

Potentially Important Food Plants of Afghanistan



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

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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.

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 LearnØGrow 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 Afghanistan. This guide has been developed with the best intention to create interest and improve understanding of the important local food plants of Afghanistan, 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
- assume responsibility for sickness, death or other harmful effects resulting from eating or using any plant described in the database or this Field Guide

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	1
STARCHY STAPLES.....	10
LEGUMES.....	17
LEAFY GREENS	25
FRUIT.....	33
VEGETABLES	41
NUTS, SEEDS, HERBS AND OTHER FOODS	48
NUTRITIONAL VALUES OF FOOD PLANTS BY PLANT FAMILY	56

Introduction

Potentially Important Food Plants of Afghanistan has been produced to provide information on approximately 40 edible plants that are known to grow in Afghanistan. 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.

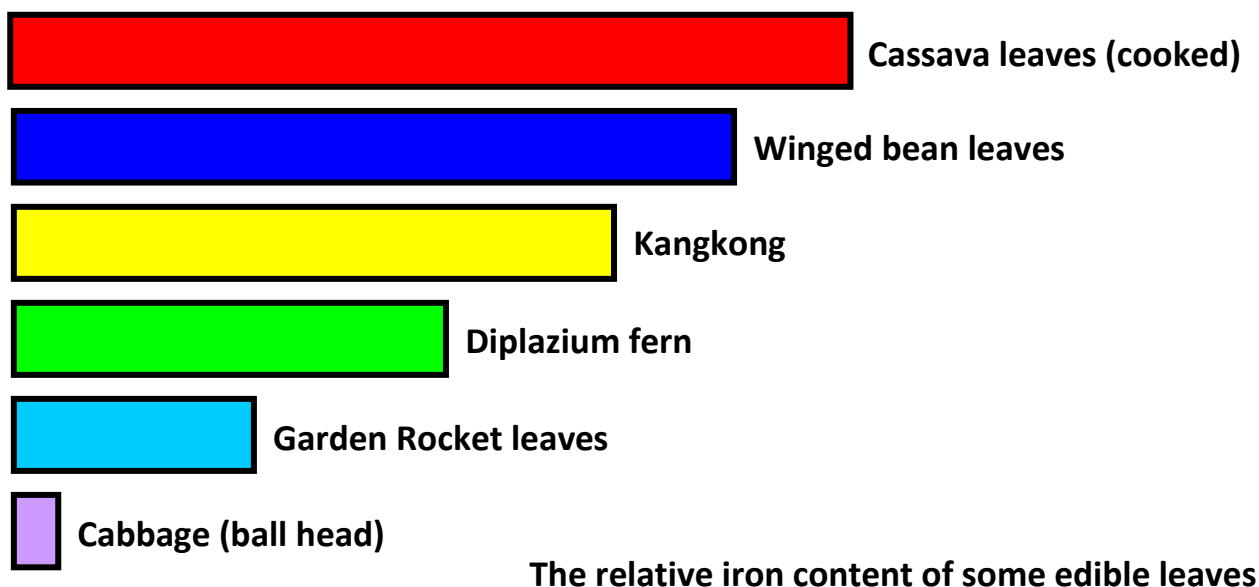
Naming of plants

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.



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

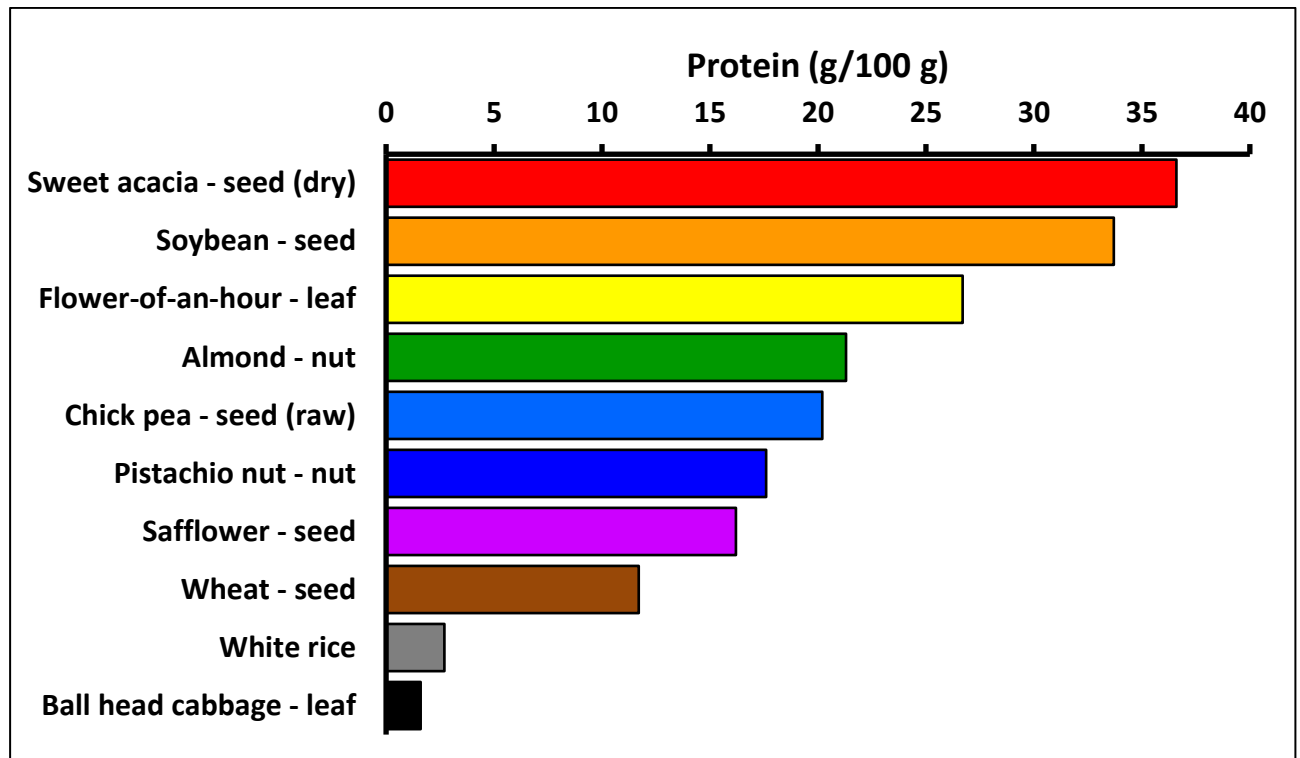
There are a large number of insects that enjoy sharing our food with us! We should not try to kill all these insects as they have an important role to play in keeping everything in nature in balance. What we need to do is to learn to manage these insects so we can all get some food to eat! Some insects 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 that 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.

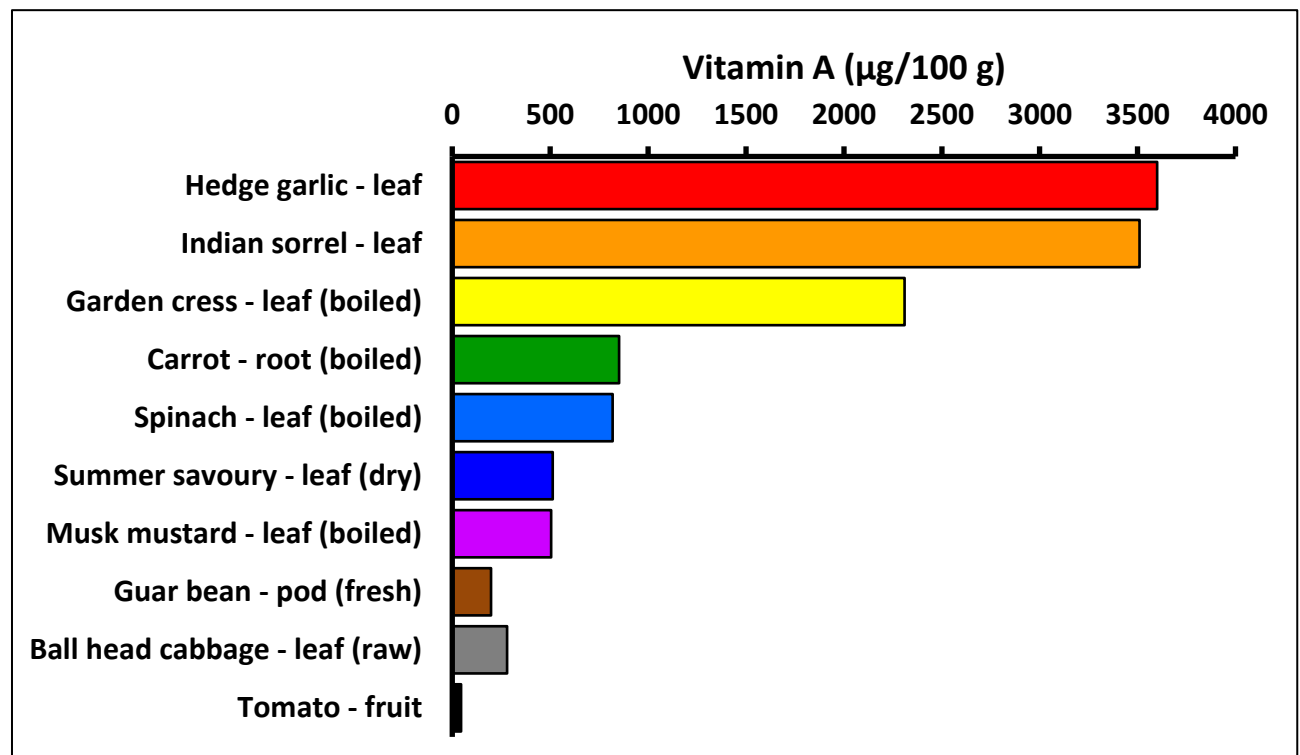
Diseases

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.

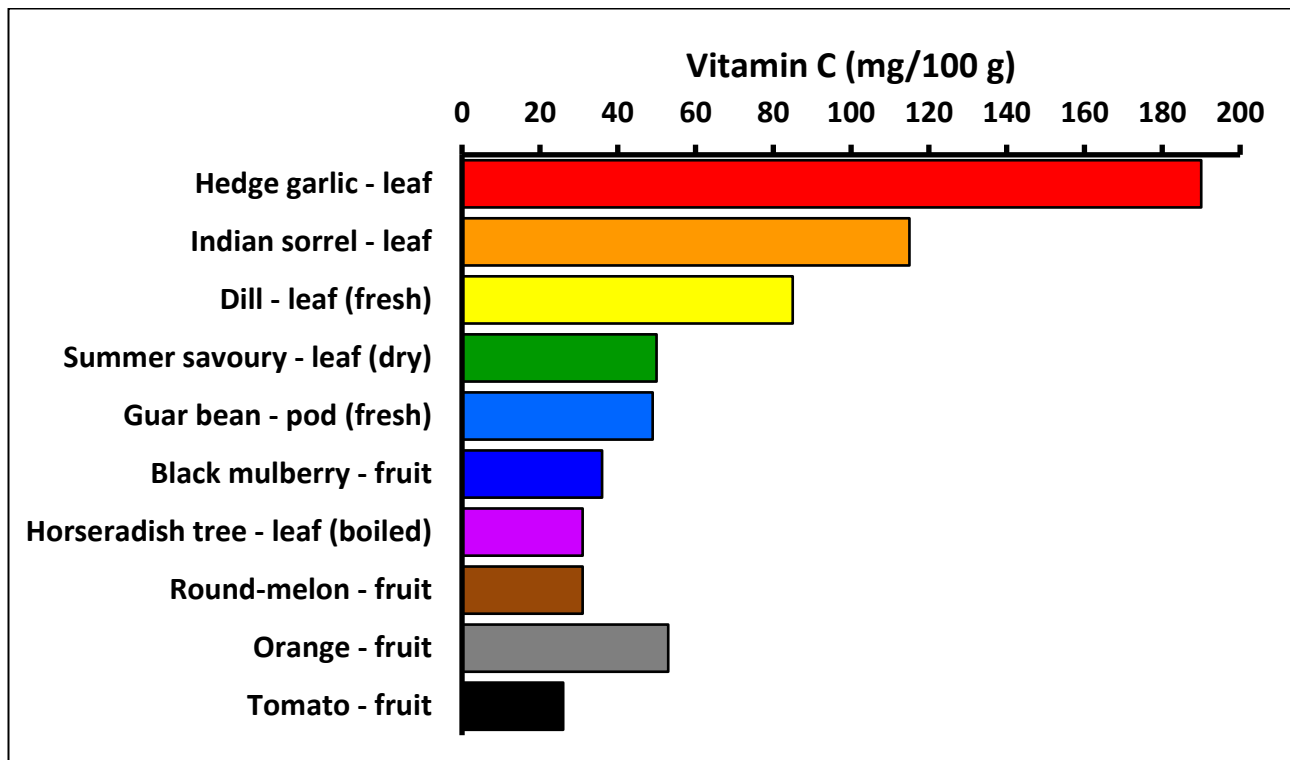
Food value charts for a selection of plants from Afghanistan



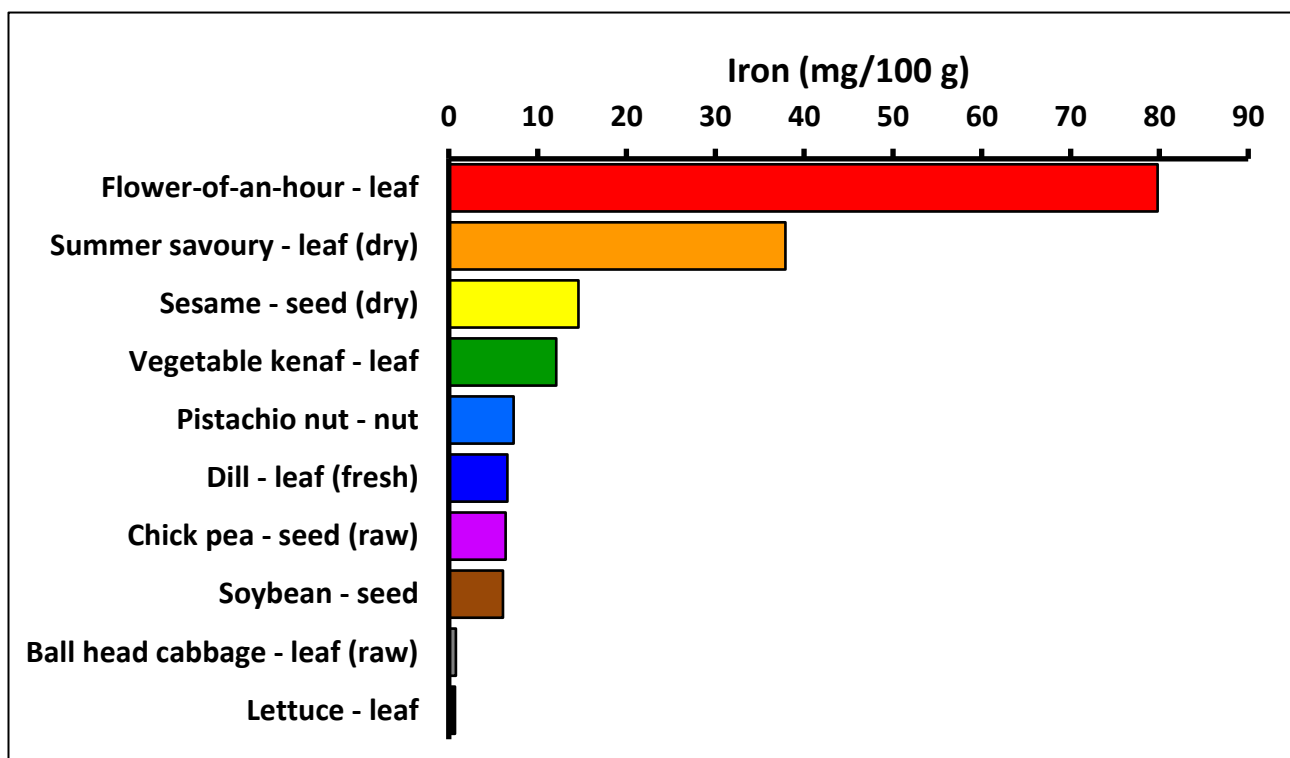
Protein helps the body repair cells and make new ones. Protein is also important for growth and development in children, teens, and pregnant women. Symptoms of protein deficiency include wasting and shrinkage of muscle tissue, and slow growth (in children).



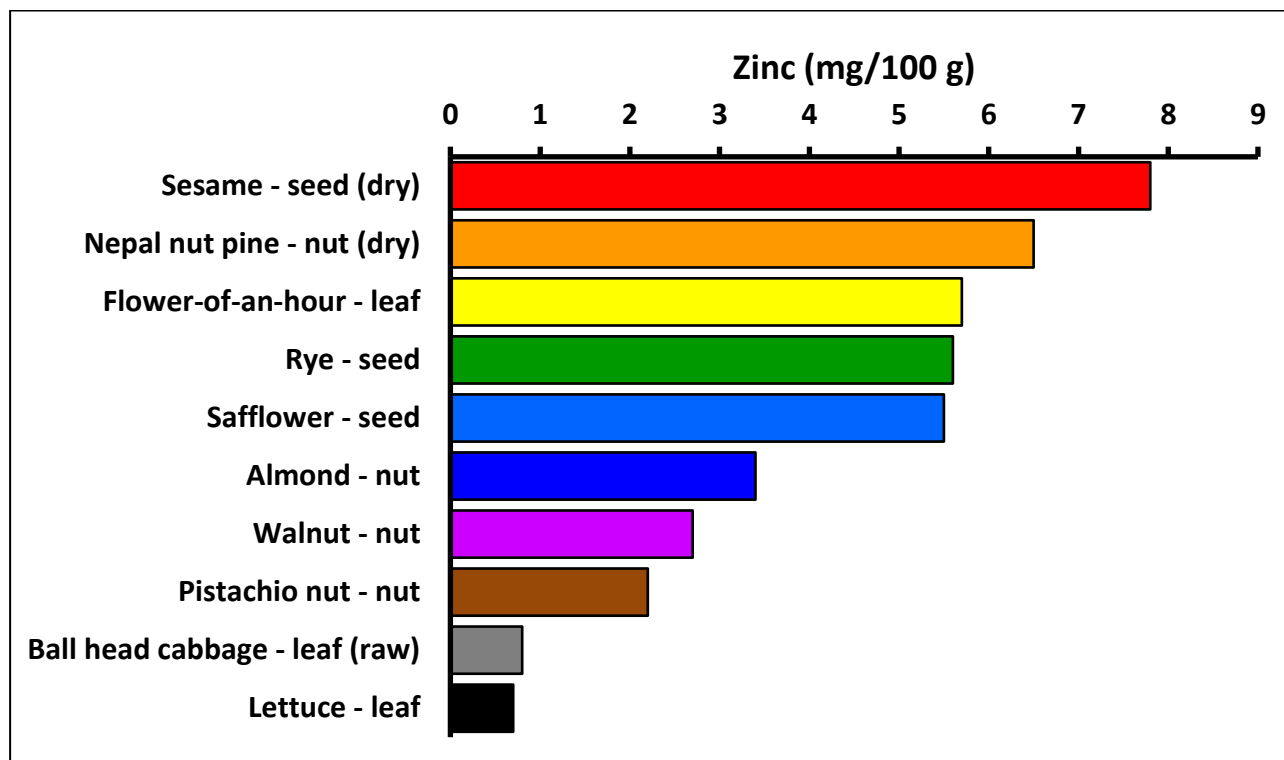
Vitamin A is very important for eyesight and fighting disease, particularly in infants, young children and pregnant women. People who are short of Vitamin A have trouble seeing at night.



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

Common name: Safflower

Local:

Scientific name: *Carthamus tinctorius*

Plant family: ASTERACEAE

Description: An erect, annual herb that grows to 60-150 cm tall. It has many branches. It has spines but the numbers vary. The stems are white, stiff and round with fine grooves along their length. The types with more spiny leaves are better for oil production. The leaves are arranged in spirals around the stem. They do not have leaf stalks. The leaves are dark green and glossy. They are 10-15 cm long and 2-4 cm wide. The flower head is made up of many small flowers that are 13 mm long and like tubes. They are yellow to orange in colour. The fruit is 4 angled and has a hard hull and a single white or grey seed. The seed is oblong.



Distribution: It grows in both tropical and temperate zones. It does better in drier regions. It cannot tolerate waterlogging. It does not suit the low, wet tropics. It needs a good dry season for drying. It is resistant to drought. It can stand some wind and salinity. High temperatures can result in poor seed set. It does best where temperatures are 17-20°C on average. At the equator it can grow at 1600-2000 m altitude but most commonly in other regions it grows below 900 m altitude. A soil pH of 5-8 is suitable. It can grow in arid places.

Use: The young shoots and leaves are eaten cooked or raw. They can be seasoned with soy sauce. The seeds are hulled and roasted. They are eaten as snacks. They are also used in chutneys. The seed oil is used in cooking and as a salad oil. This can be done by boiling the seeds and floating off the oil. The dried, edible petals are used to colour foods. They can give red or yellow dyes. The slightly bitter petals can be cooked with rice.

Cultivation: Plants are grown from seed. A fine seed bed is required and seed are broadcast or drilled. It is best sown about 2-3 cm deep. Seeds germinate in 4-7 days and a soil temperature of 15°C is best. Plants should be topped as soon as the first buds appear to increase the number of flower heads. A spacing of 15-30 cm between plants is suitable. Wider spacing gives more heads per plant and closer spacing gives higher yields per area. A seeding rate of 20-30 kg per hectare is required. Crops respond to fertiliser if there is sufficient moisture. In very dry weather, harvesting in the moist morning or evening avoids seed shattering. Plants are uprooted and heaped for a few days before threshing.

Production: Plants take 120 days to maturity. Seeds are ripe about 35-40 days after maximum flowering. Plants are harvested when leaves turn brown.

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	5.6	2163	16.2	5	0	4.9	5.5

Image accessed from: http://1.bp.blogspot.com/-Vyvwpg5La4c/U-gCRoPVHal/AAAAAAAAWPg/54ALJ6_Xuk/s1600/13+Carthamus+tinctorius+1.jpg

Starchy staples

English: Finger millet

Local:

Scientific name: *Eleusine coracana*

Plant family: POACEAE

Description: An annual millet grass. It is robust and forms many tillers or young shoots from the base. It grows 40-120 cm tall. The stems are somewhat flattened and the leaves are narrow. The flower heads are made up of 2-7 finger like spikes, 1.5 cm across and 10-15 cm long. These in turn have about 70 smaller spikes. Each one of these smaller spikes has 4-7 seeds. The seeds are roughly rounded and 1-2 mm across. There are *coracana* and *africana* subsp.



Distribution: It is a very drought resistant tropical plant. For good yields, it needs good soil drainage and adequate moisture. It cannot stand water-logging. It is an important crop in areas where annual rainfall is 900-1250 mm. It especially suits areas with long hot summers. It needs a minimum temperature above 18°C and does best where temperatures are above 27°C. It grows from sea level to 2400 m altitude in Africa. It is a short day length plant and does best where day length is 12 hours. It can grow in arid places.

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

Cultivation: It is grown from seed. Often plants are grown mixed with sorghum or maize. Good soil preparation is needed to reduce weed competition. Seed can be broadcast or drilled. Young plants need to be weeded and thinned. Seed viability drops to about 50 % after 2 years. Spacings of 5 cm apart in rows 30-33 cm apart, or 10-12 cm apart in rows 25 cm apart are recommended. About 25-35 kg of seed per hectare are needed if seed are broadcast. 5-10 kg per hectare are required if seed are drilled. Using fertiliser can dramatically increase yield. 125 kg per hectare of sulphate of ammonia when plants are 15 cm high is used in Uganda.

Production: It is self-pollinating and pollination occurs over 8-10 days. Millet seed stores very well and can be stored without damage for 10 years. Often it is stored on the head. Yields of about 450-900 kg of dried grain per hectare are usual. This can easily be increased to 1650 kg per hectare. Crops take 3-6 months until harvest.

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	11.7	1594	6.2	-	-	5.3	-

Starchy staples

English: Pearl barley

Local:

Scientific name: *Hordeum vulgare*

Plant family: POACEAE

Description: An erect annual grass. It grows 80-120 cm tall. The nodes are solid and the internodes are hollow. The leaves are narrow. There are 5-10 leaves. They are produced alternately on opposite sides of the stem at the nodes. The leaves are narrowly sword shaped and 5 - 40 cm long by 0.5-1.5 cm wide. The flowers are greenish. Flowers have long awns. The fruit is a grain. It is oval and narrow. There are a range of named cultivated varieties.



Distribution: A temperate plant. It requires full sun and well-drained soil. It can tolerate saline conditions. In Nepal it grows to 3500 m altitude.

Use: The grains are eaten. They are mixed with wheat for chappatis. They are also used in soups. They are also used for bread and breakfast cereals. They have a low gluten content. The sprouted seeds are eaten in salads. Barley water is made by soaking the barley in water and flavouring with lemon. The young seedlings are dried and powdered and marketed as *barleygreen*. Roasted seeds are added to coffee. The seeds are also soaked until they sprout and produces malt. This is used for alcohol production.

Cultivation: Plants are grown from seed. Seed can be planted 2-6 cm deep. Often 200-250 plants are grown per square metre.

Production: It has a relatively short growing season and matures quickly.

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 (boiled)	69.6	510	2.7	-	-	0.2	0.7
seed	13.7	1367	10.5	-	-	6.0	-

Starchy staples

English: Common millet

Local:

Scientific name: *Panicum miliaceum*

Plant family: POACEAE

Description: An annual grass which grows up to 1 m high. It spreads to 15 cm across. It has a fibrous root system. The stalks are tufted. They are hairy at the base and on the nodes. The leaves are 30-50 cm long by 1-5 cm wide. They are narrow and flat. The edge is slightly rough with a few long hairs near the base. The seed head is much branched. The flower is yellow. The fruit is a grain. There are several races.



Distribution: It is a temperate plant. It requires a moderately fertile well-drained soil in full sunlight. Once established it can tolerate heat and drought. It suits warm temperate and subtropical climates. Plants are frost sensitive. It can grow in arid places. It suits hardiness zones 5-9.

Use: The seeds can be cooked and eaten whole or ground into flour. They can be used in bread, pasta or dumplings. They are often browned in a skillet before using in casseroles, stews and for stuffings. The seed can be sprouted and added to soups and salads.

Cultivation: It is grown from seed which takes one week to germinate.

Production: Seeds for harvest can be produced in 10 weeks.

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	9.6	1548	11	-	-	-	-

Starchy staples

English: Rye

Local:

Scientific name: *Secale cereale*

Plant family: POACEAE

Description: An annual cereal grass that grows 60-200 cm tall. It spreads to 30 cm across and produces tufts. The stem is erect and bluish green. The leaves are rough and narrow. They are 30 cm long and 8 mm wide. The leaves are smooth on the lower surface. The flowers are dense, slender spikelets. They are 20 cm long. The spikelets are 2-flowered and strongly awned.



Distribution: A temperate plant. It needs an open sunny position. It is resistant to frost but damaged by drought. It produces well in areas with cold winters and hot dry summers. It has value in cold places. It can grow in poorer soils. It germinates at 4-5°C. Seedlings can endure frost. The average temperature should not exceed 20°C when grain is being produced.

Use: The seeds are used for flour. It does not have enough gluten to make bread that will rise well. Rye flour is the substrate of the leaven for *sourdough bread*. The flour can be used for pasta. It is also used for making whiskey. The seeds are used for breakfast cereals and the flour in bread. Sprouted seeds are used in salads. Roasted grains are used as a coffee substitute. **Caution:** It can get infected with a fungus called eergot which is poisonous.

Cultivation: Plants are grown from seed. It is mostly wind pollinated.

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	12.5	1396	12.8	0	0	3.0	5.6

Image sourced from: https://upload.wikimedia.org/wikipedia/commons/a/a6/Secale_cereale.jpg

Starchy staples

English: Foxtail millet

Local:

Scientific name: *Setaria italica*

Plant family: POACEAE

Description: An annual grass. It grows 1-1.5 m tall. It can be tinged with purple colour. The stalks are upright and the section between the nodes is hollow. It develops tillers from the base. It has along leaf sheath. The leaf blade is 30-45 cm long by 1.2-2.5 cm wide. It has a prominent midrib and tapers towards the tip. The flower is a spike-like branching flower 7.5-25 cm long by 1.2-5 cm wide. The side branches carry 6-12 small spikes each with 1-3 bristles. The mature grain is 2 mm long. There are many named cultivated varieties.



Distribution: A warm temperate plant. It suits regions of low rainfall. It is grown from sea level to 2000 m altitude. It can tolerate a wide range of soil conditions. It cannot tolerate waterlogging or long periods of drought. It can grow in arid places.

Use: It can be cooked and eaten like rice. The seeds can be parched, popped, added to soups and sauces or made into porridge, cakes, puddings, and dumplings. The sprouted seeds can be used as a vegetable. The seeds can be used for making beer. The seeds can also be made into syrup.

Cultivation: Plants are grown by seed. Seed can be broadcast or drilled. Pure stands require 8-10 kg/ha of seed. Plants are harvested by cutting off the ears.

Production: It grows quickly. Plants mature in 80-120 days. Flowering occurs over 10-15 days. Plants can be self or cross pollinated. Yields of 800-900 kg/ha are common and straw yields for livestock feed can be up to 2500 kg/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
seed	13.5	1425	9.5	-	-	5.5	3.5

Starchy staples

English: Wheat

Local:

Scientific name: *Triticum aestivum*

Plant family: POACEAE

Description: An annual grass that easily forms tillers to produce a clump of shoots. Plants grow 30-80 cm tall. The stems are erect and simple. They are usually without hairs. The stems have 5-7 nodes and are hollow between these. The leaf sheath is wrapped around the stem. It is entire at the lower section but split further up. The strap like part where the leaf blade forms is colourless and jagged. The blade is flat, narrow and pointed. It is about 20-37 cm long and 1.2 cm wide. The veins are parallel. The flower stalk or ear is at the end of the stem as a compound spike. It is 5-10 cm long. There are 2 rows of spikelets along each side. Usually 2 grains per spike develop and these are oval with a groove along the centre. There is a tuft of hairs at the end. There are more than 25000 cultivated varieties.



Distribution: A temperate plant that is grown at higher altitudes in the subtropics and tropics. The best temperature for germination is about 29°C and the minimum temperature is about 4°C. Under good conditions, seeds germinate in about 4-5 days. Most wheat is grown between latitudes 30° and 60° north and between 30° and 40° south. It suits hardiness zones 9-11.

Use: It is used in fermented and unfermented products. Chapati flour usually comes from low gluten varieties. The seeds can be eaten as a cereal. It can be made into flakes, puffed, shredded and other forms or breakfast cereal. Wheat that is parboiled, dried and cracked is sold as *tabouli*. Young seedlings are juiced and used as wheatgrass drink.

Cultivation: Seed should be sown into a clean weed free seedbed. Seeds can be broadcast or drilled. Seed should be 2.5-5 cm deep and plants 20-25 cm apart.

Production: Spring wheat has a growing period of 100 days or more. The rainfall of most wheat growing areas is 750 mm per year or less. In the tropics, maturity varies from 95-150 days. Yields of 1420 kg per ha are the world 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	12.5	1387	11.7	-	-	3.3	-

Legumes

English: Sweet acacia

Local:

Scientific name: *Acacia farnesiana*

Plant family: FABACEAE

Description: An evergreen shrub. It grows 5-7 m tall and 3 m across. The stem is slender and erect. The crown is open. It is a spreading, densely branched shrub. The bark is smooth and brown. The leaves are branched and green. There are 4-6 pairs of larger leaves and 10-20 pairs of small leaflets. They have tiny leaflets and thorns up to 2 cm long, occur in pairs. The leaf stalk has a gland at or above the middle. The flowers are large orange balls. They are strongly perfumed. (The oil is used as a perfume in France.) The pods are long and dark brown to black. They



are 5-8 cm long by 0.5-1 cm wide. They are inflated and sausage like. Often they are curved. They are marked with narrow lines. The pods have hard grey seeds imbedded in a pithy substance. The pods do not split open at maturity. The seeds are chestnut brown and 7-8 mm long by 5.5 mm wide.

Distribution: It is a tropical plant. This tree occurs naturally in Australia, Asia and Africa. It will grow on most soils. It is drought and frost resistant. It most commonly grows naturally on clay soils. It grows in areas with an annual rainfall between 400-4000 mm. It can grow in acid or alkaline soils. It can grow in arid places. It suits hardiness zones 11-12.

Use: The pods have been recorded as eaten after cooking. The gum is eaten. The ground up seeds are eaten. The germinated seeds are claimed to be eaten. The gum is used to prepare sweets. The young leaves are used in India as a substitute for tamarind in chutneys.

Cultivation: It is grown from seed.

Production: It is fast growing. Flowering can occur almost continuously if watering is regular. In northern Australia, flowering is normally November to January, with pods available from March to May.

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)	8.1	1522	36.6	-	-	6.0	0.6

Legumes

English: Pigeon pea

Local:

Scientific name: *Cajanus cajan*

Plant family: FABACEAE

Description: An upright perennial shrubby legume that can live for 3-4 years. They can grow up to 4 m tall and spread to 1.5 m wide. It has a bushy appearance and a strong deep taproot. The root nodules are round and sometimes lobed. The leaf consists of 3 narrow, green leaflets which are silvery-green underneath. The end leaflet is larger with a longer leaf stalk. The pea shaped flowers are red and yellow and occur on branched flower stalks which stick upwards in the axils of leaves. Pods are long, straight and narrow, often with 4-8 seeds. Seeds vary in shape, size and colour. The pods are slightly hairy. Pods are often 4-8 cm long and have a beak at the end. Pods are constricted between the seeds. Many varieties of pigeon pea occur. Some are dwarf and day length neutral.



Distribution: A tropical plant that requires a tropical or subtropical climate. Plants grow from sea level up to about 1800 m in the tropics. They can tolerate drought and are suited to a drier climate. They can grow in places with less than 600 mm rainfall per year. They do less well in the wet tropics. They suffer in waterlogged soils and are damaged by frost. It can also tolerate heat. It will grow on poor soils cannot grow on salty soils. It can grow in arid places and suits hardiness zones 10-12.

Use: Young leaves, shoots and pods are eaten. The pods can be used in curries. The leaves and shoots as potherbs. Young seeds are cooked and eaten like peas. Ripe seeds are also cooked and eaten in soups and curries. Bean sprouts can be produced and eaten. Preparation of the seeds for dahl is somewhat complicated.

Cultivation: They are grown from seeds. It is best to sow seeds where the plants are to grow. Seeds normally germinate easily and well. Before sowing seed it helps to soak them in cold water for one day. Seeds store well if kept cool and dry. A spacing of 1.5 m x 1.5 m is suitable. Plants can be cut back and allowed to re-grow. Plants can also be grown from cuttings.

Production: Plants are fast growing. Pods are ready after 5 months. Mature seeds take about 8 months. Plants will often live for 3-4 years. Plants are cross pollinated by insects, or self-pollinated.

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	10.0	1449	19.5	55	-	15.0	-
pod (young)	64.4	477	8.7	-	-	2.0	-
seed (young, boiled)	71.8	464	6.0	2	28.1	1.6	0.8

Legumes

English: Chick pea

Local:

Scientific name: *Cicer arietinum*

Plant family: FABACEAE

Description: Chick peas are erect, annual herbs with a strong taproot. Plants grow up to 60 cm high and all parts are hairy. Plants are often bluish green in colour. The leaves are up to 5 cm long and have 9-15 pairs of leaflets along a stalk and a single leaflet at the end. The leaflets are 1-2 cm long by 0.3-1.4 cm wide and are strongly pointed and with a toothed edge. The flowers are carried singly on long stalks in the axils of leaves and are white, pink or purple. The flowers normally never open and are self-pollinated.



The pods are inflated, 2-3 cm long and have 1 or 2 seeds. The seeds are angular and up to 1 cm across. They have a pointed beak. The seed colour can vary from brown, white, red or black. There are many named varieties.

Distribution: Chick pea is a sub-tropical crop. It suits high altitudes in the tropics because it needs cold nights with dew. It is well suited to semi-arid regions. It can tolerate salt and drought. It does not do well in warm, humid places. It needs well drained soil and is damaged by frost. For best growth, night temperatures between 18-26°C, and day temperatures of 21-29°C, are required. The temperature range of 8°C between day and night is required. Annual rainfall of 600-750 mm and a relative humidity of 20-40% is suitable. The best soil pH is 5.5-7.5 but they will grow on alkaline soils.

Use: Mainly the ripe seeds are eaten. They are most commonly boiled and mashed but they can also be roasted or fried or used in stews and soups. The young leaves, shoots and pods are sometimes eaten. Sprouted seeds can be eaten. When roasted they can be eaten as a snack. The seeds can also be used to make flour. Chick peas are used in hummus, couscous, falafel, and to make pita bread. They can be fermented into miso and tempeh and the roasted roots and seeds can be used as a coffee substitute.

Cultivation: Chick peas are grown from seed. Often other crops are grown mixed with Chick peas but these are planted 3-4 weeks after sowing the Chick peas. Seed should be planted 2-12 cm deep. Seed will germinate at temperatures above 5°C but are best above 15°C. Spacing plants 10 cm apart in rows 25-30 cm apart is suitable if plants are put in rows. Plants are cut and harvested when leaves turn brown.

Production: Yields of 400-1600 kg per hectare of seed are average for chick peas. Plants can reach maturity in 4.5-5 months, but 7 months or longer are taken for some types.

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 (raw)	9.9	1362	20.2	190	3	6.4	-

Legumes

English: Guar bean

Scientific name: *Cyamopsis tetragonolobus*

Local:

Plant family: FABACEAE

Description: An upright bushy plant often only 1 m tall. Some kinds grow to 3 m. The branches are stiff and usually with white hairs. The branches stick upwards and are angled and with grooves. The leaves are produced alternately and have 3 leaflets. The leaflets are oval and with slight saw teeth around the edge. The leaf stalks have grooves. The flowers are small in clusters in the axils of leaves. The flowers are white with pink wings. It produces clusters of thick fleshy pods. They are stiff and straight. There is a double ridge along the top of the pod and a single one below. There are also 2 ridges along the flat sides. The pods have a beak at the end. There are 8-10 small oval seeds inside.



Distribution: A tropical plant. It is a hardy, drought resistant plant that suits dry areas. It grows well on alluvial and sandy soils and in areas with high summer temperatures and low rainfall. It can tolerate an alkaline soil with pH 7.5-8.

Use: The green immature pods are eaten cooked. They are added to curries. They can be fried in oil, salted or dried for later use. The seeds are eaten. The seeds contain a gum used as a thickening agent. It is used in ice cream, baked goods, gluten free foods and salad dressing. The sprouted seeds are also eaten.

Cultivation: They are grown from seed, often in mixed cropping situations. It requires 15-24 kg of seed to sow a hectare. Seeds are sown 2-3 cm deep. They are often put 20-30 cm apart in rows 65 cm apart. Seeds germinate within one week.

Production: Plants mature in 3-3.5 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	9.9	1452	30.5	-	-	-	-
pod (fresh)	82.0	-	3.7	198	49	5.8	-

Legumes

English: Soybean

Local:

Scientific name: *Glycine max*

Plant family: FABACEAE

Description: A small erect bean growing up to 60 cm tall. It grows each year from seed. Straggling kinds can occur. Stems, leaves and pods are softly hairy. The leaves have 3 leaflets. The leaflets have stalks. Flowers are small and white or blue. They occur in groups in the axils of leaves. The pods are broad, flat and hairy. Pods have 2-4 seeds. The seeds can be yellow to black.



Distribution: It is a temperate plant that suits lowland areas. It can be grown from sea level to 2000 m altitude. Many varieties will not flower in the tropics (short days). It needs fertile soil. The best soil acidity is pH 5.5-7.0. It is damaged by frost.

Use: The young pods and ripe seeds are eaten. They are used for flour. The dried seeds are boiled or baked and used in soups, stews and casseroles. The seeds are used for oil. Toasted seeds are eaten like a snack. Strongly roasted seeds are used for coffee. Soy flour is used for noodles, and confectionary. The beans are fermented and used in a range of foods. Sometimes the young leaves are eaten. The seeds are also used for sprouts and for making cooking oil and soya sauce etc. Because soybean contains a trypsin inhibitor they should be cooked and even the sprouts should be lightly cooked.

Cultivation: It is grown from seed. Seeds need to be inoculated with bacteria before planting. Plants need to be about 20 cm apart.

Production: Plants flower about 8 weeks after sowing and pods mature about 16 weeks after sowing. Often plants are pulled up and hung up before threshing out the seed.

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	9.0	1701	33.7	55	-	6.1	-
seed (immature)	68.0	584	13.0	16	27	3.8	0.9
sprout	79.5	339	8.5	1.0	8.3	1.3	1.0

Legumes

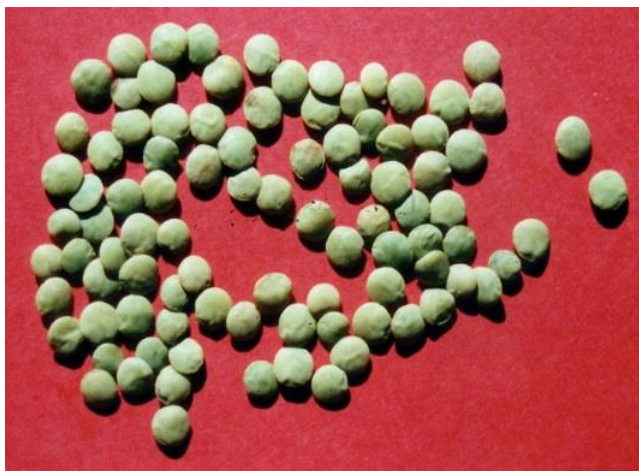
English: Lentils

Local:

Scientific name: *Lens culinaris*

Plant family: FABACEAE

Description: A slender, annual plant. They grow to about 25-40 cm high. It is erect with many branches. Plants are softly hairy. The leaves are compound with leaflets along the stalk. There is usually a tendril at the end. There are 4-7 pairs of leaflets and these do not have a stalk. They are sword shaped and 1.3 cm long. The flowers are in the axils of leaves. There are 1-4 flowers in a group. The flower stalk is slender. The flowers are small and up to 8 mm long. The flowers are bluish. The pods are oblong and 1.3 cm long. There are 1-2 seeds per pod. The pods are flat and the seeds are about 3-6 mm across.



There are also large seeded kinds with seeds 6-9 mm across. The seeds are lens shaped, round and curved out on both sides. The seeds become reddish brown when ripe. There are several named cultivated varieties.

Distribution: A plant of warm temperate and tropical zones. It prefers a sandy soil in a warm position. It produces most seed when grown on poorer soils. They grow in subtropical, warm temperate and high altitude tropical places. In India they grow from sea level to 3500 m altitude. They can grow on a range of soils. It suits hardiness zones 7-11.

Use: The seeds are cooked, sprouted or eaten raw. Young seedpods can be cooked and eaten. The ground seed can be used with cereals. The seeds are often eaten in soups and stews. They are served as Dahl in India. Lentil flour can be mixed with cereal flour to bake bread. The sprouted seeds are eaten in salads, vegetable dishes and soups.

Cultivation: Seed are sown where they are to grow. Plants are normally self-pollinated but cross pollination can occur. In India it is often grown mixed with rice. When grown as a pure stand it can be broadcast or planted in rows.

Production: Yields of 2 ton per hectare are possible. For sprouts, the seeds are soaked for 12 hours in warm water then allowed to sprout for 5 days. Crops mature in about 3.5 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
sprouted & cooked	68.7	423	8.8	4	12.6	3.1	3.1
split & boiled	72.1	420	7.6	20	-	2.4	1.0

Legumes

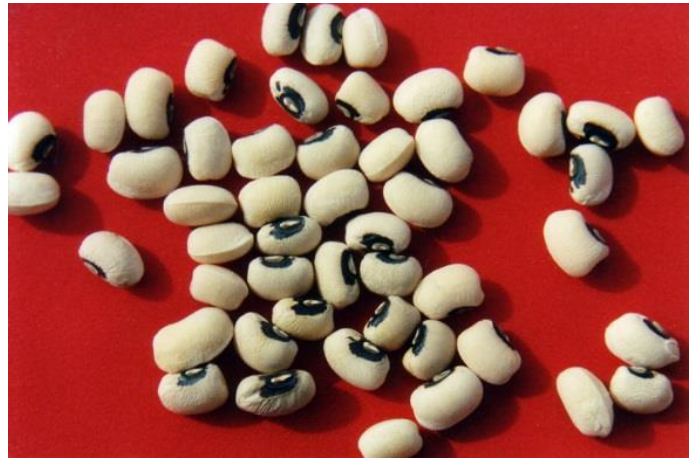
English: Cowpea

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

Legumes

English: Mung bean

Local:

Scientific name: *Vigna mungo*

Plant family: FABACEAE

Description: Mung beans are erect, annual herbs that grow up to 80 cm tall. Sometimes the stems are twining. The stems have a dense covering of yellow or rusty hairs. The leaves are divided into 3 oval leaflets. Each leaflet is 3-10 cm long by 1-5.5 cm wide. The leaf stalks are long but the leaflets stalks are short. The flowers are yellow, 1-2 cm long and occur in dense clusters. The fruit is a hairy pod 4-7 cm long and 5-6 mm wide. Each pod contains 4-10 small, black seeds. The seeds are 4-4.5 mm long by 4 mm wide and have square ends.



Distribution: Mung beans are grown mainly in coastal areas of the tropics but will probably grow up to 1800 m altitude. It suits dry areas. It is drought resistant. It is grown in areas with rainfall of 900 mm per year. It cannot stand frost or long periods of cloud. It is not suited to the wet tropics. It suits hardiness zones 10-12.

Use: The ripe seeds can be eaten. They can be fried and roasted and eaten as a snack. The young pods and young leaves are also edible. The beans are also used for bean sprouts. The seeds can be used in lentil soup, parched and ground into flour for porridge, or baked into bread. The roasted and ground seeds are also used in a spice mixture.

Cultivation: Mung beans are grown from seed. Seed collection is easy. Seed can be broadcast or sown 25 cm apart.

Production: Flowering of mung bean commences after 6 weeks. Plants are self-pollinated. Pods are ready to harvest 2-4 months after planting. Pods shatter easily. It is easiest to pull the whole plant, dry them for a week then thresh out the seeds. Seed yields of 450-560 kg per hectare after 80-120 days are common.

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 (raw)	12	981	22.0	6	-	8.0	-
seed (sprouted)	93.4	88	2	1	11.4	0.7	0.5

Leafy greens

English: Musk mustard

Local:

Scientific name: *Chorispora tenella*

Plant family: BRASSICACEAE

Description: A cabbage family herb. It is a hairy, annual plant that grows up to 40 cm tall. The leaves at the base and on the lower stem are broadly oval with lobes along the side. They are 3-4 cm long by 3-5 mm wide. The leaves in the stems do not have leaf stalks. They have teeth. The flowers are lavender and small. They are 3 mm long. The pods are cylinder shaped and 3-5 cm long and slightly curved. They have a beak. The seeds are oblong and 1.5 mm long. They are light brown.

Distribution: It grows in pastures, roadsides, fields, waste areas from 100-200 m altitude in China.

Use: The young leaves are used in salads.



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 (boiled)	92.5	84	1.6	505	24	3.7	0.2

Image sourced from: <https://swbiodiversity.org/seinet/taxa/index.php?taxon=1269&clid=4978#>

Leafy greens

Common name: Flower-of-an-hour

Local:

Scientific name: *Hibiscus trionum*

Plant family: MALVACEAE

Description: An annual herb. It can be erect or lie over. It is 25-70 cm high. The leaves are alternate. The leaf stalk is 2-4 cm long. The leaf blade has 3-5 lobes arranged like fingers on a hand. The leaf blade is 3-6 cm across. The central lobe is longer. The leaf blade is covered with coarse star like hairs. The flowers occur singly in the axils of leaves. They are yellow and purple at the base. They are like a Hibiscus flower. The fruit is a capsule which is about 1 cm across. It is a hairy five celled capsule. There are many black seeds.



Distribution: It suits tropical, subtropical and temperate regions. It does best in a sunny position. It does not occur in hot humid tropical rain forest zones. It suits drier warmer places. It can grow in hot arid zones with a marked dry season. It grows up to 2635 m above sea level. It can grow in arid places. It suits hardiness zones 10-12.

Use: The shoots and leaves are cooked and eaten. The pods are used in soups and stews. The pods are sun-dried and powdered and used later in food in Sudan. The seeds are eaten raw and have a sesame flavour.

Cultivation: Plants can be grown from seed or cuttings.

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	6.3	1263	26.7	-	-	79.8	5.7
shoot	-	-	21.0	-	-	21.8	9.4

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Leafy greens

Common name: Garden cress

Local:

Scientific name: *Lepidium sativum*

Plant family: BRASSICACEAE

Description: A cabbage family herb. It is an annual plant about 60 cm high. It has narrowly lobed leaves. The leaves near the base have long stalks and the leaves higher on the plant do not have stalks. The flowers are small and white. The fruit is a pod. These are oval and deeply notched. The seed pods are reddish brown. The plant develops tuberous roots and grows for a second season. There are some named cultivated varieties.

Distribution: A temperate plant. In Nepal it grows between 200-3000 m altitude. In tropical Africa it grows between 750-2900 m and is best at cooler locations. It suits plant hardiness zones 4-10.

Use: The leaves are used in salads. They are cut when young. The tender leaves are cooked as a vegetable. They are used in curries. The fresh or dried seed pods can be used as a pungent seasoning. The seeds also yield an edible oil. The seeds can be sprouted and eaten.



Cultivation: Seeds are sown at regular intervals of about 2 weeks throughout the year. They need to be sown shallowly in a fine soil. Plants can start to be harvested in a few weeks.

Production: It is fast growing.

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	87.2	150	4.2	58	59	2.9	0.2
leaf (boiled)	92.5	96	1.9	2310	23	0.8	0.2

Image accessed from: <https://i.pinimg.com/originals/5a/4e/3a/5a4e3a1ef0846df605fb7be2781d45bc.jpg>

Leafy greens

English: Spinach

Local:

Scientific name: *Spinacia oleracea*

Plant family: AMARANTHACEAE

Description: An annual leafy vegetable. It grows 60-90 cm high and spreads 30-45 cm wide. The broad leaves are produced in a clump on short stalks. The leaves at the base are large and leaves on the stalk are smaller. Plants are separately male and female. Both types are needed if seed is to be produced. Flowers are greenish in spikes.



Distribution: It is a temperate plant. It does not suit the tropical lowlands and grows best where the temperature varies between 10°C and 20°C or above 2000 m altitude. The kind with very prickly seeds is frost resistant. Plants need a deep well drained soil. It is a cool season, short day plant. It suits hardiness zones 6-9.

Use: Leaves are cooked in a small amount of water. They are also used in soups and salads. Young leaves are eaten raw and older leaves are cooked. The sprouted seeds can be used in salads.

Caution: Spinach can contain oxalates which affects calcium absorption.

Cultivation: It is normally sown directly from seeds. Plants need to be 25 cm apart.

Production: The older leaves are picked off. They can be harvested starting at 8 weeks.

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	91.6	61	2.9	32	52	2.7	0.5
leaf (boiled)	92.9	57	2.4	819	29	2.9	0.8

Leafy greens

English: Summer savoury

Local:

Scientific name: *Satureja hortensis*

Plant family: LAMIACEAE

Description: An annual herb which grows from seed each year. It grows to 30 cm high and spreads to 25 cm wide. It has small, narrow, greyish-green leaves about 1.3 cm long. These turn slightly purple during summer and autumn. The leaves are attached directly to a pinkish stem. The flowers are small and white. They are in spikes in rings.



Distribution: It suits Mediterranean regions. They do best in warm climates but are not suited to the tropics. They do best when grown in full sunlight in fertile, well-drained alkaline soils. It suits hardiness zones 5-9.

Use: The leaves are used as flavouring with tomatoes, beans, fish and salads. They have a hot spicy flavour. They are used fresh or dried. They are also used in cakes, puddings and sausages. Because it reduces flatulence, it is eaten with beans and cucumbers. They can be used in cooking to reduce the smell of cabbage and turnips. The leaves can be harvested before flowering and used for tea.

Cultivation: Plants are grown from seed sown directly where they are to grow. Plants need to be supported by mounding soil up around their base.

Production: The leaves can be 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
leaf (dry)	9.0	1138	6.7	513	50.0	37.9	4.3

Leafy greens

Common name: Hedge garlic

Local:

Scientific name: *Alliaria petiolata*

Plant family: BRASSICACEAE

Description: A cabbage family herb. It is a biennial plant as it takes 2 years to complete its life cycle. It grows 1 m high and 40 cm across. It gives off a strong smell of garlic. The leaves are bright green and the lower leaves are kidney shaped. The upper leaves are oval. The edges are wavy and can have rounded teeth. They are 5-15 cm across. The flowers are small and white. They are 5-10 mm across. They are in clusters at the tips of the stems and at the leaf bases. The fruit are slender pods 5 cm long. They are cylinder shaped and upright. There are many very small seeds.

Distribution: It is a temperate and Mediterranean plant. It grows naturally in damp shady places on basic soils in Britain. It is resistant to frost but sensitive to drought. It grows best on alkaline soils but can grow in a range of soils.



Use: The young leaves are eaten raw or cooked. It tastes like mustard seed. It is finely chopped and used in salads. They can be mixed with mint leaves and made into a sauce with lamb dishes. The flowers and young seeds pods are eaten raw as a flavouring.

Cultivation: Plants are grown from seed sown where plants are to grow. They can be grown from cuttings.

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	75	292	-	3600	190	-	-

Image sourced from: <https://www.flickr.com/photos/nturland/49945531918>

Leafy greens

English: Persian clover

Local:

Scientific name: *Trifolium resupinatum*

Plant family: FABACEAE

Description: An annual herb that can lie over or be erect. The leaves have leaflets 7-30 mm long. They are broadly wedge shaped. The flowers are in a head on a stalk. It is pink or reddish-purple. The inflated fruit are a short, oval shape.

Distribution: It is a temperate plant.

Use: The leaves are eaten in salads.



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	80.3	251	7.2	-	-	6.1	-

Image sourced from: https://upload.wikimedia.org/wikipedia/commons/1/1e/Trifolium_resupinatum_eF.jpg

Leafy greens

English: Vegetable kenaf

Local:

Scientific name: *Hibiscus cannabinus*

Plant family: MALVACEAE

Description: A herb that can grow from seed each year, or keep growing from year to year. It grows up to 3.5 m tall. It has a few sharp spines. The leaf stalk is 6-20 cm long. The leaf blade has 2 forms. The leaves lower on the stem are heart shaped and those higher on the stem have 4-7 lobes arranged like fingers on a hand. These lobes are sword shaped and 2-12 cm long by 0.6-2 cm wide. They have teeth around the edge and taper at the tip. The flowers are yellow, white or ivory and red at the base. They occur singly in the axils of leaves. They are large and up to 10 cm across. They have very short stalks. The fruit is a capsule about 1.5 cm across. The seeds are kidney shaped.



Distribution: A tropical plant. It can grow in well-drained sandy soils and in dry but seasonally waterlogged places. It grows from 1500-2100 m above sea level. It grows in areas with an annual rainfall of 500-635 mm. It can grow in arid places and suits hardiness zones 10-12. It grows in many African and Asian countries.

Use: The leaves are eaten cooked as a vegetable. They are also used as a substitute for tamarind for curries. They are used in soups. The leaves are cooked with the aid of potashes. The seeds are roasted and eaten. They are also fermented. The seeds yield an edible oil. The flowers are eaten cooked as a vegetable. The bark is sweet and is chewed by children.

Cultivation: It is usually grown from seeds but can be grown from cuttings. Seeds will last for about 8 months. Seeds germinate best at 35°C.

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 (dry)	8.1	1785	20.2	-	-	-	-
leaf	79.0	280	5.5	34	-	12.1	-

Fruit

English: Nectarine

Local:

Scientific name: *Prunus persica*

Plant family: ROSACEAE

Description: A small deciduous tree, that grows 3-8 m tall. It has an open growth habit. The leaves have stalks that are 5-10 mm long. The leaves are oblong to sword shaped. They have fine teeth along the edge. The leaf blades are 7-15 cm long and 2-3 cm wide. They are acute at the base and taper to the tip. The flowers occur singly. They appear before the leaves. The flowers are small and pink or white. The fruit varies in shape and size. It is round with a groove down the side. It is 5-8 cm across. It is yellow when ripe. It has one hard stone inside with holes in it. There are a very large number of cultivated varieties.



Distribution: It is native to China. They need a specific cold requirement below 7°C to start flowers and leaves forming but a warm period for fruit ripening. Some low chill varieties are available. It likes a warm sheltered position. It will tolerate mild frosts. Mild-hot summers and cool-cold winters are best. Some varieties can be grown in some highland regions in the tropics if the leaves are picked off. It needs a soil pH of 5.7-6.9. It suits hardiness zones 5-10.

Use: Ripe fruit are eaten fresh, preserved or made into wine. They are canned, stuffed, made into jam and juice and used in cakes, pies and pickles. The seed oil is used for cooking. **Caution:** The bitter kinds of kernels contain amygdalin which releases cyanide and is poisonous unless removed by cooking.

Cultivation: Trees can be grown from seed but do not breed true. It is better to graft. Branches which have borne fruit should be removed to allow new fruit bearing wood to grow.

Production: Budded trees commence fruiting in 2-3 years. Trees often need zinc and borax sprays. Trees tend to be fairly short lived (20 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 (raw)	86.2	156	0.6	25	8	0.4	0.1

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 hardness 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 per 10 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: Apricot

Local:

Scientific name: *Prunus armeniaca*

Plant family: ROSACEAE

Description: A medium-sized deciduous tree. It grows to 10 m tall. It is a broad spreading shape. The bark is dark red-brown and smooth and shiny. The leaves have stalks. The leaves are broadly oval. They are 10 cm long by 6 cm wide. They are rounded at the base and taper to the tip. They have shallow round teeth along the edge. The leaves are glossy and dark green. The flowers are 2.5 cm across and pale pink or white. They are almost without stalks and have 5 petals. They occur singly on old shoots. The fruit is fleshy and rounded. It is yellow and can be flushed with red. There is a hard covering over the seed. This stone is smooth. The seeds are oval. The flesh is edible. The seeds are edible (but contain toxins).



Distribution: It is native to C. Asia and N. China. It grows in cool areas with hot dry summers. They do best on a free draining soil. It does well in areas with 100 cm rainfall, cool winters with 300-900 chilling hours below 7°C and a frost free spring. A soil pH of 6-6.8 is suitable. It needs good sunlight. It suits hardiness zones 5-10.

Use: The ripe fruit are eaten. The kernels can be eaten. If sweet they are eaten fresh and if bitter they are roasted. The seed oil is used for cooking. The fruit are also used for juice and are dried and eaten dry. They are also used for jam, and in pastries, pies, cakes, and picked. **Caution:** The bitter kinds of apricot kernels contain amygdalin which releases cyanide and is poisonous unless removed by cooking.

Cultivation: Plants can be grown from seed but are often grafted onto rootstocks. The flowers are self-fertile. Plants require some winter chilling.

Production: Trees fruit in 3-4 years. Fruit are picked by hand.

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 (raw)	86	117	0.6	96	7	0.4	0.1
fruit (boiled)	82.6	92	0.4	59	5	0.3	0.1

Image sourced from: <https://www.gardenia.net/plant/prunus-armeniaca-harcot>

Fruit

English: Pomegranate

Local:

Scientific name: *Punica granatum*

Plant family: LYTHRACEAE

Description: A shrub that grows up to 10 m tall. It has short thorns. Trees usually lose their leaves in one season during the year. The trunk is covered by reddish-brown bark. Trees often sucker near the base. The leaves are opposite, entire and 8 cm by 1.5 cm. Leaves narrow towards the base. It has large scarlet flowers at the ends of branches. 1-3 flowers occur together. The fruit is round, leathery skinned and up to 10 cm across. It is yellow-brown in colour. Inside there are angular hard seeds in a juicy yellow pulp. The seeds are 10 mm long. There are many named varieties.



Distribution: A Mediterranean climate plant that occurs naturally from SE Europe to the Himalayas. It suits drier sub-tropical climates, and areas with a long, hot, dry summer and cool winter. A temperature of 35-38°C is best for good fruit development. A humid climate affects fruit formation. They can tolerate some salinity. They grow mostly from the coast up to 500 m in the tropics. Trees are severely damaged by temperatures below -11°C. It suits hardiness zone 8-11.

Use: The juicy pulp around the seeds is eaten. The juice can be used for a drink. It provides a red colour. The seeds are dried with their aril and used in the Indian condiment Anardana. The fruit are used in sauces, soups, meat dishes, salads and other dishes. The flowers are eaten. Boiled leaves are also reported as eaten.

Cultivation: They are easily raised from seed. They are best propagated by layering or grafting but cuttings or root suckers can be used. Cuttings root easily. Cuttings 30-50 cm long of one year old wood can be used. Pruning of sucker growth and surplus branches is needed. A spacing of 4-5 m is suitable.

Production: Trees bear after 2-3 years. Fruiting is seasonal from Dec-May. The tree loses its vigour after about 15 years but trees can live for many years. The pomegranate is self-pollinated as well as cross-pollinated by insects. Cross-pollination increases the fruit set. Fruit matures 5-7 months after flowering. Fruit need to be picked when mature to prevent splitting. Fruit do not ripen further after harvesting. Fruit develop a distinctive colour and when ripe, have a metallic sound when tapped. A well maintained tree can produce 150-200 fruit in a year.

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 (raw)	81.0	285	1.0	-	6	0.3	0.1

Fruit

English: Sweet cherry

Local:

Scientific name: *Prunus avium*

Plant family: ROSACEAE

Description: A medium sized tree that grows 10-20 m tall. It is spreading and loses its leaves during the year. The bark is silver grey and peels in circular strips. The leaves are alternate and are bronze when they open. They turn dark green, then change to crimson in autumn. The leaves are oval and double toothed. The upper surface is dull, dark green. They are hairy underneath where the veins join. The leaf stalk is red and grooved. The flowers are pink and white. They occur in small clusters. The fruit are small and red-black when ripe. They are 25 mm across. They are sweet and juicy. There are at least 1000 different forms of sweet cherry.



Distribution: It is a temperate plant that is native to Europe. It can tolerate frosts except at flowering. It needs well drained soils. It needs adequate moisture during fruit development. In India it is grown from 2000-2500 m altitude. It needs 1100-1600 chilling hours below 7°C during winter. A soil pH of 6.5-7 is best. It suits hardiness zones 3-9.

Use: The fruit are eaten raw and used for jam. They are also dried, stewed and candied for use in pies, cakes, ice cream, puddings and pastries. They can be made into preserves or jelly. Liqueurs are distilled from the fermented pulp. The stones were also crushed into the pulp. The leaves are added to pickled cucumbers, apples and tomato for flavouring. The leaves are used for *sarma* in Turkey. They are rolled around a filling of rice or minced meat. The gum from the bark can be eaten. It is allowed to solidify and eaten as a children's snack.

Cultivation: Seeds need to be treated with cold by putting in a refrigerator for 3-4 months before sowing. They should be sown 5 cm deep. They may still take a year to germinate. Seedlings can be budded from better fruiting trees. Tongue grafting is used. Larger fruit often lack flavour. It requires cross pollination, so 2 or more cultivars are planted together. Suitable pollinating varieties have to be chosen. A spacing of 4 m is suitable. Trees are pruned to produce 4 or 5 widely spaced branches. Bearing trees need little pruning. Fruit are produced on spurs of one year old wood. These can produce for 10-12 years.

Production: Trees produce in 3-4 years and last about 45 years. Fruit are hand-picked when ripe. A tree can produce 18-20 kg of fruit each 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
fruit	80.8	301	1.2	21	7.0	0.4	0.1

Fruit

English: European grape

Local:

Scientific name: *Vitis vinifera*

Plant family: VITACEAE

Description: A woody vine which keeps growing from year to year. It is often pruned to reduce its size. It climbs by coiled tendrils which attach to objects. It has large leaves which are roughly heart shaped. They can be entire or deeply divided into 3-5 lobes, and can be 20 cm across. The edges of the leaf are sharply and irregularly toothed. The tip of the leaf is pointed and the base is rounded. Sometimes the leaves are hairy. The flowers are small and yellow-green. They occur in clusters which are 5- 20 cm long and beside the leaves. The 5 green petals drop off together to show 5 central stamens and the ovary. These bear clusters of fleshy fruit. The fruit is a berry which is generally oval, juicy and edible. The skin can be yellow or violet-black. They are 1-4 cm long. They contain a few hard seeds. There are 10000 cultivated varieties.



Distribution: A subtropical plant that grows mainly in Mediterranean-type climates with hot, dry summers and cool, rainy winters. It needs shelter from the wind. A soil pH of 6.5-7.5 is suitable. It suits hardiness zones 6-9.

Use: The fruit are eaten ripe and also used for juice and wines, champagnes and brandies. Sometimes young, slightly acid leaves are eaten. The leaves are used for *sarma* in Turkey. They are rolled around a filling of rice or minced meat. The dried fruit are eaten as raisins. The flowering shoots are eaten as a vegetable. They can also be pickled.

Cultivation: They are mostly grown from hardwood cuttings. It needs a trellis for support. It is normally pruned to control growth when the vines have lost their leaves. Pruning in the first year is designed to form the permanent shape of the plant. It is normally pruned to allow a single stem with two branches just below the trellis. A spacing of 2.4 m by 3 m is suitable.

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
fruit (fresh)	80.6	297	0.7	7	10.8	0.3	0.1
fruit (dry)	19.2	1184	4.1	7	4.7	3.3	0.7
leaf	73.3	389	5.6	2699	11.1	2.6	0.7

Fruit

English: Jujube

Local:

Scientific name: *Ziziphus jujuba*

Plant family: RHAMNACEAE

Description: A small deciduous tree that can grow to 13 m tall. It has drooping branches with thorns on the branches. The plant sends up thorny suckers often at a distance from the tree. These need to be cut off. The leaves are small and oval. They are 2-5 cm long and bright shiny green. The leaves turn bright yellow before falling. During the growing season, each node of a woody branch produces one to 10 small branches. These fall off later. The flowers are small and 0.5 cm across. They are white to green and produced in large numbers in the angles of leaves. The fruit are round of long and vary from cherry to plum size. They are 2-3 cm long. They have a single hard stone with two seeds. The fruit changes from green to yellow with red spots as it ripens. When fully red and ripe it softens and wrinkles. There are many named varieties.



Distribution: A subtropical plant. It can stand high temperatures in summer then due to winter dormancy can tolerate very cold temperatures. It only requires a small winter chill to enable it to fruit. They do best in warm sunny positions. They cannot grow in shade. They do best in sandy well drained soils. They can grow in soils with high salinity or alkalinity. It can tolerate drought but fruits best with adequate rainfall. It suits hardiness zones 7-10.

Use: The fruit are eaten fresh, dried or preserved in sugar. They can be stewed, baked, pickled, or used in puddings, cakes, breads, jellies, soups and sweetmeats. The ripe fruit are powdered and cooked with millet or rice. The kernels are edible.

Cultivation: Plants can be grown from seed but these do not breed true. Grafting, budding or cuttings can be used. Root suckers can be used. Although cross pollination is not required for fruit production it is needed for producing viable seed. A spacing of 3-4 m is suitable.

Production: Fruit are produced 4-5 years after planting. Fruit do not ripen at the same time so fruit can be picked from the one tree over several weeks. Fruit need to be picked when ripe. Ripe fruit can be stored at room temperature for about one week. Tree dried fruit stores for a long time.

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 (dried)	19.7	1201	3.7	-	13	1.8	0.2
fruit (raw)	77.9	331	1.2	4	69	0.5	0.1

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https://upload.wikimedia.org/wikipedia/commons/e/ea/Ziziphus_jujuba_MS_2461.JPG

Fruit

English: Black mulberry

Local:

Scientific name: *Morus nigra*

Plant family: MORACEAE

Description: A deciduous tree. It is a medium-sized tree which grows 10-12 m high. The trunk is short and then branches widely. It has an extensive root system. The bark is dark brown. The young branches are hairy. The leaf stalk is 1.5-2.5 cm long. The leaf blade is oval and 6-12 cm long by 7-11 cm wide. The flowers are small and greenish. The fruit is blackish purple when mature. It is 2-2.5 cm long by 1.5-2.5 cm wide.



Distribution: It grows in temperate Asia. It will grow on most types of soils. The soils need to be well-drained. The black mulberry will grow in colder places than the white mulberry. It suits hardiness zones 5-10.

Use: The fruit are eaten. They can be eaten raw or preserved. They can be used for jams, jellies, and drinks.

Cultivation: Plants can be grown from seed but such trees are very slow to grow and produce. It is grown by cuttings of 1-2 year old wood. Larger cuttings make faster growth. Cuttings are taken while trees are dormant in winter. Cuttings should be 1.5-2.5 cm across and 25-35 cm long. They need to be planted in sandy soil to half their depth. Grafted plants can also be used.

Production: Fully ripe fruit can be harvested by putting a cloth under the tree and shaking the branches.

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	87.7	180	1.4	3	36	1.9	0.1

Vegetables

Common name: Bulb onion

Local:

Scientific name: *Allium cepa*

Plant family: AMARYLLIDACEAE

Description: An onion family plant with a two year life cycle. Normally it develops fattened bulbs at the base. It has a shallow fibrous root system. The actual stem is very short and condensed. Leaves are produced in an alternate fashion one after the other from the top of this stem. Successive leaves grow up inside, then burst through the leaf sheath of the previous leaf. Leaves are thin and long. They are slightly to markedly flattened on the upper surface. Long day lengths and warm temperatures help the leaf bases become swollen and store food reserves. Flowers are greenish white in colour. Flowers develop on a rounded head with stalks all coming from the centre. Flowers in the rounded head open irregularly. There are no bulbils on the flower-head. There are short day cultivars that will form bulbs in the tropics.



Distribution: A temperate plant. They do not suit the wet humid tropics. Because the day lengths are short near the equator, onions often do not produce a bulb. Some newer varieties will yield in the tropics. The plant grows best at 12-21°C and the bulb forms best at 15-25°C. It grows best with a pH 5.7-6.6. It suits hardiness zones 5-10.

Use: The bulbs and leaves are used as flavouring raw or cooked.

Cultivation: They are grown from imported seed. For bulbs, a tropical cultivar is needed and bulbing is normally better at higher altitudes. Cultivars which form flowers early need to be avoided. Seedlings can be transplanted.

Food Value: Per 100 g edible portion

Edible part	Moisture %	Energy kJ	Protein g	proVit A µg	proVit C mg	Iron mg	Zinc mg
bulb (boiled)	96.6	53	0.6	-	6	0.3	0.1
bulb (raw)	92.8	99	0.9	-	10	0.3	0.1
leaf	90	-	1.4	49	-	0.5	0.5

Vegetables

English: Edible burdock

Local:

Scientific name: *Arctium lappa*

Plant family: ASTERACEAE

Description: A tall herb or shrub which takes two years from planting to flowering and seed production. Plants can be 2 m tall. The plant forms a clump of very large, grey-green wavy-edged leaves. The leaves can be 50 cm long. The leaves and stems are covered with fine hairs. The leaves are paler underneath. In the second year, a tall branched flower stalk 2 m tall grows from the centre of the clump. There are many small purple or white flowers. They have a bract around them that is longer than the flower. The fruit is a spiky seed pod. This burr attaches itself to clothes. The burdock roots are long and slender and resemble parsnips. They can be a metre long and 3 cm wide. The skin is brown and the flesh is white.



Distribution: It can grow in temperate regions and in warm and humid places. In frosty places, leaves will die back, but plants will re-shoot from the roots. They need full sun and good drainage. They do best in soils with a pH of 6.5-7.5. It does not grow well in acid soils. Too much nitrogen fertiliser causes forking of the roots. It also grows in wetlands.

Use: The young roots are stir-fried or added to soups and stews after the bitter element is removed. This is done by peeling, then soaking in water for an hour. The roots can also be pickled, made into a paste or made into a drink. Young leaves can be eaten cooked as a vegetable. The pith of the flower stalk can be eaten in salads. Seeds can be sprouted and eaten.

Cultivation: Plants are grown from seed. Improved varieties have been selected for cultivation. The seed are sown directly at a depth of 1.5 cm. The soil temperature needs to be above 10°C. Seeds germinate best with temperatures of 20-25°C. Seed should be soaked for 12 hours before sowing, or scratched with fine sandpaper. Seed may take 2 weeks to germinate. A spacing of 20 cm is suitable.

Production: Roots can be harvested after about 5-8 months. Roots should be 25 mm across and 60 cm long for harvest. Roots left too long become woody and tough. The flavour of roots is not as good once plants have flowered.

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 (boiled)	75.6	368	2.1	0	3	0.8	0.4
root (raw)	80.1	301	1.5	0	3	0.8	0.4

Vegetables

English: Carrot

Local:

Scientific name: *Daucus carota* subsp. *sativus*

Plant family: APIACEAE

Description: A root crop grown from seed. It normally grows a fattened root one year then forms a flower the next year. It can be 60 cm high and spread to 50 cm wide. The root is long in shape and orange in colour. The stem is erect, tough and furrowed. The leaves are feathery and divided 3 times. The leaves have a sheath clasping the stalk at the base. The flowers are white and lacy. They form a dense compound cluster at the top of the plant. Sometimes flowers are only produced into the second year of growth, depending on temperature.



Distribution: A temperate plant. In the tropics it is mostly grown in the highlands, but will grow from sea level to 2600 m altitude. Sometimes on the coast only leaves are produced. Carrots are frost resistant. It needs a deep loose soil. Seed germinate well in the temperature range 7-24°C. Plants grow well with a temperature about 15°C. It grows best with a pH of 6-7. It suits hardiness zones 3-9.

Use: Both the roots and the leaves are edible. The young leaves are used in soups. The roots can be eaten raw or cooked. They can be steamed, fried, pickled, made into jam, or used in stews. Carrot seed oil is used as a flavouring. The juice is used raw and fermented. The roots can be dried and the flour used to flavour and thicken soups.

Cultivation: They are grown from seeds sown directly. Because the seeds are very small, they are sometimes mixed with sand before sowing to allow a more even distribution of plants. A spacing 5 cm apart in rows 15-20 cm apart is suitable. Often this spacing is achieved by thinning out plants. For seed production, a low temperature of 4-9°C for 40-60 days is needed before flowering to break the dormancy.

Production: There are tropical varieties that mature within 90-110 days.

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 (raw)	89.9	180	1.0	835	6	0.6	0.4
root (boiled)	91.5	79	0.6	852	4	0.4	0.3
leaf	87.4	-	2.2	65	-	-	-

Vegetables

English: Horseradish tree

Local:

Scientific name: *Moringa oleifera*

Plant family: MORINGACEAE

Description: A small, soft-wooded tree that grows 9-12 m tall. The tree loses its leaves during the year. The bark is grey, thick, corky and peels off in patches. The leaves are pale green and the leaf is divided 3 times. The whole leaf is 30-60 cm long and the leaflets are usually oval and 1-2 cm long. The leaflets are jointed with a gland near the joint. The flowers are pale yellow. They occur in long sprays 30 cm long. Each flower has 5 petals and of these one is erect and 4 are bent backwards. The fruit is a long capsule 30-100 cm long by 2 cm wide. The seed capsules are up to 45 cm long. They are roughly triangular in shape. The seeds have 3 wings. Often the fruiting kinds are grown as annual plants.



Distribution: A tropical and subtropical plant. They suit the dry lowland areas and grow up to 1350 m altitude in the tropics. They are not hardy to frost. They cannot tolerate water-logging. A pH of 6-7.5 is suitable. It can grow in arid places. It suits hardiness zones 9-12.

Use: The young tops and leaves are eaten cooked. They are eaten as potherbs or used in soups and curries. They can be dried and stored for later use. The very young long pods are eaten cooked, especially in curries and soup. They are also pickled. The young seeds are eaten roasted or fried. Sometimes the roots are used as a horseradish substitute. A gum from the bark is used as seasoning. The bark is used for tea. The roots, leaves, flowers and fruits are eaten cooked in water and mixed with salt and chili peppers. The oil expressed from the seeds is used in salads.

Cultivation: It is best to grow plants from 1 metre long cuttings but they can be grown from seed. They can be used as a hedge and pruned regularly to produce more leaves. Properly dried seed can be stored for a long time in sealed containers in a cool place. Normally perennial types are grown from cuttings and annual types are grown from seed.

Production: Trees are fast growing. They can be pruned or topped. With one variety the tree flowers and fruits continuously while with the other variety there are flowers and fruit once per year. The fruit ripens 3 months after flowering. Annual types produce fruit 6 months after planting. Leaves are best dried in the shade to retain more of their Vitamin A.

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	76.4	302	5.0	197	165	3.6	-
flower	84.2	205	3.3	-	-	5.2	-
leaf (boiled)	87	189	4.7	40	31.0	2.0	0.2
pod (raw)	88.2	155	2.1	7	141	0.4	0.5
seed	6.5	-	46.6	-	-	-	-

Vegetables

English: Round-melon

Local:

Scientific name: *Praecitrullus fistulosus*

Plant family: CUCURBITACEAE

Description: A pumpkin family plant. It is an annual herb that lies along the ground or climbs. It has hairy stems and tendrils. The leaves are alternate and simple, and are oval and 15 cm long. They have leaf lobes and teeth along the edge. The flowers occur singly in the axils of leaves. They are small and yellow. The fruit is a flattened, round berry. It is 6-12 cm across. It has rough bristles when young. The fruit are green outside and pale green inside. There are many seeds.



Distribution: It suits a warm and dry climate. A temperature of 26-30°C is best. A warm temperature is needed for seed germination. A soil pH of 6-7 is suitable.

Use: The young fruit is cooked as a vegetable. They can be pickled, candied or made into preserves. They are used in soups. The seeds are roasted and eaten.

Cultivation: Plants are grown from seed. Seed are soaked in water to hasten germination. They germinate in 5-7 days.

Production: Fruit are ready 60-90 days after sowing. The fruit are edible 6-8 days after fruit set. Fruit are harvested young and immature.

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	93.5	96	1.4	0	31	0.9	-

Image sourced from: <http://veggiesinfo.com/wp-content/uploads/2016/07/Tinda-400x300.jpg>

Vegetables

Common name: Indian sorrel

Local:

Scientific name: *Rumex dentatus*

Plant family: POLYGONACEAE

Description: An erect annual herb. It grows to about 70 cm high. The lower leaves are stalked. They are 3-20 cm long by 0.6-5 cm wide. They are oblong and rounded or heart shaped at the base. The upper leaves are smaller. The flowers are greenish yellow. They occur in distinct leafy rings in the axils of leaves. The fruit is a nut. It is 3 sided.

Distribution: In Nepal it grows from 1200-1400 m altitude. It grows in moist, neglected ground.

Use: The tender leaves are cooked as a vegetable.



Cultivation: Plants are grown from seed or thickened roots.

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	89.4	124	3.2	3510	115	3.4	-

Image sourced from: <https://tse4.mm.bing.net/th?id=OIP.zy2jixA7HqmOYSUVES6UXgHaFj&pid=Api>

Vegetables

English: Broad bean

Local:

Scientific name: *Vicia faba*

Plant family: FABACEAE

Description: An upright plant up to 1 m tall. Plants vary in height from 30-180 cm. It has a well-developed taproot. It has square stems which are hollow and have wings at the angles. There can be 1-7 branches from near the base of the plant. The leaves have leaflets along the leaf stalk and end in a short point. There are 2-6 leaflets. These are 5-10 cm long. Flowers occur in the axils of leaves and there are 1-6 flowers on a stalk. The flowers are white with black spots. Pods are large and fat and contain several large beans inside. The pods are 5-10 cm long in field varieties and can be 30 cm long in garden varieties. They are fleshy with a white velvety lining. They become tough and hard at maturity. The seeds can vary a lot in shape and size. They can be flat or rounded and white, green, brown, purple or black. They are 1-2.6 cm long. The hilum along the seeds is prominent.



Distribution: A temperate plant only suitable for the highlands over about 1200 m. in the tropics. It mainly occurs from 1900-2700 m altitude in equatorial zones. It is frost tolerant and is resistant to drought. It can grow with temperatures down to 4°C. In the lowland hot tropics it often flowers but does not set seed. It requires fertile soils. It does best with adequate lime needing a soil pH of 6.4-7.2. It can tolerate some salinity.

Use: It is mostly the young beans that are eaten. The ripe beans and leaves are also edible. The dried beans can be boiled, ground into flour and added to soups or used for making tofu. Sprouted seeds are cooked and eaten. The tender pods are eaten as a vegetable. **Caution:** Some people, mainly of Mediterranean origin can get a disease called Favism from these beans. The beans should be well cooked. They can react with some people using some antidepressant drugs.

Cultivation: The crop is grown from seed which are sown at 15-40 cm spacing. If the seed pod formation is poor, it can be improved by pinching out the tops of the plants when in flower. Hand pollination also helps. Plants are self-pollinated but also cross pollinated by insects.

Production: Time to maturity is 12-16 weeks. Yields in the cool tropics vary from 1-2 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 (dry)	10.0	1448	26.2	130	16	6.7	-
seed (fresh, raw)	76.0	315	7.1	35	140	1.9	0.6
seed (fresh, boiled)	83.7	259	4.8	27	20	1.5	0.5

Nuts, seeds, herbs and other foods

English: Walnut

Local:

Scientific name: *Juglans regia*

Plant family: JUGLANDACEAE

Description: A large, deciduous tree that grows up to 30 m tall. The straight trunk can be 120 cm across. The leaf stalks are 5-7 cm long. Leaves are often 30 cm long and with 5-9 leaflets. Leaflets can be 6-15 cm long by 3-6 cm wide. They are smooth except for a tuft of hair in the axils of the veins. Male and female flowers are separate but on the same tree. Flowers are small and greenish. Male flowers are compact in hanging spikes. Female flowers are on short stalks. The fruit has a green leathery husk. Nuts are hard shelled and about 4 cm across. The surface is figured. The kernels are edible.



Distribution: It is native to China and S.E. Europe. Trees can stand hard frosts when no flowers are on the tree. It is a cold temperate plant. It does best with a temperature of 29-32°C near harvest time. In China they are common in the northern regions, between 23-42°N. They grow on mountain slopes between 500-1800 m altitude. It suits hardiness zones 4-10.

Use: The kernels of the nuts are eaten raw or cooked. They are used in cakes, ice cream sauces, soups etc. The young green fruit can be pickled in vinegar and eaten. They can also be made into jams and preserves. Oil is extracted from the fruit. The remainder can be used in bread. The trees yield a sweet sap made into syrup or sugar.

Cultivation: Trees can be grown from seeds but quality is often variable. It is best to use grafted trees. Trees can be pruned, which should be done during the summer as calluses form more easily preventing bleeding. Seedling plants are spaced 10 m apart and budded plants are spaced 8 m apart. They easily become boron deficient.

Production: Seedling trees can produce nuts in 8-12 years. Grafted trees can produce in 4 years. Trees can live for 150 years. A good tree produces about 150 kg of nuts per year but 40-50 kg is more common. Nuts are harvested when the hulls start to turn yellow and crack. Nuts can also be collected 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	4.4	2903	14.4	4	3	2.5	2.7

Nuts, seeds, herbs and other foods

English: Nepal nut pine

Local:

Scientific name: *Pinus gerardiana*

Plant family: PINACEAE

Description: A tree that grows 15-25 m tall. The bark is white and has irregular cracks. It forms into thin plates. The first year branches are pale yellow-green. There are 3 needles per bundle. They are triangle shaped in cross section. They are 6-10 cm long and stiff. The seed cones have short stalks. They are oval and 12-20 cm long by 9-11 cm wide. They are almost brown at maturity. The seed scales are 4-5 cm long. The seeds are long and round and about 2.5 cm across.



Distribution: It is a temperate plant. In Xizang in China, it grows in the mountains at about 2700 m altitude. In the Indian Himalayas, it grows from 3200-3800 m above sea level. It grows on stony ground and in dry, low rainfall areas.

Use: The seeds are valued as a dessert. They can be eaten raw or roasted. They are also ground and mixed with flour.

Cultivation: Plants can be grown from seeds.

Production: The cones are plucked before they open and then heated to make the scales expand to get the seeds out. The seeds are stored for later use. A cone produces 50-100 seeds. A tree bears about 25 cones.

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 (dry)	2.9	2940	13.7	1	0.5	4.9	6.5
nut (fresh)	12.4	2067	18.1	-	-	-	-

Image sourced from: <https://steemit.com/health/@lovelypic/health-is-life-fcb55a0dcac44>

Nuts, seeds, herbs and other foods

English: Pistachio nut

Local:

Scientific name: *Pistacia vera*

Plant family: ANACARDIACEAE

Description: A small deciduous tree that grows to about 10 metres tall. It can have one or several trunks. Trees tend to droop and spread. Leaves are large and greyish and have 3-5 leaflets. These are roundish and 5-10 cm long. Male and female flowers occur on separate trees. The flowers are small and green in clusters in the axils of leaves. The fruit are red and wrinkled. Trees produce clusters of small green nuts. The kernel is 3 cm long by 1.5 cm wide. It is protected by a thin shell. The seed is edible. There are several named cultivated varieties.



Distribution: It is a warm temperate and Mediterranean climate plant that suits hot dry places. They can tolerate drought. Winters need to be cool to break bud dormancy. Trees need 600-1500 hours of chilling below 6°C. Trees do not do well in areas with high humidity. They grow in places with temperatures from -10°C in the winter to 40°C in the summer. In western Asia they grow to 1500 m altitude. They need fertile, well-drained soils. They do well in light, calcareous soils with a pH of 7-7.8. It suits hardiness zones 8-10.

Use: The nuts are eaten after roasting and salting. They can be eaten raw. They are used in confectionery, ice cream, cakes, pies, soups etc. An edible oil can be produced from the seed. The fruits can be used for marmalade. **Caution:** It contains urushiol that can cause allergic reactions in some people.

Cultivation: Mostly grown from seed. The seed should be pre-soaked in alkalized water, or for 3-4 days in warm water before sowing. Germination can be slow and irregular. Cuttings of half ripe wood from young trees can be used. Trees can also be grown by layering. Because male and female flowers occur on separate trees, both male and female trees must be grown. One male tree to 5 female trees is suitable. It is possible to graft a male branch onto a female tree. The pollen is carried by wind. The nuts are normally knocked off the trees then harvested off the ground.

Production: It is slow growing. Seedlings take 8 years to bear. Budded and grafted trees can bear in 4 years. Peak production is reached after about 20 years. Trees can live for centuries under suitable conditions. The fruit take several months to mature.

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	5.9	2598	17.6	55	7	7.3	2.2

Image sourced from: https://species.wikimedia.org/wiki/Pistacia_vera

Nuts, seeds, herbs and other foods

English: Almond

Local:

Scientific name: *Prunus dulcis*

Plant family: ROSACEAE

Description: A deciduous tree. It grows 7.5-12 m high. It can spread 7.5-9 m wide. It grows straight then spreads later. The bark is dark grey and cracks. The bark has yellow rings of pores around the trunk. The leaves are alternate and long pointed. They are 12 cm long by 4 cm wide. They hang down. The leaves have fine soft teeth around the edge. The leaves are folded along the midrib. It loses its leaves during the year. The flowers appear before the leaves. The flowers occur either singly or in pairs. They are pink and 5 cm across. The fruit are green and contain edible nuts. The fruit are 6 cm long. The flesh is dry and leathery. There is one stone and the white seed inside is edible.



Distribution: It is native to North Africa, Central and South-West Asia. They are frost hardy and suit a Mediterranean climate. They need a warm summer to fully ripen. It suits hardiness zones 7-10.

Use: The oil from the kernel can be bitter and contains HCN which needs to be removed by heating. The oil is used as food flavouring. The kernels of sweet kinds are eaten. They can be eaten fresh or dried, crushed, flaked, ground and used as ingredients. The nuts can be blended with water to form almond milk, made into almond butter or pressed for their edible oil. The oil is used in salads.

Cultivation: Almond trees cannot pollinate themselves. For good fruit set pollinating cultivars are planted along with others.

Production: Trees can bear for 50 years. A tree can produce 10-15 kg per year.

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	5.3	2418	21.3	1	-	4.3	3.4

Nuts, seeds, herbs and other foods

English: Spearmint

Local:

Scientific name: *Mentha spicata*

Plant family: LAMIACEAE

Description: A creeping leafy herb with numerous long runners. It has underground stems. It grows to 50 cm high. The leaves have a strong smell. The plant tends to be stiff and upright with long narrow pointed leaves. The leaves have short stalks. The leaves are 2-3.5 cm long by 1.5-2.5 cm wide. They have teeth along the edge. It has pink flowers at the top. They occur in a ring of many flowers. It has small brown seeds.



Distribution: A cool temperate plant. In the tropics it mainly occurs in the highlands. It grows in moist, open places. It suits hardiness zones 3-10.

Use: The leaves are used for flavouring food. They are used in salads, sauces, soups, fruit drinks, vegetable dishes, desserts, and dressings. They are also pickled. The essential oil is used for flavouring. The fresh or dried leaves are used for tea.

Cultivation: Plants are easily grown by using runners or rooted cuttings. They can be grown from seed.

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)	11.3	1192	19.9	1058	-	87.5	2.4
leaf (fresh)	85.6	184	3.3	405	13.3	11.9	1.1

Nuts, seeds, herbs and other foods

English: Dill

Local:

Scientific name: *Anethum graveolens*

Plant family: APIACEAE

Description: A fine leafy herb up to about 1 m tall. It can spread 50 cm across. It is an annual plant, re-growing each year from seeds. The root is long and wiry. The stems of the plant are smooth, dark green and with pale stripes. They are finely grooved and hollow. The leaves are bluish-green and like a feather. They can be 35 cm long. The leaves are twice divided and have a sheath wrapping around the stem at the base. The small leaflets are like threads. Flowers are yellow and in flat compound arrangements



where flowers are on stalks coming from one point. These flower arrangements can be 9 cm across. The fruit are oval one seeded dry ribbed fruits. Plants have an aniseed scent. The fruit are 1.5 times as long as wide. There are several named cultivars.

Distribution: It is a temperate plant. It is suited to shady places but does best in sunny positions. It is easily damaged by wind. It is frost resistant but drought tender. It needs moist, well drained, humus rich soil. In hot weather it produces flowers quickly. It is best with temperatures of 16-18°C. A pH of 5.6-6.5 is best. It grows below 1900 m above sea level. It can grow in arid places. It suits hardiness zones 8-10.

Use: The seeds are used to flavour foods. They are added to pickles. The young leaves can be eaten. They have an aniseed flavour and are used in soups, salads, sauces, and with vegetables. It is one of the main ingredients in curry powder. The leaves and seeds are used for tea.

Cultivation: Plants are grown from seed. They are not easily transplanted. Seed are therefore best sown where they are to grow. Seed should be 1 cm deep and with 25 cm between plants. (Dill and fennel can cross pollinate.)

Production: Plants are fast growing. The leaves can be cut for use at any time, but they are at their best just before flowering. Plants can be cut 6 weeks after planting. Seeds are harvested when the plants are mature and have finished flowering and the fruits are fully formed. Harvesting during the cool of morning or evening avoids seeds being shattered and lost.

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	7.7	1276	16.0	5	21.0	16.3	5.2
leaf (dry)	7.3	1059	20.0	585	50.0	48.8	3.3
leaf (fresh)	86.0	180	3.5	772	85.0	6.6	0.9

Nuts, seeds, herbs and other foods

English: Lucerne

Local:

Scientific name: *Medicago sativa*

Plant family: FABACEAE

Description: A herb. It is an erect or spreading legume. It grows to 80 cm high and spreads to 30-80 cm wide. It forms deep roots. It keeps growing from year to year. The stems are slender and hairy. The leaves are bluish green. The leaves have 3 leaflets like clover. The leaflets are oval or narrow. They are 3 cm long. The flowers are mauve. They appear in long stalked bunches. The fruit are small sickle shaped pods. The pods are deep brown. There are many named cultivated varieties.



Distribution: It will grow in warm and temperate climates. It can grow in arid places. It suits hardiness zones 4-8.

Use: Seeds are often sprouted and the young sprouts eaten raw. Young leaves are eaten cooked. They are often lightly cooked and added to meat dishes. The seeds can be ground into flour for bread. The dried and powdered leaves and flowers can be used as tea.

Cultivation: Plants are grown from seed sown where they are to grow. Plants can be 10 cm apart. Plants can be cut back to encourage new growth for the young leaves.

Production: The first picking of young leaves can be made 3-4 weeks 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
seed (sprouted)	91.2	122	4.0	155	8.2	1.0	0.9

Image sourced from: <https://legumeinfo.org/organism/Medicago/sativa>

Nuts, seeds, herbs and other foods

English: Sesame

Local:

Scientific name: *Sesamum indicum*

Plant family: PEDALIACEAE

Description: A small, erect annual plant. It is very branched and grows 1-2 m tall. The stem is stout, 4 sided and furrowed along its length. It is densely covered with fine, downy, glandular hairs that vary in shape. The lower leaves have long stalks and are spear shaped, often with lobes or a toothed edge. The leaf stalks are 3-11 cm long. The leaf blade is 4-20 cm long by 2-10 cm wide. Upper leaves are narrow and oblong. They are 0.5-2.5 cm wide. The flowers occur in the axils of upper leaves, either on their own, or



in groups of 2 or 3. They can be white, pink, purplish and with yellow spots and stripes. The fruit can be smooth or rough and there are 2 chambers in the capsule. The fruit are brown or purple. They are oblong and deeply grooved. The seeds are small and oval. They are 3 mm by 1.5 mm and vary in colour from white, yellow, grey, red, brown or black. The fully ripe pods burst open.

Distribution: A tropical plant that suits the hot, dry, semi-arid tropics and sub-tropics. It can tolerate short periods of drought once established. It needs a temperature of 20-24°C in early growth, then 27°C for ripening. It grows from sea level to about 1200 m in areas with an annual rainfall of 400-1000 mm. Soils need to be well drained. It is very intolerant of water-logging. It cannot stand high humidity and needs frost free conditions. It needs a dry period for seed drying. It does not like acid soils. It grows in open sunny places. It can grow in arid places.

Use: The seeds are eaten. They are used in soups or fried or boiled. They are used in tahini and hummus. Seeds are eaten in the form of sweetmeats. Roasted seeds are used in pickles. They are also put on bread. Oil from the seeds is used in cooking and on salads. The refuse from the seed after the oil has been extracted is boiled in water and made into soup.

Cultivation: Plants are grown from seed. Seed will not germinate below 21°C. Seeds are broadcast on well prepared land and then harrowed in using a light harrow, or sown 2-15 cm apart in rows 20-45 cm apart. Plants can be thinned or weeded during early growth to produce a better crop. Seeding rates of 9-11 kg/ha are used. Some varieties shatter easily.

Production: Yields of 340-500 kg/ha are average. Plants reach maturity in 80-180 days. Crops are harvested as the leaves begin to drop. Plants are cut and stooked or dried in racks. The hull is removed by soaking in water overnight, then partly dried and rubbed against a rough surface.

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)	4.7	2397	17.7	1	-	14.6	7.8
leaf (raw)	85.5	188	3.4	-	-	-	-
oil	-	3683	0.2	-	-	-	-

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	<i>Spinacia oleracea</i>	Spinach	leaf (boiled)	92.9	57	2.4	819	29	2.9	0.8	28
AMARYLLIDACEAE	<i>Allium cepa</i>	Bulb onion	bulb (boiled)	96.6	53	0.6	-	6	0.3	0.1	41
ANACARDIACEAE	<i>Pistacia vera</i>	Pistachio nut	nut	5.9	2598	17.6	55	7	7.3	2.2	50
APIACEAE	<i>Daucus carota</i> subsp. <i>sativus</i>	Carrot	root (boiled)	91.5	79	0.6	852	4	0.4	0.3	43
APIACEAE	<i>Anethum graveolens</i>	Dill	leaf (fresh)	86.0	180	3.5	772	85.0	6.6	0.9	53
ASTERACEAE	<i>Carthamus tinctorius</i>	Safflower	seed	5.6	2163	16.2	5	0	4.9	5.5	10
ASTERACEAE	<i>Arctium lappa</i>	Edible burdock	root (boiled)	75.6	368	2.1	0	3	0.8	0.4	42
BRASSICACEAE	<i>Chorispora tenella</i>	Musk mustard	leaf (boiled)	92.5	84	1.6	505	24	3.7	0.2	25
BRASSICACEAE	<i>Lepidium sativum</i>	Garden cress	leaf (boiled)	92.5	96	1.9	2310	23	0.8	0.2	27
BRASSICACEAE	<i>Alliaria petiolata</i>	Hedge garlic	leaf	-	-	-	3600	190	-	-	30
CUCURBITACEA	<i>Cucumis melo</i>	Canteloupe	fruit	93.0	109	0.5	169	30	0.4	0.2	34
CUCURBITACEAE	<i>Praecitrullus fistulosus</i>	Round-melon	fruit	93.5	96	1.4	0	31	0.9	-	45
FABACEAE	<i>Acacia farnesiana</i>	Sweet acacia	seed (dry)	8.1	1522	36.6	-	-	6.0	0.6	17
FABACEAE	<i>Cajanus cajan</i>	Pigeon pea	seed (young, boiled)	71.8	464	6.0	2	28.1	1.6	0.8	18
FABACEAE	<i>Cicer arietinum</i>	Chick pea	seed (raw)	9.9	1362	20.2	190	3	6.4	-	19
FABACEAE	<i>Cyamopsis tetragonolobus</i>	Guar bean	pod (fresh)	82.0	-	3.7	198	49	5.8	-	20
FABACEAE	<i>Glycine max</i>	Soybean	seed	9.0	1701	33.7	55	-	6.1	-	21
FABACEAE	<i>Lens culinaris</i>	Lentils	split & boiled	72.1	420	7.6	20	-	2.4	1.0	22
FABACEAE	<i>Vigna unguiculata</i>	Cowpea	young pod + seed (boiled)	89.5	142	2.6	45	17.0	0.7	0.2	23
FABACEAE	<i>Vigna mungo</i>	Mung bean	seed (sprouted)	93.4	88	2	1	11.4	0.7	0.5	24
FABACEAE	<i>Trifolium resupinatum</i>	Persian clover	leaf	80.3	251	7.2	-	-	6.1	-	31
FABACEAE	<i>Vicia faba</i>	Broad bean	seed (fresh, boiled)	83.7	259	4.8	27	20	1.5	0.5	47
FABACEAE	<i>Medicago sativa</i>	Lucerne	seed (sprouted)	91.2	122	4.0	155	8.2	1.0	0.9	54
JUGLANDACEAE	<i>Juglans regia</i>	Walnut	nut	4.4	2903	14.4	4	3	2.5	2.7	48
LAMIACEAE	<i>Satureja hortensis</i>	Summer savoury	leaf (dry)	9.0	1138	6.7	513	50.0	37.9	4.3	29
LAMIACEAE	<i>Mentha spicata</i>	Spearmint	leaf (fresh)	85.6	184	3.3	405	13.3	11.9	1.1	52
LYTHRACEAE	<i>Punica granatum</i>	Pomegranate	fruit (raw)	81.0	285	1.0	-	6	0.3	0.1	36
MALVACEAE	<i>Hibiscus trionum</i>	Flower-of-an-hour	leaf	6.3	1263	26.7	-	-	79.8	5.7	26
MALVACEAE	<i>Hibiscus cannabinus</i>	Vegetable kenaf	leaf	79.0	280	5.5	34	-	12.1	-	32
MORACEAE	<i>Morus nigra</i>	Black mulberry	fruit	87.7	180	1.4	3	36	1.9	0.1	40
MORINGACEAE	<i>Moringa oleifera</i>	Horseradish tree	leaf (boiled)	87	189	4.7	40	31.0	2.0	0.2	44
PEDALIACEAE	<i>Sesamum indicum</i>	Sesame	seed (dry)	4.7	2397	17.7	1	-	14.6	7.8	55
PINACEAE	<i>Pinus gerardiana</i>	Nepal nut pine	nut (dry)	2.9	2940	13.7	1	0.5	4.9	6.5	49
POACEAE	<i>Eleusine coracana</i>	Finger millet	seed	11.7	1594	6.2	-	-	5.3	-	11
POACEAE	<i>Hordeum vulgare</i>	Pearl barley	seed	13.7	1367	10.5	-	-	6.0	-	12
POACEAE	<i>Panicum miliaceum</i>	Common millet	seed	9.6	1548	11	-	-	-	-	13
POACEAE	<i>Secale cereale</i>	Rye	seed	12.5	1396	12.8	0	0	3.0	5.6	14
POACEAE	<i>Setaria italica</i>	Foxtail millet	seed	13.5	1425	9.5	-	-	5.5	3.5	15
POACEAE	<i>Triticum aestivum</i>	Wheat	seed	12.5	1387	11.7	-	-	3.3	-	16
POLYGONACEAE	<i>Rumex dentatus</i>	Indian sorrel	leaf	89.4	124	3.2	3510	115	3.4	-	46
RHAMNACEAE	<i>Ziziphus jujuba</i>	Jujube	fruit (dried)	19.7	1201	3.7	-	13	1.8	0.2	39
ROSACEAE	<i>Prunus persica</i>	Nectarine	fruit (raw)	86.2	156	0.6	25	8	0.4	0.1	33
ROSACEAE	<i>Prunus armeniaca</i>	Apricot	fruit (raw)	86	117	0.6	96	7	0.4	0.1	35

Plant Family	Scientific name	Common name	Edible part	Moisture %	Energy kJ	Protein g	Vit A µg	Vit C mg	Iron mg	Zinc mg	Page
ROSACEAE	<i>Prunus avium</i>	Sweet cherry	fruit	80.8	301	1.2	21	7.0	0.4	0.1	37
ROSACEAE	<i>Prunus dulcis</i>	Almond	nut	5.3	2418	21.3	1	-	4.3	3.4	51
VITACEAE	<i>Vitis vinifera</i>	European grape	fruit (fresh)	80.6	297	0.7	7	10.8	0.3	0.1	38



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