

Food Plant Solutions Brief Guide to Food Plants in the Zacualpa region of Guatemala

Our bodies need nutrients to be healthy and strong - nutritious food provides these:

- Starch:** Starch provides sustained energy for the body.
- Protein:** 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:** 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:** 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:** 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:** 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.



Starting a garden

PLAN:

Identify a suitable location for the garden. Factors to consider include:

A site that receives 6-8 hours a day of sunlight and is not shaded by buildings or trees.

Easy access – a garden that is difficult to get to will not be maintained.

Protection from predators like native animals. If this is an issue, consider what can be used as a barrier and install it before planting.

Adequate and easily accessed water, whether it be a garden hose or a watering can.

TOOLS AND EQUIPMENT:

You need tools to turn over the soil, to plant seeds and seedlings (e.g. spade, hand trowel, hoe) and to move the soil to cover seed (e.g. rake). Can you borrow tools to reduce your start-up costs?

SIZE:

Gardens can be all different sizes. Plan the size of your garden – what space is available and how much time do you have? Start small and increase the area as you become more confident. If space is limited, remember plants can be successfully grown in containers or pots.

BUILD:

Clear the area, removing any existing plants and large weeds (turn the soil – dig, lift and turn it over onto itself). Once the soil has been loosened,

spread compost and work it into the soil. Avoid stepping on freshly turned soil, as this will compact the soil and undo your hard work. Once the digging is complete, smooth the surface with a rake and water thoroughly. Allow the bed to rest for several days before planting. Use a good quality potting mix if using pots and containers.

PLANT:

Seeds and seedlings can be purchased from nurseries, garden centres, and most hardware stores. A packet of seeds will grow a lot of seedlings but take longer to mature than transplanted seedlings. Plant seeds and seedlings in accordance with their specific directions and apply sufficient water to ensure the soil around the seeds and/or seedling roots is moist. Consider how tall and wide each plant will grow when planning the space between plants. Information on seed packets or seedling labels will indicate the appropriate distance between neighbouring plants. Add a thick layer of mulch around seedlings to help keep the soil moist. Make small signs to stick in the ground to show what you have planted.

MAINTAIN:

Plants need regular watering, which should not occur in the heat of the day, and should preferably occur early in the morning, although sometimes late in the day may be more convenient. Weeds will compete with the plants for nutrients and water, so it is important to keep them to a minimum. Hand weeding and adding mulch around seedlings will help keep weeds under control.

Starchy Staples provide energy and dietary fibre

Common name: Sweetcorn

Scientific name: *Zea mays*

Cultivation: It is grown from seeds. It is normal to plant one seed per hole at 1-2 cm depth. A spacing of about 30 cm between plants is suitable.

Use: The cobs are eaten cooked. The dried grains can be crushed and used. The meal can be used for breads, cake, soups, stews etc. Maize is cooked and prepared in many ways such as boiled, roasted, dried and steamed.

Nutrients: energy, protein, provit A, iron, zinc

Common name: Sorghum

Scientific name: *Sorghum bicolor*

Cultivation: Sorghum seeds will germinate soon after harvest. The seeds also store well if kept dry and protected from insects.

Use: Sorghum seeds are eaten as a cereal. Flour can be made from the grain and then used for porridge or other dishes. It cannot be used for bread as it contains no gluten. The stems of some varieties are sweet and can be chewed. The grains can be popped and eaten. The sprouted seeds can also be eaten.

Nutrients: energy, protein

Common name: Comb fringe grass

Scientific name: *Dactyloctenium aegyptium*

Cultivation: Plants can be grown from seeds.

Use: The seeds are husked then boiled into a porridge. They are also roasted in a hot pot to soften them. It is then pounded into flour and cooked into porridge. The rhizome or runners are eaten raw.

Nutrients: seed: energy, protein, iron, zinc



Legumes provide protein for growth

Common name: Honey mesquite

Scientific name: *Prosopis juliflora*

Cultivation: It grows from seeds sown directly where they are to grow. Seeds are hard to extract from the pod but this can be done by soaking them in water. Seeds are easy to store. It can also be grown by cuttings and suckers.

Use: The sweetish white pulp of the pod is eaten raw or ground into meal and mixed with water. This can be drunk immediately, made into a pudding or fermented into beer. The ripe beans can be soaked overnight and baked. The flowers can be eaten raw, roasted or made into tea. The trunks yield a sweet gum used in candy making.

Nutrients: leaf: protein; flower: protein; pod: protein; root: protein; seed: protein

Common name: Sweet acacia

Scientific name: *Acacia farnesiana*

Cultivation: It is grown from seed.

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.

Nutrients: seed: energy, protein, iron, zinc

Common name: Soybean

Scientific name: *Glycine max*

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

Use: The young pods and ripe seeds are eaten or used for flour. The dried seeds are boiled or baked. The seeds are used for oil, soy sauce or sprouts. Toasted seeds are eaten and strongly roasted seeds are used for coffee. The beans are fermented and used in a range of foods. Sometimes the young leaves are eaten.

Nutrients: seed: energy, protein, provit A, iron; seed (immature)/sprout: energy, protein, provit A, vit C, iron, zinc



Fruit are an important source of vitamins and dietary fibre

Common name: Barbados cherry

Scientific name: *Malpighia glabra*

Cultivation: They can be grown from hardwood cuttings or budded onto seedlings. They can also be grown by ground layering. Plants can be grown from seed. Seeds germinate poorly. Spacing of 3-4 m is suitable. Cross pollination is needed for good fruit production.

Use: The fruit are eaten fresh or used in juice. They can be used for wine. They can be used in jellies, jams and preserves. The sauce or puree can be used as a topping for cakes, puddings, ice cream or sliced bananas.

Nutrients: energy, provit A, vit C, iron

Common name: Guava

Scientific name: *Psidium guajava*

Cultivation: Trees can be propagated by budding, grafting, layering, root cuttings, or stem cuttings. For stem cuttings the tips are used and grown under mist at 28-30°C with bottom heat. Suckers can also be used. Using vegetative methods of propagation enables better fruit kinds to be preserved.

Use: The young leaves are eaten raw or cooked. The fruit is eaten raw. The fruit can be used for jams and jellies. Half ripe fruit are added to help the jelly set. The liquid from boiled guava seeds is used to flavour cheese. The seeds are the source of an edible oil.

Nutrients: energy, provit A, vit C, iron

Common name: Nance

Scientific name: *Byrsonima crassifolia*

Cultivation: Plants are grown from seed. The seeds are collected from ripe fruit. The pulp is removed under running water. Seeds need to be planted fresh. They grow best in light shade. Seedlings emerge in 25-35 days.

Use: The fruit are eaten fresh. They are also used in desserts, jams, soups, and stuffings for meat. They are also used in drinks. **Caution:** There has been some concern about the fruit causing gastrointestinal disorders.

Nutrients: energy, protein, provit A, vit C, iron



Vegetables are an important source of vitamins and dietary fibre

Common name: Bitter cucumber

Scientific name: *Momordica charantia*

Cultivation: Plants are grown from seed. For large scale plantings, 6-7 kg of seed are required for planting one hectare. Seeds are sown 2 cm deep at 50 cm spacing in the place where the plants are to grow. They need a stick to climb up. Plants are often grown on raised beds 2 m apart. The seed has a hard seed coat and germinates slowly. Soaking seeds for 24 hours before sowing gives quicker, more even germination. Regular watering is required.

Use: The young bitter fruit are boiled, stuffed, fried or pickled and used in soups, stews and stir-fries. The seed mass of the ripe fruit is used as a food flavouring. The leaves are cooked and eaten as a flavouring. The tender shoots and leaves are sometimes eaten.

Caution: The leaves are considered to cause diarrhoea and vomiting.

Nutrients: seed: energy, protein; leaf: provit A; pod (raw): provit A, zinc

Common name: Kangkong

Scientific name: *Ipomoea aquatica*

Cultivation: Dryland kangkong is normally grown from seed. Sometimes seeds are pre-soaked for 12-24 hours prior to sowing. Plants can also be grown from cuttings and establishment is rapid. Top cuttings 2-4 cm long can be planted beside a pond.

Use: The young tips can be boiled, steamed, stir-fried and added to soups, stews, or curries. The young stems can be used in pickles. Young tips can be eaten raw in salads. The roots are occasionally cooked and eaten. The harvested leaves can be stored for 4-5 days. The fruit are fried and eaten.

Nutrients: leaf: energy, provit A, vit C, iron

Common name: Sweet potato

Scientific name: *Ipomoea batatas*

Cultivation: Vine cuttings are used for planting. It is grown in mounds, ridges, or other raised beds or in undug loose soils. It needs a sunny position. Enlarged roots will not form if the ground is waterlogged when enlargement starts to develop.

Use: Roots are boiled, baked, steamed, fried, mashed, or dried. They can be used in noodles. The chopped and dried tubers can be boiled with rice or ground into flour and mixed with wheat flour to make cakes or bread. The young leaves are edible.

Nutrients: root: energy, provit A

Leafy greens are a source of iron

Common name: Moringa

Scientific name: *Moringa oleifera*

Cultivation: It is best to grow plants from 1 m 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. Perennial types are grown from cuttings, and annual types are grown from seed. They are fast growing. One variety flowers and fruits continuously while another flowers and fruits 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.

Use: Young tops and leaves are eaten as potherbs or used in soups and curries. They can be dried and stored. Flowers are used in curries. Very young long pods are eaten in curries and soup and also pickled. Young seeds are eaten roasted or fried. Roots can be used as a horseradish substitute. Gum from the bark is used as seasoning. Bark is used for tea. Roots, leaves, flowers and fruits are eaten cooked in water and mixed with salt and chilli peppers. The oil expressed from the seeds is used in salads.

Nutrients: seed: protein; leaf: protein, provit A, vit C, iron; flower: iron; pod: protein, vit C, zinc

Common name: Sticky cleome

Scientific name: *Cleome viscosa*

Cultivation: Plants are grown from seed.

Use: The leaves are edible when cooked. The young fruit are eaten candied. Roasted seeds are used in curries and pickles. Seed oil is used for cooking. The leaves are soaked, fermented and used as a spice.

Nutrients: leaf: protein, iron

Common name: Butterfly tree

Scientific name: *Bauhinia purpurea*

Cultivation: Plants are grown from seed. Seed need to be treated to help them grow. It can be grown by air-layering and grafting.

Use: The young leaves are cooked and eaten. They are used in curries. The flower buds and young fruit are cooked as a vegetable. They are also pickled. The ripe seeds are fried and eaten. The gum is edible.

Nutrients: leaf: energy, protein, iron, zinc

Acknowledgements:

This guide is based on information from the Food Plants International (FPI) database developed by Tasmanian agricultural scientist Bruce French AO. "Food Plant Solutions Brief Guide to Food Plants in Zacualpa, Guatemala" is a limited selection of food

plants intended as a **Draft Guide** to identify some local food plants that have high levels of nutrients important to human nutrition. This guide has been developed with the best intention to create interest and improve understanding of the important local food plants in Zacualpa, Guatemala. It is not a comprehensive guide of food plants for the region. Other important nutritious plants may be equally useful. Please contact Food Plant Solutions if you would like further information about these, or more detailed information about the ones selected.

Food Plant Solutions Rotary Action Group 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, which are well adapted to the prevailing conditions in which they are to be grown, and how this resource may be used to address hunger, malnutrition and food security. For more information, visit the website www.foodplantsolutions.org or email info@foodplantsolutions.org. Unless otherwise stated, all images are from the Food Plant International database www.foodplantsinternational.com.

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Always be sure you have the correct plant and undertake proper preparation methods.

Compost - if it has lived once, it can
live again.

