: A slightly woody creeper that attaches to the trunks of trees. It grows 10 m long. The fruit occur in clusters. They are 5 mm across and are orange-red in colour.

Distribution: It is a tropical plant that grows in forests, woodland and along rivers.

Use: The fresh or dried fruit is used to flavour soups, rice and other foods. It is like mild pepper. The leaves are added to soups and also cooked and used as a substitute for tea. Leaves are chewed with betel nut as a substitute for *Piper betle*. Ash from the plants is used as a substitute for salt.

Cultivation: Plants can be grown by seeds or cuttings. Seeds germinate in about 22 days.

Production: Fruit are harvested then dried in the sun. In Tanzania fruit, are collected from October to December. In Central African Republic flowers have been observed in May, and fruit from December to February.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
leaf	78.6			18.5		6.1	2.1

Image sourced from:
http://tropical.theferns.info/plantimages/2/5/25ec5f644bd9e075c9cbd82d1d3fd9af6d1622db.jpg

Leafy greens

English: Burweed
Local:

Scientific name: *Triumfetta rhomboidea*
Plant family: MALVACEAE

Description: A herb or small shrub that keeps growing from year to year. Plants can be 1.5 m tall. The bark is tough and fibrous. The younger stems and leaves and flowers are densely covered with hairs. The leaves are alternate and the edges of the leaves have teeth. The lower leaves have 3 lobes. The flowers occur in small clusters opposite the axils of leaves. The stalks carrying the flowers are 20-40 cm long. There are 5 yellow petals. The fruit are brown and hairy and covered with hooked spines. They are round and about 5 mm across. They contain 2-4 seeds. The fruit cling to clothing.

Distribution: A tropical plant. It grows naturally in grassland and re-growth situations. It is more common in tropical places with seasonal rainfall. It grows in savannah woodland and in palm groves. It grows up to 1280 m above sea level. It can grow in arid places.

Use: It is eaten as a pot-herb in times of scarcity. The roots are eaten cooked.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
leaf	78.4	284	4.2	-	-	29.2	-

Image accessed from:
http://www.phytoimages.siu.edu/users/paraman1/2_15_10/Upload15Feb10/077TriumfettaRhomboidea.jpg

Leafy greens

Common name: Bitter leaf
Local:

Scientific name: *Vernonia amygdalina*
Plant family: ASTERACEAE

Description: A woody shrub with a single stem that grows to 3 m tall. Sometimes it grows up to 10 m. The bark is pale grey and rough. The bark flakes off and the branches are brittle. The young branches are hairy but become smooth later. The leaves are oval and 20 cm by 5 cm. They taper at both ends. The leaves are dark green above and have soft pale hairs underneath. The edges of the leaves can have teeth. The leaf stalks are 3 cm long. Flowers are green or white and 4-6 mm across. They occur in dense branching flattened heads. These heads are 30 cm across. They produce a sweet smell in the evening.

Distribution: A tropical plant that grows in sub-humid wooded savannah and wetter highland areas in tropical Africa. It will grow in all kinds of soils. Humus-rich soil gives better leaf production. It grows from sea level to 2200 m above sea level. It can grow in arid places.

Use: The leaves are cooked and eaten as a vegetable. They are often squeezed to reduce bitterness before being used in soups. The finely cut and dried leaves are sold in markets. The plant is burnt and the ash is used as salt for cooking purposes.

Cultivation: Plants can be grown from seed which germinate in 8 days. Seed need to be collected in the evening. They float in the air. Seed are sown directly then plants thinned out later. Seed is best sown as fresh as possible. Plants are better grown from cuttings. Plants for leaves should be pruned to reduce the height. Young woody cuttings are used and they need to be kept well-watered until established. Plants can be spaced 12 cm apart. Plants can be cut back and will re-grow.

Production: It is a medium to fast growing shrub. It can be chopped back and allowed to regrow. Plants start flowering in January in the northern hemisphere. Plants continue to produce a harvest of leaves for about one year. First leaves can be harvested 6 weeks after planting. Young shoots 12-15 cm long are picked. There can be about 19 harvests over a month period.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
leaf	83.6	218	5.3	-	50	5.0	-

Image sourced from:
https://steemitimages.com/p/D5zH9SyxCKd9GJ4T6rkBdeqZw1coQAaQyCUzUF4FozBvW7kYdxGQqzK2N8fjwME3SeFp9J52561Lbu1bjwnyZN7SBHe3jVMkuJDrRfQozztG6NFZCyxiPjjeoTgZevkABMiVav?format=match&mode=fit

Leafy greens

Common name: Coffee senna
Local:

Scientific name: *Senna occidentalis*
Plant family: FABACEAE

Description: An annual herb or small shrub. It can continue growing for a few years. It grows 1-2.5 m high. The stems have few hairs. The leaf stalk has a gland at the base but there is no gland along the leaf axis. The leaves are compound. There are 4-6 pairs of leaflets. The leaf stalk is 2-3 cm long. The leaflets are oval and 4-12 cm long by 1.5-4 cm wide. They taper to the top and are rounded at the base. The flower stalks are very short. The flower cluster is in the axils of leaves. The petals are yellow and 0.9-1.5 cm long. The fruit is a narrow, slightly curved pod. It is 5-10 cm long by 0.5-1 cm wide. It has pale edges. They are flattened. They usually dry with a brown area along the pod. The seeds are compressed. There are 28-32 seeds inside. They are green or brown and 5 mm long. There are small pits on each side.

Distribution: A tropical plant. It grows in monsoon forest as well as arid areas. In Africa it grows up to 2400 m altitude. It can grow in acid, neutral or alkaline soils. It can grow in arid places. Temperatures which average 12.5-28°C are suitable. It grows in areas with rainfalls between 500 and 4000 mm per year. A rainfall of 500 to 1000 mm is enough.

Use: The seeds are roasted and used for coffee. (They contain no caffeine). **Caution:** The seeds are poisonous unless roasted. Young leaves and young seeds are eaten cooked. The leaves are added to soups. The unripe pods are cooked and eaten with rice. The ashes of the pods are used as food salt.

Cultivation:

Production:

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
leaf (dry)	10.0	-	31.7	-	-	3.1	-
leaf	84.9	205	5	-	17.9	12.7	-

Image accessed from: https://tse1.mm.bing.net/th?id=OIP.wjO-VnTA1RQnqZQ4IIlp9wHaFe&pid=Api

Fruit

English: Hybrid plantains
Local:

Scientific name: *Musa x paradisiaca*
Plant family: MUSACEAE

Description: These are the main group of cultivated bananas. They can be classed into diploid, triploid and tetraploid kinds with various amounts of the A or B parents. They grow 2-9 m tall. They are large non-woody herbs with broad long leaves. Most kinds have several suckers. Bananas grow a soft firm false stem from an underground corm. The fruiting stalk eventually emerges from the top of this false stem and normally curves over to point towards the ground. Fruit occur in clumps or hands along this stem. The male flowers are in a red bud at the end of the flower stalk. The colour of the stem, bracts, bud and fruit varies considerably depending on the variety. The fruit can be 6-35 cm long depending on variety. They can also be 2.5-6 cm across.

Distribution: A tropical and subtropical plant that grows from sea level up to about 2000 m altitude in the tropics. They are rarely an important food above about 1,600 m. In Nepal they grow to about 1800 m altitude. They do best in warm and humid tropical climates. Temperatures need to be above 15°C. The best temperature is 27°C. The maximum growing temperature is 38°C. Bananas grow best in full sun. For best growth, a rainfall of 200-220 mm per month is needed. A deep friable soil is best. They can tolerate a pH of 4.5-7.5. It suits hardiness zones 10-12.

Use: Fruit are eaten raw or cooked depending on variety. Male buds and flowers are eaten on some varieties. They are cooked as a vegetable. The central pith of the false stem and the underground rhizome are also sometimes eaten. Although it has little food value, the corm can be boiled, dried and eaten with the false stem.

Cultivation: They are planted from sword suckers. Diploids need re-planting annually but many triploids can be re-suckered from the base on the same site. Spacing depends on variety. A population of 1000-3000 plants per hectare is used, depending on variety. Suckers are usually planted 30 cm deep.

Production: Time to maturity varies from 6-18 months depending on variety and altitude. Triploids have larger bunches than diploids. Tetraploids are very large plants.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
fruit (cooking)	65.3	510	2.0	113	18.4	0.6	0.1
Fruit (sweet)	70.7	337	1.1	200	10	0.4	0.2
stem	88.3	176	0.5	-	7	-	-
flower bud	91.3	109	1.6	-	-	1.0	-

Fruit

English: Canteloupe
Local:

Scientific name: *Cucumis melo*
Plant family: CUCURBITACEAE

Description: A pumpkin family plant. It is an annual climber with tendrils. It grows to 0.5 m high and spreads to 1.5 m across. The stems are soft and hairy and often angled. The leaves have lobes and often a wavy or toothed edge. They are on long leaf stalks. The leaves are often hairy underneath. The tendrils are not branched. The flowers are yellow and funnel shaped with expanded lobes. The male flowers occur in clusters and are produced before the female flowers. The fruit is round, mostly with a rough or streaky skin. It is green or yellow inside. The fruit is edible. Different kinds of melons occur. Some have a hard, warty, scaly skin. Others have a network of fine ridges over the surface.

Distribution: A tropical plant, but not suited to places with high rainfall. It suits hot dry places with a fertile well drained soil. It needs a sheltered sunny position. It is drought and frost tender. A temperature range of 24-28°C is best but much higher temperatures are tolerated. Mostly they are grown below 500 m altitude in the tropics. A pH of 6-6.7 is best. Acid soils are not suitable. It can grow in arid places. It suits hardiness zones 9-12.

Use: The ripe fruit are eaten raw. They are also dried, candied and made into jams, jellies and preserves. The seeds are sometimes eaten roasted. The seeds are blended with fruit juice to form a drink. Sometimes the immature fruit are cooked as a vegetable. The seeds contain an edible light oil. The young leaves are eaten as a potherb.

Cultivation: They are grown from seed planted about 1-4 cm deep. Plants need to be 1-2 m apart. Seedlings can be transplanted when about 10-15 cm high.

Production: Plants are ready 3-4 months after planting. Yields of 20 kg per10 sq m is average.

Food Value: Per 100 g edible portion

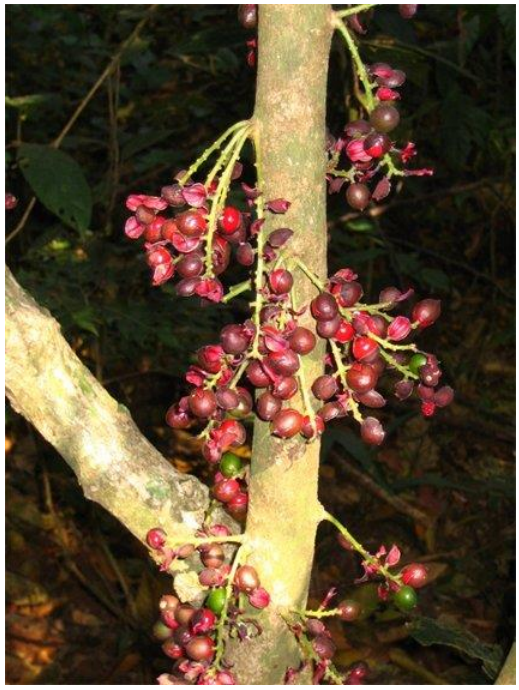
Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed	7.0	2319	15.8	-	-	-	-
leaf	85.0	172	4.2	72	-	-	-
fruit	93.0	109	0.5	169	30	0.4	0.2

Fruit

English: Bush berry
Local:

Scientific name: *Maesobotrya barteri*
Plant family: PHYLLANTHACEAE

Description: A shrub or small tree that grows to 10 m high. The trunk is crooked. It produces its flowers and fruit along the trunk. The edible fruit are succulent and black/purple. They are oval and 1 cm long.



Distribution: A tropical plant. It is an under-storey plant of the high rain-forest.

Use: The fruit is eaten and used to flavour sauces and other dishes. They are also used for jams and jellies. The fruit stain the tongue.

Production: In Liberia the fruit are produced from November to January.

Food Value: Per 100 g edible portion

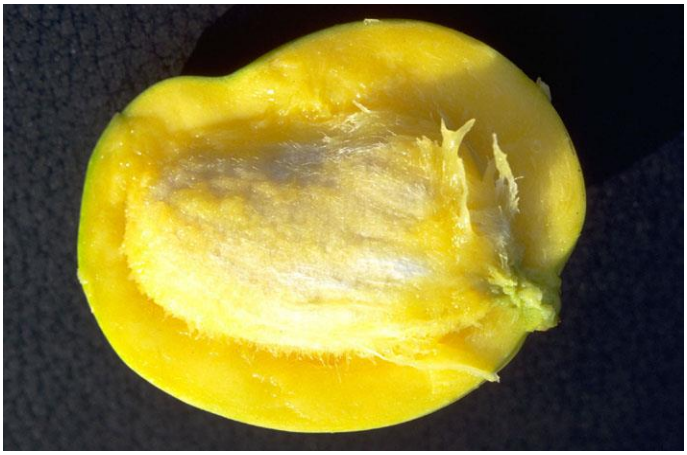
Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
fruit	6.7		11.4	6.2	361	8.5	
seed	3.9		13.3	12.6	22.3	4.9	

Image sourced from: http://cfile1.uf.tistory.com/image/231ABD4854082D7207D894

Fruit

English: Mango
Local:

Scientific name: *Mangifera indica*
Plant family: ANACARDIACEAE



Description: An erect, branched evergreen tree. It can grow to 10-40 m high and is long lived. (Trees grown by vegetative means are smaller and more compact.) Trees spread to 15 m across. It has strong deep roots. The trunk is thick. The bark is greyish-brown. The leaves are simple and shaped like a spear. Some kinds of mangoes have leaves with a wavy edge. They can be 10-30 cm long and 2-10 cm wide. They are arranged in spirals. The leaf stalk is 1-10 cm long and flattened. Leaves are often brightly coloured and brownish-red when young. These tender leaves which are produced in flushes become stiff and dark-green when mature. The flower stalks are at the ends of branches. They are 10-50 cm long and branching. Up to 6000 flowers can occur on a stalk. Most of these are male and up to 35% have both male and female flower parts. Fruit are green, yellow or red and 2.5-30 cm long. The fruit hang down on long stalks. The outside layer of the seed is hard and fibrous and there is one seed inside. Several embryos can develop from one seed by asexual reproduction. The fruit shape and colour vary as well as the amount of fibre and the flavour. India has many varieties and they cannot tolerate humidity.

Distribution: A tropical and subtropical plant. It grows in the lowlands. It grows from sea level up to 1300 m altitude in the tropics. It does best in areas below 700 m and with a dry season. Rain and high humidity at flowering reduces fruit set. It thrives best where temperatures are about 25°C but will grow with temperatures from 10-42°C. Temperatures of 0°C will damage young trees and flowers. Low temperatures (10-20°C) at flowering time will reduce fruiting. As temperatures get lower due to latitude or altitude, fruit maturity is later and trees become more likely to only have good crops every second year. Mangoes can grow on a range of soils. In wetter areas soils with less clay are better. They can withstand occasional flooding. A soil pH of 5.5-6.5 is best. Soils with pH above 7.5 cause plants to develop iron deficiency. It grows in the Sahel. It can grow in arid places. It suits hardiness zones 11-12.

Use: Ripe fruit are eaten raw. Unripe fruit is pickled. Seeds can be eaten cooked. They are boiled or roasted. They are made into meal by powdering. Young leaves can be eaten raw or cooked. Amchur is made from the dried unripe fruit. This is used in curries, and pickles and chutneys. The seed kernels are used for famine food in India. They are boiled, roasted or soaked to remove the bitterness. **Caution:** The sap from the tree or fruit can cause skin problems with some people.

Cultivation: Trees are grown by planting fresh seed and they can be transplanted. Mangoes vary in their ability to breed true from seed. When more than one seedling emerges from the seed some of these are asexual and breed true. Clean seed germinate best if they are treated at 50°C for 20 minutes, then planted on their edge with the round bulge upwards and near the soil surface. The husk around the seed should be removed. Seeds germinate in 3-6 weeks. The strongest growing seedlings from this seed are used and the others thrown away. The seedlings from the folds of the seed are vegetative while the seedling from the centre of the seedling near the stalk end may be sexual and show variation from type. Other seeds only produce one seedling and these normally

vary and can be different from the parent tree. Plants can be propagated by budding, or by grafting using in-arching. This is not easy and care is required. In wetter places, flowers need to be protected with fungicides to enable fruit to form. If organic manure is used this should not be directly in the planting hole nor immediately against the new plant. Young transplanted seedlings need regular watering. A spacing of 6-12 m between plants is used. Wind protection is advisable to prevent fruit rubbing and getting damaged. Trees should only ever be lightly pruned as fruit develop on new growth and heavy pruning can reduce flowering. Flowering can be brought about by foliar sprays of potassium nitrate.

Production: Seeds germinate after about 20 days. Seedling trees produce after 4-6 years and increase in production up to 20 years. Trees often bear better each second year. Rain at flowering reduces fruit setting. Fruiting is at the end of the year. Fruit take 4-5 months to mature. Fruit vary in weight from 200-1000 g. Trees can produce one million flowers but only 500 fruit. Trees last for many years.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
fruit	83.0	253	0.5	54	30	0.5	0.04
leaf	82.1	226	3.9	-	60	2.8	-

Fruit

English: Avocado
Local:

Scientific name: *Persea americana*
Plant family: LAURACEAE

Description: A small to medium sized tree that normally grows 8-10 m tall, but can reach 25 m. The leaf stalk is 1.5-5 cm long. Leaves are entire, oval and 5-40 cm long. Flowers are greenish, small and on the ends of branches. Clusters of flowers may contain 200-300 flowers. Normally only 1-3 fruit develop from each cluster. The fruit is round or pear shaped, and 7-20 cm long. The fruit are greenish-yellow with some red coloration. The fruit has greenish-yellow flesh and a large round seed. There are 3 named races-West Indian, Guatemalan and Mexican.

Distribution: A subtropical plant that grows from sea level up to 2250 m in the tropics. It cannot stand water-logging. Branches are easily damaged by wind. It needs a frost free location or where frosts are rare. West Indian varieties thrive in humid, tropical climates, freeze at or near 0°C and can stand some salinity. Mexican types come from dry subtropical plateaus and thrive in a Mediterranean climate. They are hardy to-7° C. They are salt sensitive, have the smallest fruits and the thinnest skin. The best daytime temperature is 25-33°C. Guatemalan types come from cool, high-altitude tropics and are hardy to-3°C. It does best with neutral or slightly acid and well aerated soil. Growth is disrupted when soil temperature is below 13°C. It needs high humidity at flowering and fruit set. It can grow in arid places.

Use: The fruit pulp is eaten raw or cooked. It is used in salads, soups, sandwiches, spreads, ice cream, and also in tortillas and wine. The fruit is mixed with sugar and water to make a drink. Oil is extracted from the flesh and is used in salad dressing. The leaves can be used for tea sweetened with sugarcane juice. Toasted leaves are used to season stews and bean dishes. **Caution:** Some people are allergic to avocado.

Cultivation: Plants are often grown from seed. Seeds remain viable for 2-3 weeks. Fresh seed held at 25°C day to 15°C night will germinate in 3 weeks. It is best to propagate vegetatively. Tip cuttings, layers and grafts can be used. Because different types have pollen at different times of day, a mixture of trees which have pollen and flowers receptive at different times gives best fruit set. Although trees will grow in shade, they need sun for fruiting. The leaves do not rot easily and can accumulate under trees. Other plants cannot be grown under avocado trees.

Production: Seedlings grow quickly and continuously in warm, moist conditions. Seedlings bear after 5-8 years. Grafted trees can fruit in 1-2 years. A good tree produces 400-600 fruit each year. A fruit can weigh 50 g-1 kg. In the subtropics, trees often produce 2 main flushes of fruit per year. From fruit set to maturity can take 6-12 months. Fruit ripen off the tree in 4-14 days. For the Mexican types, the fruit weigh less than 250 g and they ripen 6-8 months after flowering.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
fruit	74.4	805	1.8	480	11	0.7	0.4

Image accessed from:
https://upload.wikimedia.org/wikipedia/commons/7/7d/Avocados_(Persea_americana)_(18159574242).jpg

Fruit

Common name: African elm
Local:

Scientific name: *Trema orientalis*
Plant family: CANNABACEAE

Description: A straight slender tree that grows to 10 m high. The trunk is 15-20 cm across. It may or may not lose its leaves during the year. The leaves have 3 conspicuous veins from the base. The leaves are heart shaped and with 3 veins. The leaves are often widest at the base. Leaves are often 6-15 cm long by 2.5-5 cm wide. There are fine teeth along the edge of the leaf. The leaves are rough and hairy when young. The flowers are small, green and no easily seen. They occur in short dense bunches. Mostly male and female flowers occur separately. The fruit are small and round and black. They are 4-6 mm across.

Distribution: A tropical plant that needs good rainfall and light. It can grow on thin, poor soils. It grows in areas with an annual rainfall between 1000-1600 mm. It grows below 2100 m above sea level. It can grow in acid soils and arid places.

Use: The young leaves are cooked and eaten as a vegetable. The fruit are eaten.

Cultivation: Plants are grown from seed. Seeds germinate easily. They can also be grown by cuttings.

Production: It is fast growing but short lived.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
fruit	74.1	452	4.5	-	51.5	-	0.6

Image sourced from: https://commons.wikimedia.org/wiki/File:Trema_orientalis_14.jpg

Vegetables

English: Pumpkin
Local:

Scientific name: *Cucurbita moschata*
Plant family: CUCURBITACEAE

Description: A pumpkin family plant. It is a creeping plant with long creeping stems and softly hairy but without prickly hairs. The stems are rounded or 5 angled and moderately hard. They can grow 15-20 m long. The leaves are large and shallowly lobed and divided like fingers on a hand. Occasionally the leaves have white blotches. They have rounded lobes. They are 20 cm by 30 cm. The leaf stalk is 12-30 cm long. The flowers have male and female flowers separately on the same plant. The fruit stalk is distinctly expanded where it joins the fruit. The fruit are not hard shelled and are dull in colour. The flesh is yellow and often has fibres through it. The seeds are plump and white to brown. They separate easily from the pulp of the fruit. The edge of the seed is scalloped and irregular in outline. There are a large number of cultivated varieties.

Distribution: A tropical plant that suits the wet tropics. It will thrive in humid as well as in very hot climates. A temperature of 18-30°C is best. It can tolerate some shade. It can grow in soils with a pH of 5.5-6.9. It suits hardiness zones 8-11.

Use: The fruit are eaten cooked. They are boiled, fried or baked. They can be mashed and used in pies, soups, bread and cakes. They can be dried, ground into flour and used for bread. The young leaves and flowers are edible. They can also be dried and stored. The seeds are eaten roasted. They can also be roasted in salt.

Cultivation: Plants are grown from seed. Seeds can be put in a nursery and transplanted.

Production: Fruit mature in 70-180 days after sowing depending on variety.

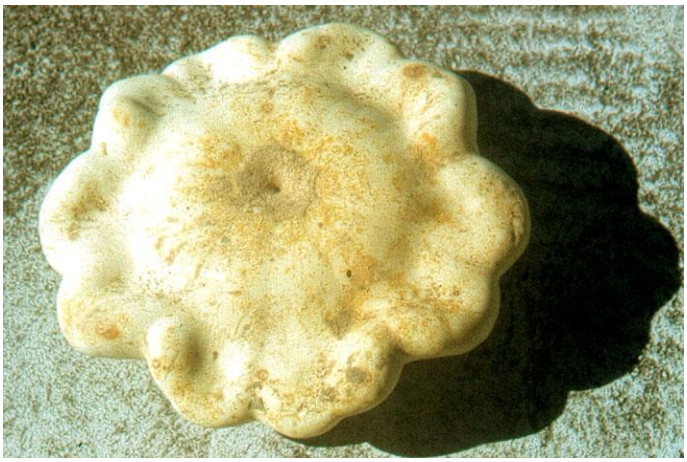
Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed	5.5	2331	23.4	-	-	2.8	-
leaf	93.6	88	3.0	95	10	2.1	-
fruit	95.0	35	0.7	-	14	0.4	-

Vegetables

English: Marrow
Local:

Scientific name: *Cucurbita pepo*
Plant family: CUCURBITACEAE



Description: A bristly hairy annual vine in the pumpkin family. It has branched tendrils. The stems are angular and prickly. The leaves are roughly triangular. The leaves have 5 lobes which are pointed at the end and are toothed around the edge. Male and female plants are separate on the same plant. Male flowers are carried on long grooved flower stalks. Female flowers are borne on shorter more angular stalks. The fruit stalks have furrows along them but are not fattened near the stalk. The fruit vary in shape, size and colour. Often they are oval and yellow and 20 cm long by 15 cm wide. The seeds are smaller than pumpkin and easy to separate from the tissue. The scar at their tip is rounded or horizontal, not oblique. There are a large number of cultivated varieties.

Distribution: A subtropical plant. They are more suited to drier areas. They are frost sensitive, and grow best with day temperatures between 24-29°C and night temperatures of 16-24°C. It suits tropical highland regions. It suits hardiness zones 8-11.

Use: The young fruit are cooked and eaten. They can be steamed, boiled or fried. They are used in pies, soups, stews and cakes. The young leaves and the ripe seeds can also be eaten cooked. The seeds are dried, salted and toasted and eaten as a snack food. The seeds can also be pressed to produce oil. The sprouted seeds are used in salads. Flowers and flower buds can be eaten boiled. They can be dried for later use.

Cultivation: They are grown from seeds. The seeds germinate after one week. They can be grown from cuttings. They are best planted on mounds. A spacing of 2-3 m between plants is needed. Hand pollination assists fruit setting. Plants can also be grown from cuttings as plants root at the nodes.

Production: The first usable immature fruit are ready 7-8 weeks after planting.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed (dry)	3.7	2266	29.4	-	-	7.3	-
leaf	89.0	113	4.0	180	80	0.8	-
fruit (mature)	92.0	105	1.6	17	16	2.4	-
fruit	91.3	102	1.1	-	12	0.8	0.2
yellow fruit	92.0	97	1.0	180	8	1.4	-
immature fruit (raw)	92.0	92	1.5	-	9	0.4	0.1

Vegetables

English: Eru
Local:

Scientific name: *Gnetum africanum*
Plant family: GNETACEAE

Description: A woody climber that can grow 10 m long. The branches are thickened at the nodes. It is an evergreen plant. Plants are separately male and female. The leaf stalks are 1 cm long. The simple leaves are narrowly oval and opposite, and taper to a short tip. They are 10-13 cm long by 4-5 cm wide. The male flowering shoot has male flowers close together and evenly spaced. The female flowering shoots have 2-3 flowers at each node and are 2 mm long. The seeds are fleshy and 10-15 mm long by 4-8 mm wide. They have a fleshy envelope around them that turns orange or red when ripe.

Distribution: It is a tropical plant that grows in the rain-forests of West Africa. It can be found from sea level to 1200 m above sea level. It grows in areas with a rainfall of about 3000 mm. It needs shade to grow well.

Use: The young leaves are eaten raw or cooked and are also used in sauces. The leaves can be tough and can be softened with leaves such as *Talinum*. The leaves can be shredded and dried and stored for later use. The seeds and fruit are eaten. They can be stored for 8 months or longer.

Cultivation: Seeds are hard to get to grow. Germination can take 12 months. Leafy stem cuttings can be used.

Production: It is possible to harvest leaves 2-3 times per year. Vines should preferably not be damaged in the process. Plants may last 10 years.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed	31.6	449				1.5	1.1
leaf	37.4		10.2			5.3	0.5

Image sourced from: http://tropical.theferns.info/plantimages/sized/G/n/GnetumAfricanumFruit_480px.jpg

Vegetables

English: Rosella
Local:

Scientific name: *Hibiscus sabdariffa*
Plant family: MALVACEAE

Description: A branched shrub up to 2 m tall. It has reddish stems, leaves and fruit. Different types vary in their height, shape and leafiness. The leaves are 7-10 cm across and lobed. The upper leaves often have more lobes than the lower leaves. The flowers are large and yellow and in the axils of the leaves. They are carried singly. The bracts at the base of the flower are enlarged and form a fleshy red fruit. This capsule is 3 cm long and contains 22-34 seeds. The seeds are dark brown and 4-6 mm long. 1000 seeds weigh about 25 g.

Distribution: A tropical plant that grows from sea level up to about 1000 m altitude. It will tolerate a range of soils and requires short days for flowering. It will grow in semi arid locations. It grows best where average temperatures are in the range 25-30°C. It needs a temperature above 10°C. Plants will tolerate high temperatures. They grow up to 800 m altitude in Africa. A rainfall of 450-550 mm distributed over a 90-120 day growing period is required. It cannot tolerate waterlogged soils. It can grow in arid places. It suits hardiness zones 10-12.

Use: The swollen bases of the flowers are used for jams or drinks. The young leaves can be cooked and eaten. They can also be dried and used. The flowers can be used to flavour drinks. The seeds can be eaten. They can be dried and ground. They can be pressed for oil.

Cultivation: Seeds are sown and the seedlings can be transplanted. They are transplanted when 15-20 cm high. Seed should be planted 1-2.5 cm deep. A spacing of 50 cm x 50 cm is suitable although a wider spacing is used for fruit and a closer one for leaves. Plants can be propagated by cuttings.

Production: Fruit are ready 12-15 weeks after sowing. The bracts are picked 15-20 days after flowering. They can produce about 1 kg per plant. The yield of leaves can be 10 tons per hectare.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed	8.2	1718	19.6	-	-	4.2	-
leaf	86.4	185	10.9	58	35	1.5	4.1
leaf (dry)	9.0	1185	6.9	-	4.2	6.4	2.8
calyces	86.0	185	1.6	29	14	3.8	-

Vegetables

English: Purslane
Local:

Scientific name: *Portulaca oleracea*
Plant family: PORTULACACEAE

Description: A spreading branched herb. It lies flat on the ground. It grows each year from seed. The plants spread 10 to 50 cm wide. The stems are purplish. The leaves are fleshy, flat and shaped like a wedge at the base. They are 1.5-2.5 cm long and 0.3-1 cm wide. The flowers are yellow and occur in a few rounded heads. They are 0.8-1.5 cm across. They bloom about the middle of the day. The capsules are 0.5 cm long and oval. The seeds are black and shiny.

Distribution: It grows in tropical and temperate regions. They are common in waste places throughout the Philippines. It is a common self-sown plant in lowland areas and up to 1700 m altitude. It prefers sandy well drained places. It can grow on salty soils. It can grow in arid places. It suits hardiness zones 7-12.

Use: The stems and leaves are cooked and eaten. Usually the skin is scraped off then the plant is boiled and mashed. It thickens stews and other dishes in which it is cooked. It is used as a pot herb. The fleshy stems are pickled. Sprouted seeds are eaten in salads. The seeds are ground for use in cakes and bread. **Caution:** In areas where a lot of nitrogen fertiliser is used plants can cause nitrate poisoning. Plants can also have oxalates.

Cultivation: It roots easily from broken pieces. It can be grown from stem cuttings. It can be grown from seed.

Production: The first harvest of leaves can be a month after planting. In the tropics it can complete its lifecycle in 2-4 months. Often it is harvested in the dry season when other vegetables are in short supply.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed	9.1	1405	19.5	-	-	-	-
plant	87.0	181	4.0	-	11	2.5	-
root	79	210	3.5	-	-	-	-
leaf	82.2	108	3.1	54	20	0.8	1.5

Vegetables

English: Camwood
Local:

Scientific name: *Pterocarpus mildebraedii*
Plant family: FABACEAE

Description: A tree that grows to 35 m tall. The trunk is 20 m tall and 80 cm across. The bark is pale grey and exudes a red gum when cut. The leaves are compound and 35 cm long. There are 7-15 alternate leaflets with one at the end. These are oval and 6-14 cm long by 3-7 cm wide. They have a round base and taper to the tip. The flowers are in a group 5-15 cm long. The fruit is a round pod 10-12 cm long and with a broad thin wing. There is usually one seed.

Distribution: A tropical plant that grows in lowland evergreen and semi-deciduous forest in West Africa. It grows up to 1,250 m above sea level. In Tanzania it is restricted to 300-600 m elevation. It can tolerate acid soil.

Use: The leaves are cooked and eaten as a vegetable. They are used in soups.

Cultivation: Plants can be grown by seed or stem cuttings. It can be cut back and allowed to re-grow. Plants can be budded.

Production: It grows quickly. There is a flush of edible leaves during the dry season.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
leaf	85.0	237	3.8			4.7	3.1

Image sourced from: https://upload.wikimedia.org/wikipedia/commons/thumb/3/3a/Starr_070727-7640_Pterocarpus_indicus.jpg/1200px-Starr_070727-7640_Pterocarpus_indicus.jpg

Nuts, seeds, herbs and other foods

English: Tallow tree
Local:

Scientific name: *Allanblackia floribunda*
Plant family: CLUSIACEAE

Description: A tree that grows up to 30 m tall. The trunk is straight and the bark is dark brown. The branches are slender and drooping and are often in rings. The leaves are 10-25 cm long and 3.5-7.5 cm wide. They are rounded at the base and taper to the tip. The flowers are large and white, pink or red. They have a fragrant smell. The fruit are sausage-shaped pods 45 cm long and 12 cm across. They hang on the ends of short branches. They taper towards each end. They are brown and roughly fleshy with grooves along them. They contain 50-100 red-brown seeds. The seeds are about 4 cm by 2 cm and irregular in shape. They have flattened surfaces and are in a pink pulp.

Distribution: It is a tropical plant that grows in central African forests.

Use: The fat of the seeds is eaten.

Cultivation: It is best grown vegetatively. Leafy stem cuttings can be used but it may take 25 weeks before significant roots form. Plants can be grown from seed but the germination rate is low and trees take a long time to fruit.

Production: The kernel is about 62% of the seed by weight.

Food Value: Per 100 g edible portion

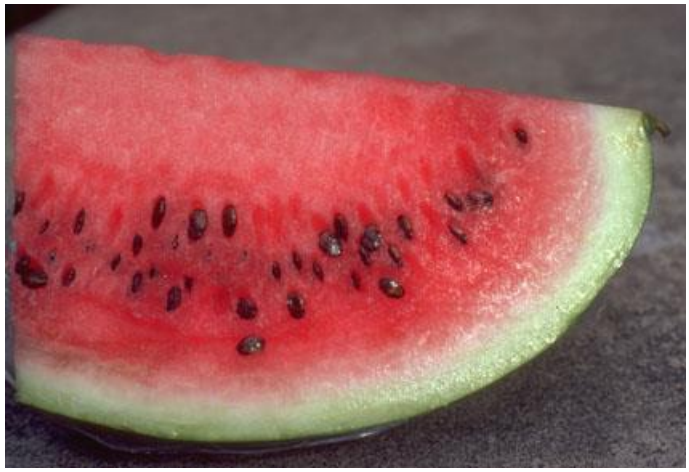
Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed (dry)	6.0	2709	3.6	-	-	-	-

Image sourced from:
http://tropical.theferns.info/plantimages/a/a/aa7a13d9586fb53180fa04bb1f749fa99c060956.jpg

Nuts, seeds, herbs and other foods

English: Watermelon
Local:

Scientific name: *Citrullus lanatus*
Plant family: CUCURBITACEAE



Description: An annual climber, with deeply divided leaves and tendrils along the vine. It trails over the ground and has hairy, angular stems. The leaves are on long leaf stalks. The leaves are deeply divided along their length. These leaf lobes are rounded and can themselves be divided. The leaves are 5-20 cm long by 2-12 cm across. The tendrils are divided. The plant has separate male and female flowers on the same plant. The flowers are pale yellow and smaller than pumpkin flowers. The flowers occur in the axils of leaves. The male flowers appear first. Fruit are large and round or oval. They can be 60 cm long. Fruit have a hard smooth skin. Several fruit colours and shapes occur. They often have a dark green mottle, or blotches. The fruit has reddish, juicy flesh and black or red seeds. The seeds are oval-shaped and smooth.

Distribution: It grows in most tropical and subtropical countries. It grows best on the coast in the tropics, but will grow up to about 1000 m altitude. It will not stand water-logging and does well on sandy soils. Plants are frost-sensitive. Seed will not germinate below 21°C. Temperatures between 24-30°C are suitable. Fruit are sweeter in arid warm areas. It suits hardiness zones 10-12.

Use: The fruit is eaten raw when ripe. Small, unripe fruit can be cooked as a vegetable. The skin is sometimes candied in vinegar and eaten with fish. Seeds are also eaten. They are dried, soaked in salt water, then roasted. Oil is extracted from the seeds. Very young leaves are occasionally eaten. It is a popular fruit.

Cultivation: They are suitable mainly for the dry season. A spacing of 1.5-2 m is suitable. They grow easily from seed. They do best when fully exposed to the sun. Seed can be dried and stored. If too much vegetative growth occurs, picking out the tip to produce side branches will produce more fruit.

Production: Harvesting commences after 4-5 months. The main fruit season is November to January. The ripeness can be determined by tapping the fruit to get a dull sound The part of the fruit on the ground changes from green to light yellow and the tendril near the base of the fruit becomes dry when ripe. Fruit yield can be 45-60 t/ha.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
fruit	94.0	92	0.4	20	5	0.3	0.1
seed	5.1	2330	28.3	0	0	7.3	10.2

Nuts, seeds, herbs and other foods

English: African wild mango
Local:

Scientific name: *Irvingia gabonensis*
Plant family: IRVINGIACEAE

Description: A tree that grows to 40 m high. The trunk grows to 1 m across. It has narrow buttresses. The bark is light grey and smooth. The leaves are simple and alternate, and are 3.5-16 cm long and 2-8 cm wide. The yellowish-green scented flowers are small and occur among the leaves. The fruit are 10-13 cm long and 3-4 cm wide. The fruit has a thick covering and one seed.

Distribution: A tropical plant that grows in the humid forest zone in central Africa. It grows below 1000 m altitude. It grows in areas with a rainfall of 1500-3000 mm per year and temperatures of 25°-32°C.

Use: The seed provides oil used in cooking. It is used to make Gabon chocolate or Dika bread. The kernels are ground and eaten in dishes of mixed vegetables. The kernels are extracted from the stones then roasted. They are then pounded and poured into a mould. This cheese is then scraped and added to boiling meat or vegetables. It is like a relish, especially for plantain bananas. The pulp of the fruit is eaten fresh.

Cultivation: Plants are grown from seed that germinate in about 14 days. It can be grown from stem cuttings under mist. Plants can also be budded.

Production: Young trees are slow growing. Fruit are usually harvested from the ground.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
nut	4.0	2918	8.5	-	-	3.4	-
fruit	81.4	255	0.9	-	-	3.4	-

Image sourced from:
https://www.researchgate.net/profile/Ebimieowei_Etebu/publication/270721748/figure/fig1/AS:295085292965893@1447365224580/Figure-1-Unripe-Irvingia-fruits-on-the-day-of-harvest.png

Nuts, seeds, herbs and other foods

English: Giant yellow mulberry
Local:

Scientific name: *Myrianthus arboreus*
Plant family: URTICACEAE

Description: A medium sized tree that grows 15-25 m tall. It branches low down and the crown is dense. The leaves are compound with leaflets arranged like fingers on a hand. There are 5-7 leaflets. Leaves are 90 cm long and 60 cm across. They are leathery and are whitish underneath. There can be teeth along the edge. The male and female flowers are separate. The male flowers are in long stalks and are yellow. The female flowers are in small balls. The fruit are large and yellow. They have 4 or 5 sided sections. Fruit can be 20 cm across. Each section contains a hard oval seed.

Distribution: A tropical plant that grows along the edges of rain-forests. It is often near streams and in moist locations. It grows up to 1200 m altitude but is most common below 300 m.

Use: The fruit have a nice flavoured juice. They are eaten raw. Young leaves and shoots are eaten in soups. The seeds are eaten after cooking.

Cultivation: Plants are grown from seed and take about 1 month to germinate. Soaking seeds helps more to germinate. Plants can be grown from stem cuttings and by grafting. Plants can be budded.

Production: Plants from seed can produce fruit in 4-5 years. In some places fruiting is seasonal and in other places it is year round. Leaves can remain fresh for 3-5 days after harvesting. There is a flush of edible leaves during the dry season.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
kernel (dry)	13.5	1969	23.6	-	-	6.6	-
leaf	85.5		1.9	-	-	1.1	-

Image accessed from: http://photos.mongabay.com/j/Myrianthus-arboreus-J-P-Vandeweghe.360.jpg

Nuts, seeds, herbs and other foods

English: African breadfruit
Local:

Scientific name: *Treculia africana*
Plant family: MORACAE

Description: An evergreen tree. It grows to 15-30 m tall. It can grow up to 50 m tall. It has a dense spreading crown. The trunk is fluted. The bark is dark grey and smooth. It is thick and produces a white latex when cut. This later turns rusty red. The leaves are simple and alternate. They are very large. Leaves can be 30 cm by 14 cm or larger. They are dark green and smooth above but paler and slightly hairy underneath. The leaves are tough. They have 10-18 pairs of clear veins. The leaf stalk is 1.5 cm long and the leaf tip is pointed. Young leaves are red or yellow. The flower heads are rounded ad a yellow-brown. They are 2.5-10 cm across. Male and female flowers are usually separate. Flowers can grow in the axils of leaves or on older wood down to the trunk. The fruit is a compound fruit. It is rounded and very large. It can be 30-45 cm across. It grows on the trunk and main branches. Inside there are many orange seeds about 1 cm across. They are in a spongy pulp. The outer fruit surface is covered with pointy growths.

Distribution: A tropical plant. It suits hot, tropical lowland climates. It grows in forests near rivers. It can grow in swampy areas. It grows from sea level up to 1500 m in Uganda or 1200 m in Tanzania.

Use: The seeds can be dried, fried and eaten. They are also boiled, roasted or ground into flour. The flour is used in soups and nut milk. An edible oil can be extracted from the seeds.

Cultivation: Plants are grown from seed. Seed can be planted in pots then transplanted or they can be sown direct. There are about 5000 seeds per kg. Seeds will only store for a few weeks but seed treatment is not needed before sowing.

Production: The tree is fairly fast growing. A fruit can weigh 12 kg.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed (dry)	9.2	1555	12.6	-	-	320	-

Nuts, seeds, herbs and other foods

Common name: Zambezi almond
Local:

Scientific name: *Ricinodendron heudelotii*
Plant family: EUPHORBIACEAE

Description: A tree that grows to 40 m high. It loses its leaves during the dry season. The leaves are like fingers on a hand and alternate. There are 3-5 leaflets and these are 6-30 cm long by 3-15 cm wide. Male and female flowers are on separate trees. There are 5 petals and 5 sepals and they are united in a tube. The fruit are small and green. They are 4 cm across. They have 2 lobes. There are 1-2 nuts.

Distribution: A tropical plant that is common in secondary forest. It grows between 200-500 m altitude. It requires 1000 mm of rainfall but can grow in areas with 10000 mm of rain per year. It needs light. It requires a temperature between 18-32°C. It needs free draining acid soils.

Use: The dried kernels are ground and used in stews or eaten as a relish. They can be eaten raw or roasted. The nuts also yield an edible oil. The leaves are cooked as a vegetable. The kernels can be stored for many months.

Cultivation: Plants are grown from seed. Seed germinate after 3-6 weeks. It can also be grown from leafy stem cutting, layering or side grafting. Trees can regenerate from the stump.

Production: It is fast growing. Trees fruit after 8-10 years. Fruit are collected from the ground. They are put in a heap and the flesh allowed to rot to remove the stones. They are then washed and boiled and allowed to cool overnight in cold water before boiling again.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
seed (dry)	5.5	2215	21.2	-	-	0.4	-

Image sourced from:
https://www.researchgate.net/publication/312150843_Bioprospective_Screening_of_Ricinodendron_Heudelotii_Seeds

Nutritional values of food plants by plant Family

Plant Family	Scientific name	Common name	Edible part	Moisture %	Energy kJ	Protein g	Vit A µg	Vit C mg	Iron mg	Zinc mg	Page
AMARANTHACEAE	*Celosia trigyna*	Silver spinach	leaf	89.0	139	2.7	94	10	5.0	-	26
ANACARDIACEAE	*Mangifera indica*	Mango	fruit	83.0	253	0.5	54	30	0.5	0.04	37
ARACEAE	*Colocasia esculenta*	Taro	root	66.8	1231	1.96	3	5	0.68	3.2	11
ASTERACEAE	*Vernonia amygdalina*	Bitter leaf	leaf	83.6	218	5.3	-	50	5.0	-	32
CANNABACEAE	*Trema orientalis*	African elm	fruit	74.1	452	4.5	-	51.5	-	0.6	41
CLEOMACEAE	*Cleome gynandra*	Cat's-whiskers	leaf	86.6	142	4.8	-	26	6.0	-	27
CLUSIACEAE	*Allanblackia floribunda*	Tallow tree	seed (dry)	6.0	2709	3.6	-	-	-	-	48
CUCURBITACEA	*Momordica foetida*		leaf	-	92	3.3	-	20.6	3.4	0.4	29
CUCURBITACEAE	*Cucumeropsis mannii*	Dark egusi	seed	8.3	2278	26.2	-	-	6.1	7.1	13
CUCURBITACEAE	*Telfairia occidentalis*	Fluted pumpkin	seed	6.0	2280	20.5	-	-	-	-	18
CUCURBITACEAE	*Cucumis melo*	Canteloupe	fruit	93.0	109	0.5	169	30	0.4	0.2	35
CUCURBITACEAE	*Cucurbita moschata*	Pumpkin	fruit	95.0	35	0.7	-	14	0.4	-	42
CUCURBITACEAE	*Cucurbita pepo*	Marrow	fruit	91.3	102	1.1	-	12	0.8	0.2	43
CUCURBITACEAE	*Citrullus lanatus*	Watermelon	seed	5.1	2330	28.3	0	0	7.3	10.2	49
EUPHORBIACEAE	*Ricinodendron heudelotii*	Zambezi almond	seed (dry)	5.5	2215	21.2	-	-	0.4	-	53
FABACEAE	*Vigna vexillata*	Pencil yam	tuber	79.6	302	2.1	-	11.6	0.8	0.5	17
FABACEAE	*Senna obtusifolia*	Java bean	leaf	79.7	251	5.6	-	113	5.9	-	19
FABACEAE	*Mucuna pruriens*	Velvet bean	seed	7.3	-	29.3	-	4.8	-	-	20
FABACEAE	*Phaseolus lunatus*	Lima bean	seed (young, cooked)	67.2	515	6.8	37	10.1	2.5	0.8	21
FABACEAE	*Phaseolus vulgaris*	Common bean	pod	88.0	151	2.5	750	27	1.4	0.2	22
FABACEAE	*Tamarindus indica*	Tamarind	fruit	38.7	995	2.3	20	60	1.1	0.7	23
FABACEAE	*Vigna marina*	Dune bean	seed	12.0	1363	20.0	-	-	6.0	-	24
FABACEAE	*Vigna unguiculata*	Cowpea	young pod + seed (boiled)	89.5	142	2.6	45	17.0	0.7	0.2	25
FABACEAE	*Senna occidentalis*	Coffee senna	leaf	84.9	205	5	-	17.9	12.7	-	33
FABACEAE	*Pterocarpus mildebraedii*	Camwood	leaf	85.0	237	3.8	-	-	4.7	3.1	47
GNETACEAE	*Gnetum africanum*	Eru	leaf	37.4	-	10.2	-	-	5.3	0.5	44
IRVINGIACEAE	*Irvingia gabonensis*	African wild mango	nut	4.0	2918	8.5	-	-	3.4	-	50
LAMIACEAE	*Plectranthus esculentus*	Kaffir potato	tuber	78.0	351	1.9	-	-	6.4	-	16
LAURACEAE	*Persea americana*	Avocado	fruit	74.4	805	1.8	480	11	0.7	0.4	39
MALVACEAE	*Corchorus olitorius*	Jute	leaf (cooked)	87.2	155	3.4	156	33.0	3.1	0.8	28
MALVACEAE	*Triumfetta rhomboidea*	Burweed	leaf	78.4	284	4.2	-	-	29.2	-	31
MALVACEAE	*Hibiscus sabdariffa*	Rosella	calyces	86.0	185	1.6	29	14	3.8	-	45
MORACAE	*Treculia africana*	African breadfruit	seed (dry)	9.2	1555	12.6	-	-	320	-	52
MUSACEAE	*Musa x paradisiaca*	Hybrid plantains	fruit (sweet)	70.7	337	1.1	200	10	0.4	0.2	34
NYMPHAEACEAE	*Nymphaea lotus*	Egyptian water lily	root	64.0	502	5.2	-	-	-	-	14
PHYLLANTHACEAE	*Maesobotrya barteri*	Bush berry	fruit	6.7		11.4	6.2	361	8.5		36
PIPERACEAE	*Piper guineensis*	Guinea pepper	leaf	78.6	-	-	18.5		6.1	2.1	30
POACEAE	*Oryza glaberrima*	Floating rice	seed	11.3	1538	7.4	-	-	3.4	-	15
PORTULACACEAE	*Portulaca oleracea*	Purslane	plant	87.0	181	4.0	-	11	2.5	-	46
URTICACEAE	*Myrianthus arboreus*	Giant yellow mulberry	kernel (dry)	13.5	1969	23.6	-	-	6.6	-	51

Rotary

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