Food Plant Solutions Brief Guide to Food Plants in the Palm Springs 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: Gemsbok bean

Scientific name: *Tylosema esculentum*

Cultivation: Plants are grown from seed or tubers. They germinate 9-10 days after planting. Seeds should not be soaked or planted in waterlogged soils. Plants flower 2-4 years after planting. A tuber can weigh about 1 kg and become fibrous with age. The seeds can be stored for several years and are still edible.

Use: The root is sweet and nutritious. It is baked, boiled or roasted. The seeds are roasted or boiled and eaten. They are shelled and pounded and added to water to make soup. The young stems are roasted and eaten. Young leafy shoots are eaten.

Nutrients: seed: energy, protein

Common name: Yam bean

Scientific name: *Pachyrhizus erosus*

Cultivation: It is grown from seeds which should be pre-soaked for 12 hours to encourage rapid germination. Seeds germinate within two weeks. The root clump can be divided and plants grown from the thickened roots. Cuttings will grow. A spacing of 50 cm between plants is suitable. Topping the plant by picking out the growing point and removing the flowers helps tubers form. Tubers are ready about 6 months after sowing. Individual tubers can weigh up to 20 kg.

Use: The young tuber is eaten either raw or cooked. It can also be pickled. The young pods can be eaten, provided they are well cooked. **Caution:** Old pods and mature seeds can be poisonous.

Nutrients: seed: protein; tuber: vit C; pod: vit A

Common name: Tef

Scientific name: *Eragrostis tef*

Cultivation: Teff is best grown in fallowed land or after legume crops. Land preparation needs to be very thorough. A fine firm weed-free seed bed is needed. Seed are mostly broadcast. Seed is sown at 25-30 kg per hectare. Nitrogen fertiliser is recommended.

Use: Seeds are ground into flour and cooked in a variety of ways. It can be used in stews or to make unleavened bread.

Nutrients: seed: energy, protein

Legumes provide protein for growth

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: Jack bean

Scientific name: *Canavalia ensiformis*

Cultivation: It is grown from seeds. Seeds need to be sown 2 cm deep. A spacing of about 60 cm is suitable. Plants preferably need a support to climb over. Can be grown with maize/corn which would provide support for the bean plant.

Use: The leaves and top shoots are eaten. The very young pods are boiled and eaten. The flowers can be eaten. The young seeds are eaten boiled, roasted, or peeled and cooked. The seeds are also fermented. The ripe seeds are roasted and used as a coffee substitute.

Nutrients: energy, protein, vit A, iron

Common name: Mung bean

Scientific name: *Vigna radiata*

Cultivation: Plants are grown from seed. In some areas these are broadcast while for small plots often 2-3 seeds are sown in holes 50-60 cm apart. It normally requires phosphorus fertiliser for adequate growth. Seeds germinate in 3-5 days.

Use: Seeds are eaten ripe. They are eaten raw or roasted. They are added to soups and stews. They are also fermented. Young pods can be eaten. Young leaves can be eaten. The seeds can be germinated for sprouts. These are used in salads and stir-fried dishes.

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

Leafy greens are a source of iron

Common name: Indian spinach

Scientific name: *Basella alba*

Cultivation: It can be grown from seeds or cuttings 20-25 cm long at a spacing of 1 m. Plants grown from seed are more productive than from cuttings. Partial shade, rich fertile soil, and adequate moisture favour abundant leaf production. It is responsive to nitrogen fertiliser. Light shade gives bigger leaves. It requires a trellis to climb over. Frequent picking of the buds encourages branching.

Use: Leaves are eaten raw in salads or cooked, and also dried and stored. They can be stored fresh for 4-5 days. The young shoots and leaves are eaten cooked. They are somewhat slimy. The mucilage can be used to thicken soups and stews. The purple colour of fruit is harmless.

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

Common name: Warrigal Greens, New Zealand Spinach

Scientific name: *Tetragonia tetragonoides*

Cultivation: It is grown from seeds or cuttings. Seed can be saved. Seeds often grow better if soaked overnight. Seedlings are not easy to transplant so it is better to sow direct. Often 3-4 seeds are planted in a mound with the mounds 70 cm apart. Cuttings form roots quickly.

Use: The fleshy leaves and tops are eaten. They can be eaten raw, steamed, boiled, stir-fried, creamed, served with mushrooms, or made into quiche. **Caution:** They can contain oxalates and nitrates which can be poisonous.

Nutrients: vit A, vit C, iron

Common name: Red amaranth

Scientific name: *Amaranthus tricolor*

Cultivation: The seeds are scattered over ashes or fine soil in fertile ground. If they are put in an old garden, they will grow very poorly. Amaranths need high amounts of nitrogen and potash. They also like plenty of sunlight and do not suit shaded places. They need water most of the time they are growing.

Use: The young leaves and stems are cooked and eaten as a vegetable. The seeds can be eaten. It grows quickly, produces well and is nutritious.

Nutrients: leaf: vit A, vit C

Fruit are an important source of vitamins and dietary fibre

Common name: Pomegranate

Scientific name: *Punica granatum*

Cultivation: They can be raised from seed although are best propagated by layering or grafting. Cuttings of one year old wood 30-50 cm long can be used. Prune sucker growth and surplus branches. A spacing of 4-5 m is suitable. Trees bear after 2-3 years. Fruiting is seasonal. Trees can live for many years but lose vigour after about 15 years. Fruit matures 5-7 months after flowering. Fruit need to be picked when mature to prevent splitting and do not ripen further after harvesting. A well maintained tree can produce 150-200 fruit in a year.

Use: The juicy pulp around the seeds is eaten. The juice can be used for a drink. 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 and boiled leaves are eaten.

Nutrients: fruit: vit C

Common name: White mulberry

Scientific name: *Morus alba*

Cultivation: It is best to grow trees from cuttings or grafting. Because trees "bleed" it is best not to do too much pruning but they can be topped or trained. Cuttings produce fruit in 3 years while it takes 5-8 years for seedling trees. Fruit is produced seasonally.

Use: The fruit is eaten raw or used in juice, stews and tarts, and can be dried and stored. The leaves are edible and can be put in stews or used for tea. The bark can be roasted and ground into flour. The tree also yields an edible manna.

Nutrients: fruit: vit C

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 are 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.

Nutrients: energy, vit A, vit C, iron

Vegetables are an important source of vitamins and dietary fibre

Common name: Bottle gourd

Scientific name: *Lagenaria siceraria*

Cultivation: Seed should be soaked for fast and uniform emergence. Seeds are best sown in raised beds. Seedlings emerge in 5-7 days and can be transplanted if required. Fruit types vary because plants cross-pollinate. Removing young fruit to use as a vegetable will prolong the life of the plant and produce larger fruit. A spacing of 1-2 m is suitable. It prefers a trellis to climb. It grows fast and flowers 2 months after seeding.

Use: The young fruit are boiled as a vegetable. The skin and seeds are removed and can also be steamed, fried or pickled. Young tips and leaves are edible. They are often cooked with milk or coconut milk to improve the flavour. They are also mixed with other edible leaves. The seeds are sometimes eaten and provide an edible oil. Old fruit are used as containers, and the seeds are not normally edible.

Nutrients: seed: energy, protein; fruit: vit A, vit C; leaf: vit A, iron

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: 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

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 Palm Springs region" 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 Palm Springs region. It is not a comprehensive guide of food plants for Palm Springs. 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.