FOOD PLANT SOLUTIONS
ROTARY ACTION GROUP

Food Plant Solutions Brief Guide to Temperate Food Plant Gardens in Rotary District 3070

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. shovel, hand trowel, hoe) and how will soil be moved to cover seeds (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 size 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 medium 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 seedlings directly transplanted. 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 ideally should occur either early in the morning, or late in the day. 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	**Scientific Name**	**Cultivation:**	**Use:**	**Nutrients:**
Potato	*Solanum tuberosum*	Plants are grown from tubers. Due to virus diseases it is necessary to get fresh seed tubers every few years. Large tubers can be cut to include a bud or "eye". A seed piece of 40-50g is best. It is best to inter-crop as this stops bacterial wilt spreading. Surround the plant with dirt when 20-25cm tall. Later the tubers need to be kept covered with dirt.	The tubers are cooked and eaten. They can be fried, canned and made into starch or, boiled, baked, roasted, mashed and used in soups, stews, dumplings, pancakes and potato salads. **CAUTION:** The green tubers and leaves are poisonous. They contain a poisonous alkaloid solanine. Tubers need to be cooked.	Tubers: Energy, ProvitA, Vitc, Iron, Zinc.
Chinese Artichoke, Japanese artichoke	*Stachys sieboldii*	It can be grown from seed or tubers. Tubers can be planted 5cm deep and 30cm apart. The tubers are harvested after the plant dies back.	The rhizomes are eaten. The tubers are salted or preserved in plum vinegar. The leaves are eaten raw or boiled or salted. The tubers are usually boiled for a few minutes then eaten. They are also fried, roasted, steamed or pickled. The tubers discolor when exposed to air and lose flavour when peeled.	Tuber: Energy, Protein, Iron.

Maize	*Zea mays*	It is grown from seeds. Plant one seed per hole at 1-2cm depth with a spacing of about 30cm between plants. For saving seed, it should be from gardens of over 200 plants and the seed from several cobs, mixed to avoid inbreeding depression.	The cobs are eaten cooked. The dried grains can be crushed. The meal can be used for breads, cake, soups and stews. Maize can be boiled, roasted, dried and steamed. Corn oil is used in salads and cooking. Young tassels are cooked and eaten. The pollen is used in soups. The fresh silks are used in tortillas. The pith of the stem can be chewed or made into syrup. Sprouted seeds are eaten.	Seeds: Energy, Protein, ProvitA, VitC, Iron.

Legumes provide protein for growth				
Common Name	**Scientific Name**	**Cultivation:**	**Use:**	**Nutrients:**
Lablab bean	*Lablab purpureus*	Seeds are sown at 30 x 60cm spacing near stakes or trees. About 20kg of seed per hectare is required. 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. Pollination and seed setting are reduced in cold weather.	The young pods, ripe seeds and young leaves are edible, cooked. 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. **CAUTION:** Many types can be poisonous. They should be boiled and the cooking water thrown away.	Seeds (dry): Energy, Protein, Iron.
Common bean	*Phaseolus vulgaris*	Plants are grown from seed. Seed should be planted on raised beds. Climbing types need stakes. Plants are self-fertilised. Seeds remain viable for 2 years. In many places these beans are inter-cropped with other plants. If they are grown on their own, bush types can be spaced at 25cm by 25cm. Or they can be put closer together in rows wider apart to	The young pods, leaves and mature seeds are edible. The pods are eaten raw in salads and also boiled, steamed, marinated and pickled. The young seeds are boiled and served as a vegetable. The dry seeds are soaked in water and boiled until soft. They are also baked and used in soups, dips, casseroles and salads. The flowers are sauteed and	Fresh Green Pods: ProvitA, VitC. Seeds (dry): Energy, Protein, Iron, Zinc. Seeds (sprouted): VitC.

		make weeding and harvesting easier. For dried beans, once the pods are mature and turning yellow, the whole plants are pulled, then dried and threshed. About 50-75kg of seed will sow a hectare. Most French bean varieties are daylength neutral so day length does not affect flowering.	added to dishes. Sprouted seeds are also eaten.	
Broad bean	*Vicia faba*	The crop is grown from seed. Seeds are sown at 15 to 40cm 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.	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.	Seeds (dried): Energy, Protein, ProvitA, Iron. Seeds (fresh, raw): VitC, Zinc.

Leafy greens are a source of iron				
Common Name	**Scientific Name**	**Cultivation:**	**Use:**	**Nutrients:**
Amaranth Greens	*Amaranthus hybridus*	Plants are grown from seeds.	The leaves and young shoots are cooked and eaten. They are also dried. The leaves and stems are chopped and added to pastries and salads or fried with eggs.	Leaf: Protein, VitC, Iron.
Kale, Collards	*Brassica oleracea* var. *acephala*	Plants are grown from seed. Seedlings can be transplanted. Grow 30cm apart.	The leaves are eaten boiled. They can also be steamed and used in soups and stews. The unopened flower buds are used like broccoli.	Leaf (raw): Energy, Protein, VitC, Iron. Leaf (cooked): ProvitA, Zinc
Spinach	*Spinacia oleracea*	It is normally sown directly by seeds. Plants need to be 25cm apart.	Young leaves are eaten raw and older leaves are cooked. Leaves are cooked in a small amount of water. They are used in soups and salads. The sprouted seeds can be used in salads. **CAUTION:** Spinach can contain oxalates which affects calcium absorption.	Leaf (raw): Protein, VitC. Leaf (cooked): ProvitA, Iron, Zinc.

Fruit are an important source of vitamins and dietary fibre				
Common Name	**Scientific Name**	**Cultivation:**	**Use:**	**Nutrients:**
Black currant	*Ribes nigrum*	Plants are easily grown from cuttings of 2 year old canes. The 3 year old canes are cut off at two buds above soil level.	The ripe fruit are used for jam and drinks. They can also be used in sauces and pies. The buds are used for flavouring. The fresh leaves are eaten in soups. They are also used as a spice in sauerkraut. The fruit are used to make wine. The flowers are used in ice-cream.	Fruit (raw): ProvitA, VitC.
European Gooseberry	*Ribes uva-crispa*	They can be grown from seed. They are best grown from cuttings.	The fruit can be eaten raw, stewed or made into jam. The unripe fruit are often used for pies and tarts.	Fruit (ripe): Energy, ProvitA, VitC, Iron.
Chinese Date	*Ziziphus jujuba*	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.	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.	Fruit: Energy, Protein, ProVitA, VitC, Iron, Zinc.

Vegetables are an important source of vitamins and dietary fibre				
Common Name	**Scientific Name**	**Cultivation:**	**Use:**	**Nutrients:**
Beetroot	*Beta vulgaris*	Plants are grown from seed. Normally the plants are planted in the final site because transplanting is difficult. When the small clump of seeds or seed ball are planted more than one seedling will result.	The red tubers are eaten after cooking. The root is also dried and powdered and the flour mixed with barley or wheat. They can be pickled, fermented, boiled or sliced and served with vinegar. Tops of leaves are edible. They are cooked in soups and stews.	Root: Energy. Leaf (raw): ProvitA, VitC, Iron.
Cauliflower	*Brassica oleracea* var. *botrytis*	They are normally grown from seeds and transplanted. Because plants cross pollinate and seed production requires low temperatures seed collecting is neither easy nor very successful.	The thick white flower is cooked and eaten. The leaves are edible. The flower stalk and midveins of larger leaves are used in cauliflower soup. The seed sprouts are eaten.	Flower (cooked): Energy, Protein, VitC. Flower (raw): Energy, VitC, Iron, Zinc.

Winter squash	*Cucurbita maxima*	They are grown from seed. Usually 2 or 3 seeds are planted together in a mound. The distance apart depends on the cultivar. Some kinds are better for leaf tips. It is good to save seed of adapted kinds.	The young leaf tips are eaten cooked and can also be dried and stored. The fruit can be eaten cooked. They are baked, boiled, fried, steamed or mashed. They are used in pies and cakes. The seeds are edible, raw or roasted. They are also ground into a meal. The male flowers are eaten after removing the stamen and calyx.	Seeds (dry): Energy, Protein, Iron, Zinc Leaf: ProvitA, VitC

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 Plant Gardens in "Sub-tropical India for Rotary District 3070" is a limited selection of food plants, which is 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 Sub-tropical India for Rotary District 3070. It is not a comprehensive guide of food plants for Sub-tropical India for Rotary District 3070. 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 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 or email info@foodplantsolutions.org

Disclaimer: This 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:

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

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