

All Nations Park Food Forest - Tree & Plant Selection

List of fruit trees to be planted, variety names and rationale for selection

Background:

All Nations Park is a large open space public park built upon a waste disposal landfill site. Constructing a public food forest on such a site imposes certain restrictions on the choices of trees and plants that can be used.

In respect to landfill contamination issues, especially lead and other heavy metal contamination, only plants that have edible fruit are possible to use. Contaminants accumulate greatest in roots and tubers, and to a lesser extent in leaves and shoots.

With a public space food forest, it is important to select fruit trees that fulfil the following criteria:

- **Little or no maintenance** – trees that are not labour intensive to maintain, and do not require specialized spraying. Peaches and nectarines require seasonal spraying with fungicide and are therefore unsuitable for example.
- **Hardy, with tolerance to a wide range of climatic conditions** – both in the case of weather extremes and long term changes in climate
- **Year round fruiting** – to create year-round interest and activity. Early, mid and late season varieties of the same type of fruit (i.e. apples) should be planted to extend the harvest season of each fruit type, and a variety of different fruits that produce throughout the year can be used to provide fruit all year round.

Suggested Trees & Plants

Citrus varieties listed have a wide variety of uses. All citrus trees on regular full-sized rootstocks, as dwarf varieties are too slow to grow and yield very little for such a large scale public edible landscape. All are self-fertile and don't require a second pollinator tree.

Citrus	
Lemon	Eureka Lemon – fruits most of the year, produces medium sized lemons, medium sized tree, little if any thorns, one of the best culinary lemons
Lime	Tahitian Lime – lime used for juice
Orange	Washington Navel Orange – one of the best eating oranges
Orange	Valencia Orange – one of the best oranges for juicing
Mandarin	Satsuma Mandarin – Japanese variety, large sweet fruit, loose peel, seedless
Cumquat	Nagami Cumquat – edible variety favoured by Asian community
Other	Calamondin - versatile small fruit, orange flesh, juicy with a fine lime-orange flavour.

Stone fruit vary in maintenance requirements, and there is a wide range to choose from.

Not recommended: Peaches and nectarines are unsuitable as they are prone to leaf curl, a fungal disease that affects them every spring in our climate, requiring spraying with a fungicide two or three times a year during their dormant season. Apricots are marginal in their disease resistance, they don't always require spraying, but are prone to several fungal diseases, especially when pruned around damp weather or in the wrong time of year. Cherries are too maintenance intensive for an open space food forest and require a lot of care and netting to return a worthwhile crop.

Recommended: European and Japanese plums are very hardy and vigorous. The larger, juicier plums are generally the Japanese type, while the smaller, oval shaped varieties are European. European plums can be very sweet, with prunes having the highest sugar levels allowing them to be dried without fermenting.

Stone Fruit	Plum (Japanese)
Mariposa	Blood plum, large dark red fruit, juicy, sweet flesh, excellent flavour, mid season. (<i>Requires pollinator – Santa Rosa, Satsuma or Narrabeen</i>)
Santa Rosa	Large red fruit, mildly sweet, yellow flesh, excellent flavour, tart until fully ripe, early season (<i>Universal pollinator – self-fertile</i>)
Donsworth	Blood plum, large red fruit, juicy, sweet firm flesh, early season. (<i>Requires pollinator – Santa Rosa, Satsuma or Narrabeen</i>)
Narrabeen	Large red fruit, yellow flesh, excellent flavour, tart until fully ripe, mid-late season (<i>Requires pollinator – Santa Rosa or Mariposa</i>)
	Plum (European) – includes related fruit gages & damsons
D'Agen Prune	Large oval purple fruit with yellow flesh, eat fresh, best dried, late season (<i>Requires pollinator Robe de Sergeant, Angelina, Green Gage, Coe's Golden Drop, Damson, President or Sugar Plum</i>)
Robe de Sergeant Prune	Medium sized dark blue-purple fruit with very sweet yellow flesh. Used for drying or fresh fruit. (<i>Requires pollinator Angelina, Green Gage, Coe's Golden Drop, Damson, President or Sugar Plum</i>)
Angelina	Small to medium sized purple fruit with yellow sweet, firm flesh, mid season (<i>Requires pollinator Robe de Sergeant, D'Agen, Green Gage, Coe's Golden Drop, Damson, President or Sugar Plum</i>)
Coe's Golden Drop	Large purple fruit with yellow juicy, sweet, firm flesh, late season (<i>Requires pollinator Robe de Sergeant, D'Agen, Angelina, Green Gage, Damson, President or Sugar Plum</i>)
President	Large purple fruit with yellow sweet, rich, juicy flesh, late season (<i>Requires pollinator Robe de Sergeant, D'Agen, Angelina, Green Gage, Coe's Golden Drop, Damson or Sugar Plum</i>)
Sugar Plum	Medium purple fruit with yellow, very sweet, firm flesh, mid season (<i>Partially self-fertile or use pollinator Robe de Sergeant, D'Agen, Angelina, Green Gage, Coe's Golden Drop, Damson, or President</i>)
Green Gage	Small light green fruit with amber yellow, very sweet intense flavour, fruits every second year, mid season (<i>Requires pollinator Robe de Sergeant, D'Agen, Angelina, Coe's Golden Drop, Damson, President or Sugar Plum</i>)

Pome Fruits include Apples, Pears, Loquat, Medlars and Quince. Of this group, loquats are particularly drought-tolerant and are self-fertile. Pears and apples typically require another variety as a pollinator, but some varieties are partially self-fertile. Quinces are self-fertile, but are more productive when pollinators are available.

Pears are typically very large trees, unless pruned to size or espaliered, can be impractical to harvest. Dwarf pears are now available and grow 1.5-2m high, these can add interest to the garden and each tree can provide a small quantity of fruit. They can also be mass-planted fairly close together to provide a larger crop of fruit.

Pome Fruit	
Apples	<i>List of heritage variety apples to be provided by John Pinner, Heritage Fruit Society</i>
Pears	Espaliered full size or dwarf varieties. Williams (Bartlett) and Beurre Bosc are the familiar common commercial pear varieties, green and brown respectively that and are pollinators to each other.
Loquat	Champagne loquat - semi-dwarf tree with large round yellow fruit
Medlar	Dutch medlar – late season fruit, matures late autumn-early winter
Quince	Smyrna quince - Large, pale yellow fruit with a smooth skin and sweet flavour. Quinces are cooked and preserved, used to make quince jelly.
Quince	Champion quince - Large, golden yellow, pear shaped fruit with a mild flavour. Quinces are cooked and preserved, used to make quince jelly.

Other Fruit Trees which are recommended include Mulberries, Figs, Pomegranates, Persimmons many of the drought tolerant varieties, Pomegranates and persimmons are highly ornamental trees. Persimmons have broad, green glossy leaves that change colours in autumn. Some of the bright orange fruit still hang in the tree after the leaves have fallen.

Other Fruit	
Mulberry	Black English mulberry - Prolific, long, juicy black-red berries with a sweet, slightly acidic flavour. Berries produced over a short season in late spring. Slow growing very large tree, can be pruned to size.
Mulberry	Hicks Fancy mulberry - small, juicy red-black berries produced for three months, maturing in late spring. faster growing than the Black English, grows to 4m x 4m.
Mulberry	White Shahtoot mulberry - Long white, extremely sweet fruit to 10cm long. Small, spreading, hardy tree reaching 5m x 7m wide, can be pruned to size.
Pomegranate	Pomegranate Wonderful – popular commercial pomegranate variety, medium to large, deep red fruit, juicy, sweet, fragrant. 4m x 4m.
Pomegranate	Pomegranate Elche – pink fruit with juicy soft seeds, Spanish variety, 4m.
Pomegranate	Pomegranate Gulosha azerbaijani –medium to large sized, slightly elongated fruit with a pinkish hue, with deep red, large and very juicy seeds. Dwarf tree variety grows to 2m.

Fig	White Adriatic fig - A green to yellow skinned medium to large sized fig with red pulp and excellent flavour. When tree ripened this fig is unsurpassed with its rich strawberry flesh. Peels very easily when ripe.
Fig	Brown Turkey fig - A richly flavoured fig, large size, brown skin with pink flesh, long oval shape. Used for fresh fruit, drying and jam.
Fig	Black Genoa fig - Large size fruit with greenish-purple skin. Light red flesh, excellent flavour. A regular bearer of heavy crops. Used for fresh fruit, drying and jam.
Persimmon	Dai Dai Maru persimmon – Astringent variety (eaten when soft & sweet), with heavy crops of bright orange, medium sized flat tomato-shaped fruit. Early to mid-season. Large weeping tree with stunning autumn foliage, leaves change to a brilliant, deep yellow and then fiery red..
Persimmon	Nightingale (Hachiya) persimmon - Astringent variety (eaten when soft & sweet) with large orange fruit with firm flesh and excellent flavour. Leaves change to rusty orange tones in autumn. Mid-season.
Persimmon	Fuyu persimmon (Vanilla persimmon) – Non-astringent variety (can be eaten when hard & crunchy). Large, flattened, deep orange fruit, most popular commercial variety of non-astringent persimmon. Late season - matures during May.
Feijoa	Feijoa (Pineapple Guava) ‘Mammoth’ – drought tolerant, productive, ornamental evergreen tree that can be hedged. Fruit is juicy and has a flavour of pineapple mixed with pear, falls to ground when ripe. Mammoth variety produces very large fruit.
Cherry Guava	Cherry Guava (Strawberry Guava) - drought tolerant, productive, ornamental evergreen tree. Small dark red fruit with a hint of strawberry and guava flavour have can be eaten fresh or made into fruit pastes, jams or jellies.
Lemon Guava	Lemon Guava (Yellow Guava) - drought tolerant, very productive, evergreen tree. Small yellow fruit are sweeter, milder and less astringent, as well as much larger than the cherry guava, and can be eaten fresh or made into fruit pastes, jams or jellies.
Jujube	Jujube (Chinese Red Date) – extremely drought tolerant and very prolific, fruit can be eaten fresh (sweet pleasant flavour, crisp texture) or dried (sweet, like a date). Varieties - Li: Large round fruit in mid-summer, best eaten fresh. A narrow, upright tree. Chico: Late season ripening, can be eaten fresh or dried. Well known in Chinese community. Hard tree to source.

Nut Trees - are typically very large trees, most are much larger than fruit trees, comparable in size to shade trees grown in public spaces. Many have deep tap roots, making them unsuitable for areas such as landfill sites (due to local government issues of roots penetrating landfill clay cap, there is no uptake of contaminants into the nuts). There are still varieties of nut trees that are suitable for landfill sites, such as, **almonds** and **macadamia nut** trees.

Almonds are in fact fleshless peaches/nectarines, and therefore only have shallow roots and the same growing requirements just like their relatives.

Macadamia trees are native Australian trees, and are members of the Proteaceae family, the same family as grevilleas and proteas, and share the same shallow, spreading root systems which helps them access water makes them drought tolerant.

Both these trees are available as dwarf trees that can be situated amongst fruit trees. Taller varieties of these trees can be used without issue.

Nut Trees	
Almond	Almond “All-In-One” – Dwarf almond to 3m.
Macadamia	Macadamia Integrifolia “Lotsa Nuts” – dwarf macadamia to 3m

The Remaining Critical Elements

The fruit trees alone would create only an orchard, and nothing more. Orchards are maintenance and resource intensive as evidenced by commercial orchard operations. A row of trees does not constitute a food forest, which by strict definition is a multi-layered ecological system of plants resembling a temperate ecosystem model.

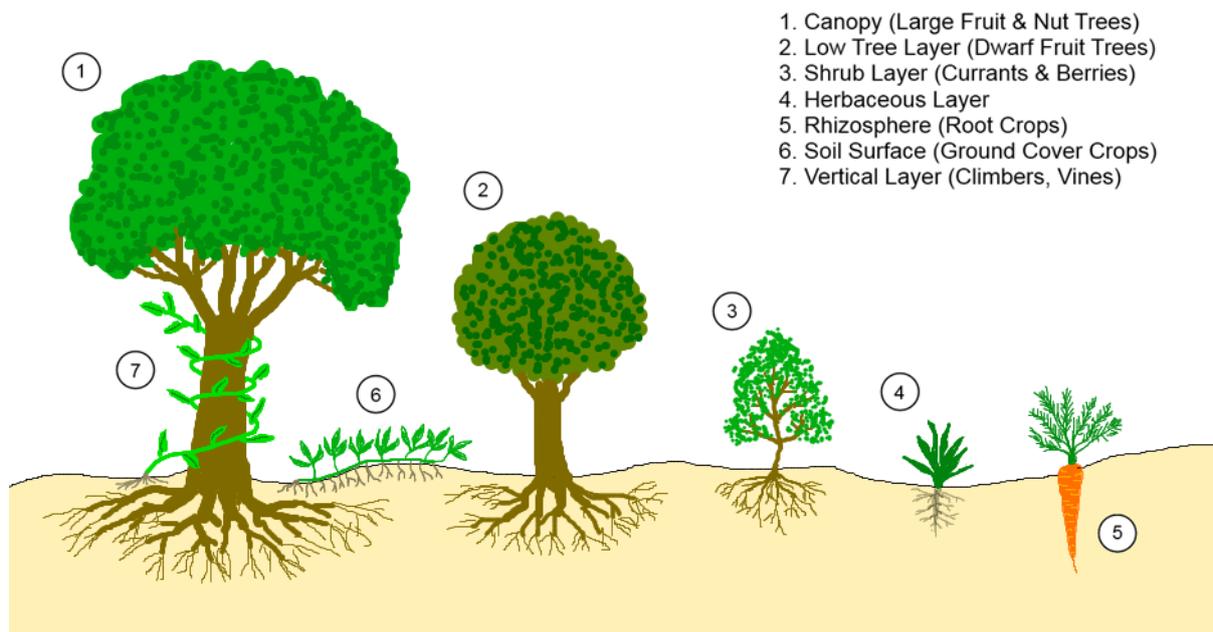
Forest ecosystems are comprised of tall canopy trees, with smaller trees below them, shrubs, herbaceous plants, ground cover plants, root zone plants going vertically down, and climbers occupying the space vertically upwards. Most of these layers are required for a constructed food forest to function as a proper living ecosystem, as opposed to a garden.

The benefits of a food forest (natural pest and disease control, minimal labour, very high yields per unit area) are only realised when a real living ecosystem is created that leverages all the natural processes that only exist in natural environments.

As such, the trees form the framework or foundation of the food forest, but the other six layers are required to make it a true food forest, both nominally and functionally.

In terms of design, we will examine the majority of the remaining layers of a food forest.

The Seven Layers of a Forest Garden



Climbers occupy vertical space and can make efficient use of walls, fences, arbours, trellises and pergolas.

Climbers	
Kiwi	Kiwi – deciduous climber, requires male and female plants (1 male can pollinate up to 6 female plants), and will produce fruit 3-4 years after planting. Require pruning, but do not require spraying with fungicides like grapes do. Leaves are not edible, unlike grape vines, so are suitable over landfill sites with soil contamination issues.
Hardy Kiwi	<p>Hardy Kiwi – deciduous climber, more tolerant of cold weather than regular kiwi, produces small smooth grape sized fruit with a flavour of kiwi, banana, strawberry, and pear that are eaten whole.</p> <p>Like regular kiwi, requires male and female plants, (1 male can pollinate up to 6 female plants) and will produce fruit 3-4 years after planting. Require pruning, but do not require spraying with fungicides like grapes do. Leaves are not edible, unlike grape vines, so are suitable over landfill sites with soil contamination issues.</p> <p>Hardy Kiwi 'Issai' is a self-fertile variety (does not require male and female plants) and will fruit after first year of planting.</p>

Shrubs occupy space below trees and above herbaceous and ground cover layers..

Shrubs	
Blueberries	Evergreen & deciduous varieties available, prefer acidic soil, full sun.
Currants	Blackcurrants, red currants, white currants and gooseberries require morning sun, afternoon part-shade and are shade tolerant.

Herbaceous layer plants occupy space below shrubs and above ground cover plants.

Herbaceous	<i>See companion plants category below</i>
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Groundcover plants protect the soil, prevent weed growth, and act as a living mulch to reduce water consumption and keep tree roots cool in summer.

Groundcovers	<i>See companion plants category below</i>
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Additional Plant Categories:

Companion Plants are beneficial plants that assist the growth of other plants and trees, repel pests and increase resistance to diseases.

Companion Plants	Companion plants can belong to all categories or levels of a food forest schema. Extremely useful deep rooted companion plants such as comfrey are not included due to the contamination and soil depth issues.
	<ul style="list-style-type: none"> Alyssum Austral Indigo (Indigofera australis) Catnip Chamomile Echinacea Feverfew Fruit salad sage Hyssop Lavender Lemon & Citronella Scented pelargoniums Lemon balm Lucerne Nasturtium Pineapple sage Pennyroyal Pyrethrum daisy Southernwood Tansy Wormwood Yarrow

Dye Plants are plants which can be used to produce dyes for colouring fabrics. Food forests can contain plants and trees that serve many other human needs, such as sources of fibres for textiles, fabrics, rope and cordage. Plants which can yield natural dyes was such a useful category of plants which the community expressed interest in.

Dye Plants	<i>Extensive lists are available with many plant varieties for various colours. Each plant has to be assessed for its suitability in the garden, this is a sub-project in itself, depending on the scale of a dyer's garden. A small scale area can be set up with some suitable plants as listed below.</i>
	Agrimony, Bilberry, Bugle, Dyer's Chamomile, Elderberry, Meadowsweet, Motherwort, Queen Anne's Lace, Sweet Woodruff, Tansy, Tormentil, Turmeric, Dyers Woad

Additional Considerations:

Other Edible Plants which have shallow roots, which is essentially the majority of them, excluding the deep tap-rooted exception, can be included in the elevated beds around the fruit trees, as they will not be able to reach the bottom of the 1.5m elevation of soil in the constructed beds.

Possibilities include all culinary herbs, such as thyme, sage, oregano, rosemary, marjoram. These are all low maintenance plants that comply with the design requirements. These plants also attract pollinators such as bees which ensure pollination of fruit trees. Edible perennials greens such as Lebanese cress, Salad Burnett,

Most annual vegetables and herbs require constant attention and care and can look untidy very quickly, so are not suitable. Perennial systems have lower nutrient, water and care requirements; hence the focus on perennial plants in true layered food forest systems.

Listed below are a variety of perennial edible and other useful plants that can be used to construct a low maintenance produce garden. All root and leaf crops are unsuitable in contaminated soil sites, as are deep rooted varieties even with elevated beds. This list is only included to illustrate the some of range and variety of perennials available for a community garden

Perennial Edibles	
Aloe vera	Perennial Leeks
Arrowroot	Potato
Asparagus	Potato Onion
Chicory	Rocoto Tree Chilli
Chives	Rhubarb
Edible Canna	Taro
French Sorrel	Seven Year Beans
Garlic	Watercress
Globe Artichoke	Walking Onions
Jerusalem Artichoke	Warrigal Greens (NZ Spinach)
Lebanese Cress	Welsh Bunching Onions
Lovage	Yacon
Perpetual Spinach	