

Food Plant Solutions Brief Guide to Food Plants in the Machame region

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:

What do you need 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, vit A, iron

Common name: Finger millet

Scientific name: *Eleusine coracana*

Cultivation: It is grown from seed. Often plants are grown mixed with sorghum or maize. Good soil preparation is needed to reduce weed competition. Young plants need to be weeded and thinned.

Use: The seeds are eaten either roasted or ground into flour. This is used for porridge and flat bread.

Nutrients: energy, protein, iron, zinc

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. Tubers will not form if the ground is waterlogged when tubers start to develop.

Use: Tubers are boiled or baked. They can be 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: tuber: energy, vit A



Legumes provide protein for growth

Common name: Soybean

Scientific name: *Glycine max*

Cultivation: It is grown from seed direct planted or in a nursery and then plants transplanted to the garden. Plants need to be about 20 cm apart. Plant in garden in spring once all frosts have finished.

Use: The young pods and ripe seeds are eaten. The dried seeds are boiled or baked and used in soups, stews, and casseroles. Toasted seeds are eaten like a snack. The young leaves can be eaten.

Nutrients: energy, vit A, iron

Common name: Pigeon pea

Scientific name: *Cajanus cajan*

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. 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.

Use: Young leaves, shoots and pods are eaten. The pods can be used in curries. The leaves and shoots are used 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.

Nutrients: seed: energy, protein, vit A, iron

Common name: Lablab bean

Scientific name: *Lablab purpureus*

Cultivation: Seeds are sown at 30 x 60 cm spacing near stakes or trees. Fertilising with nitrogen and potash until flowering is recommended. Young pods are ready 4-6 months after planting and seeds 6-8 months. Pods are often harvested over 2 or 3 years.

Use: The cooked young pods, ripe seeds and young leaves are edible. Flowers can be eaten raw, steamed, or added to soups and stews. Dried seeds can be cooked as a vegetable. The seeds can also be sprouted then crushed and cooked. The large starchy root is edible.

Nutrients: energy, protein, vit A, iron



Leafy greens are a source of iron

Common name: Prickly amaranth

Scientific name: *Amaranthus spinosus*

Cultivation: Plants are often self-sown. Plants can be grown from seed. They can be sown direct or transplanted.

Use: The young leaves are edible cooked. They are boiled or fried. The seeds are ground into flour and cooked.

Nutrients: vit A, vit C, iron

Common name: Flower-of-an-hour

Scientific name: *Hibiscus trionum*

Cultivation: Plants can be grown from seed or cuttings.

Use: The shoots and leaves are cooked and eaten. The pods are used in soups and stews, or sun-dried and powdered and used later in food. The seeds are eaten raw and have a sesame flavour. The flowers are used as a herbal tea.

Nutrients: leaf: vit A, vit C, iron, zinc.

Common name: Silver spinach

Scientific name: *Celosia trigyna*

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

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

Nutrients: vit A, iron



Fruit are an important source of vitamins and dietary fibre

Common name: Banana

Scientific name: *Musa x paradisiaca*

Cultivation: They are planted from sword suckers. Suckers are usually put 30 cm deep.

Use: Fruit are eaten raw or cooked depending on variety. Male buds and flowers are eaten on some varieties. They are cooked as a vegetable. The central pith of the false stem and the underground rhizome are also sometimes eaten.

Nutrients: energy, vit A, vit C

Common name: Pineapple

Scientific name: *Ananas comosus*

Cultivation: The suckers and slips can be used for planting as well as the top of the fruit. The time to maturity is the fastest for the suckers near the bottom of the plant and slowest when the top of the fruit is planted.

Use: The fruit is eaten fresh or used for juice. The young heart leaves can be eaten. They are cooked in curry dishes. Unripe fruit are also cooked and eaten. The flower spikes are peeled and sliced and steamed as a vegetable or added to stews.

Nutrients: vit A, vit C

Common name: Pawpaw

Scientific name: *Carica papaya*

Cultivation: Pawpaw seeds grow easily, and plants grow quickly. Fresh seeds can be used, or if dry seeds are used, they should be soaked before planting. Seeds should be planted when temperatures are 24-30°C. Seedlings can be transplanted when they are about 20 cm high. Plants should be about 3 m apart

Use: Fruit can be eaten ripe and raw. Green fruit can be cooked as a vegetable. The young leaves can be eaten cooked but are bitter. The flowers and the middle of the stem can be eaten.

Nutrients: vit A, zinc



Vegetables are an important source of vitamins and dietary fibre

Common name: Pumpkin

Scientific name: *Cucurbita maxima*

Cultivation: They are grown from seed. Usually 2-3 seeds are planted together in a mound.

Use: The young leaf tips are eaten cooked. They can also be dried and stored. The fruit can be baked, boiled, fried, steamed or mashed. The seeds are eaten raw or roasted or ground into a meal. The male flowers are eaten after removing the stamen and calyx.

Nutrients: seeds: energy, protein, iron, zinc; leaves: vit A, vit C; fruit: energy

Common name: Choko

Scientific name: *Sechium edule*

Cultivation: The entire fruit is planted as the seed cannot withstand drying out. It is planted flat and thinly covered with soil. Often chokos start to develop shoots and roots while they are still attached to the original plant. These eventually fall off and continue growing if they fall on soft moist dirt. A spacing 2 m apart along a fence is suitable. Trellis support is required. A well-drained fertile soil is needed.

Use: The fruit are edible when cooked. They can be pickled, baked, steamed, or made into fritters and puddings. The young leaf tips are eaten. The seeds can be eaten cooked. They are often deep fried. The fleshy root can be eaten cooked. They can be boiled, baked, or fried.

Nutrients: energy, protein, vit A, vit C

Common name: Chinese taro

Scientific name: *Xanthosoma sagittifolium*

Cultivation: They are planted by using the top piece of the main central corm or stem. Pieces weighing 1.5 kg are often used. It can also be grown by using the small side corms which may weigh 0.3 kg, or pieces of the corm can be used as long as they have some buds on them.

Use: Cormels are eaten roasted or boiled. Young leaves can be eaten after cooking. The leaf stalks are cooked as a vegetable and also used in chutney.

Nutrients: energy, vitA , iron



Acknowledgements:

This guide is based on information from the Food Plants International (FPI) database, “Edible Plants of the World”, developed by Tasmanian agricultural scientist Bruce French AO. “Food Plant Solutions Brief Guide to Food Plants in the Machame

region of Tanzania” is a limited selection of food plants intended as a **Draft Guide only** to identify some local food plants that have high levels of nutrients that are 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 the Machame region. It is not a comprehensive guide of food plants for Machame. 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.

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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.



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