



Gardennote

Growing healthy citrus

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Mandarin variety 'Daisy'

Most citrus fruit are well suited to the climatic conditions found in the Perth metropolitan area. To minimise pest and disease problems that can arise in unhealthy trees, this Gardennote describes the basics of growing healthy citrus.

Some citrus types are easier to grow than others and need less care to produce a successful crop. Lemons are probably the easiest to grow while thin-skinned mandarins can often be a challenge. Backyard growers will derive great satisfaction from successfully growing their own citrus fruits and should select a citrus type which reflects the amount of time they have to look after trees.

The poor, sandy soils of the Perth coastal plain often lead to disappointment for the gardener.

Improving soil conditions and ensuring trees get the correct amount of water and fertiliser will lead to greater success. Citrus do not like frost and special care needs to be taken in any areas prone to frosts.

Varieties

Lemons, mandarins, oranges, grapefruit, tangelos, limes and cumquats can all be successfully grown in Perth as long as the correct variety is selected.

Lemon varieties commonly grown are Eureka, Lisbon and Meyer. Eureka is heavy-bearing, fruits over a long period and has fewer thorns than other varieties. Lisbon also yields heavily but has the disadvantage of being thorny and only crops in

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winter and spring. The Meyer lemon has a mild less acidic flavour and smoother skin and may be very useful in the home garden, although under our conditions, it also does not bear summer crops.



Eureka lemon

There are a large range of navel orange varieties to choose from with maturity times ranging from late May through to November. Early varieties include Navelina and Newhall, mid-season varieties include Washington, Cara Cara (red fleshed variety) and Atwood. Late varieties include Late Lane, Chislett and Powell. All navel varieties are seedless but their shape can vary from oval to round depending on variety. Valencia oranges will also grow well and will produce sweet fruit through the summer period. Seedless varieties of Valencia orange such as Midnight and Delta are also available.

Mandarin varieties worth trying include Imperial, Daisy, Hickson, Afourer, Mystique and Murcott. Imperial and Daisy bear from May to July, Hicksons from July to August, Afourer from August to September and Mystique and Murcott from September to October. Imperial, Hickson and Afourer are easy to peel while Mystique is a mandarin orange cross which is large and juicy but not as easy to peel. It should be noted that thin-skinned mandarin varieties are particularly susceptible to Mediterranean fruit fly and control of this pest will be required to produce a successful crop.



Mandarin variety 'Mystique'

Grapefruit varieties include Marsh (white fleshed), Rio Red and Star Ruby (red fleshed). The red-fleshed varieties will be sweeter and have better colour in warmer areas such as Kununurra and Carnarvon. If grown in Perth they need to be left to hang on the tree until at least September/October to develop best flavour.



Star ruby grapefruit, cut

Tangelos are mandarin-grapefruit crosses which produce attractive trees that give good crops of flavoursome fruit (particularly suited to juicing) from July to October. Varieties of tangelo worth trying are Minneola and Orlando.

The best variety of lime to grow in the Perth region is the Persian or Tahitian lime. This lime is seedless and far more cold tolerant than the West Indian lime. There are also a range of native limes and native lime hybrids now available which can be grown in Perth. These tend to be much smaller than other limes and vary in colour and shape.

A number of different cumquats are available. These are small, round or oval in shape, and usually orange in colour. They are prolific bearers suited to preserving and jam making.

Multi grafted trees with more than one variety or citrus type on the same tree are also sometimes available. These trees have the advantage of providing a range of fruits from a single tree however they have some special management requirements. Care must be taken to prevent one variety or citrus type from 'taking over' from the others. The size and vigour of each variety or citrus type must be managed with careful pruning and training to ensure the balance between each is maintained.

Buying trees

Only buy trees from a reputable source. Look for trees with healthy green growth, no leaf yellowing or leaf drop and that look proportional to the pot they are growing in. Trees that have been in the nursery a long time can be pot bound which means that root strangling and entwining may have occurred.

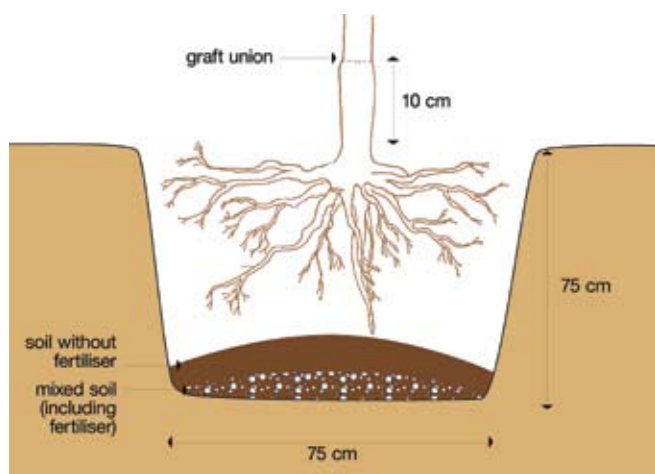
A common fallacy is that older bigger trees will grow and fruit better than smaller trees. Buying trees that are one year old from the bud can be more successful than buying older trees that may be pot bound and will need more pruning after planting.

Planting

Much of the success with citrus trees depends on the initial start the young trees receive.

Select a site that doesn't compete with established trees or lawns, is protected from strong winds and has a sunny aspect. It is preferable to plant trees in spring after any risk of frost has passed however, trees can be planted from autumn to spring in warmer areas.

Dig a hole 75 cm deep by 75 cm wide, and apply a mixture of compost, phosphorus (rock phosphate at 1 kg per tree, or superphosphate at 500 g per tree) and trace elements (100 g per tree). Mix this up with some soil in the bottom of the hole and place some soil without fertiliser over the top. Plant the young tree on top making sure the roots don't touch any fertiliser grains and that the bud union (variety and rootstock join) is well above the ground level. If the bud union is covered with soil this can allow diseases such as collar rot to develop in the tree.



When planting, make sure fertiliser grains do not touch the roots, and that the graft union is well above ground level.

If your soil is poor you can add organic matter or loam to the soil mix. Soil pH should be between 6 and 7. Lime can be added to the soil at the time of planting if pH is too low.

Try not to disturb the root ball too much at planting. Firm the soil around the roots and water immediately.

It is advisable to prune the top of larger trees after planting. If the top has many branches cutting back to three well balanced branches 15 to 20 cm long will be beneficial in developing a healthy framework. If the top of the tree is too large for the root ball to support, leaf drop and poor development will occur in the year after planting.

Caring for young trees

The trunk of the young tree should be protected from the sun in the first few months after planting. This can be done using commercially available tree guards or by loosely wrapping the trunk with shade cloth or a similar material.

Spread mulch around the tree to cool the soil in summer and reduce moisture loss. Apply sufficient water to keep the soil moist to a depth of 30 to 40 cm. During the first growing season apply 20 to 35 grams (half a handful) of urea to each tree every 6 to 8 weeks. Alternatively, there are a number of commercial slow release fertilisers available that require less frequent application (follow label instructions for application rates). Frequent applications of small amounts of fertiliser will stimulate growth and bring the tree into bearing sooner.

Established trees

A common mistake is to prepare the soil carefully before planting, but fail to adequately supplement the tree in later years. This reduces growth and bearing.

Citrus trees need a lot of nitrogen and potassium, and small amounts of phosphorus and trace elements. In Perth's sandy soils a suitable fertiliser program providing all the tree's nutrient requirements is essential. Apply 50 g of a suitable balanced fertiliser containing nitrogen, phosphorus and potassium to each tree every five weeks in spring (three to four applications). Also apply a commercial citrus fertiliser mix containing trace elements (as recommended on the label) during the growing season. One or two additional trace element sprays in spring and during fruit set will help improve fruit quality.

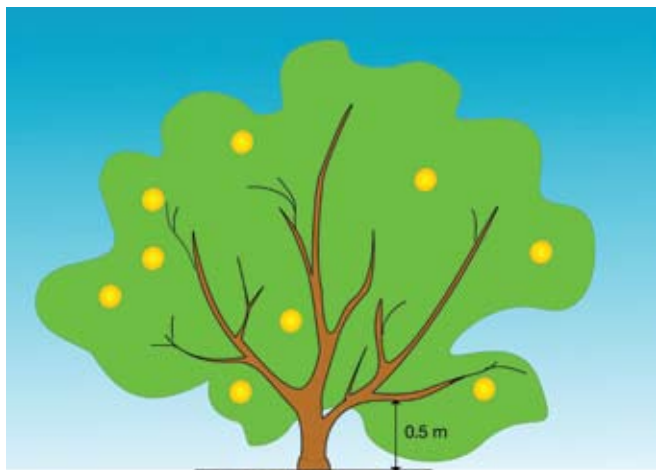
The use of organic matter such as compost or manure will encourage earthworms and other beneficial organisms, and reduce summer soil temperatures.

Remove weeds by hand being careful not to disturb the soil around the trees more than necessary. If spraying weeds avoid foliage contact with herbicides such as Glyphosate as these can cause severe damage, particularly in young trees.

Watering should aim to wet all the roots of the tree. Citrus are shallow rooted with the main mass of roots located in the top 30 to 40 centimetres of the soil and concentrated under the tree canopy. As the spread of water is poor in sand the full root perimeter should be watered. Water from a hose running under the tree will only soak quickly into the ground without benefiting the main lateral roots. This will also wash soluble nutrients away from the roots. (Detailed watering recommendations are given in Gardenote 38.)

Citrus trees do not need extensive or annual pruning, but shoots developing on the trunk should be removed. On older trees, strong shoots from the main head should be shortened or removed to prevent the tree becoming unbalanced.

Old trees will benefit from periodical pruning, involving thinning out limbs where they have become thick and entwined and removing dead wood. Pruning alone will not save a declining tree, nutritional aspects or pests and diseases must also be considered.



The desirable shape of mature citrus tree showing three main branches with an open canopy and a manageable height. Fruiting limbs should be maintained at least 0.5 m above the ground.

Pests and diseases

Mediterranean fruit fly is likely to be the most destructive pest you will come across. Mandarin varieties are particularly susceptible and growers must control this pest to achieve success. Lemons and grapefruit are much less susceptible to fruit fly damage. Other pests you are likely to see are scales, aphids, crusader bugs, leaf miner, snails and whitefly. More information about insects and their control is given in Gardennote 235, 'Common pests of citrus in home gardens'. Fungus diseases attacking citrus trees are collar rot (*phytophthora*) which girdles the trunk, and *Armillaria* root rot, which attacks and kills the roots of trees. Fruit rots caused by blue and green moulds are also often seen on fruit hanging in the tree canopy, particularly those that have rind damage caused by wind or insects. More information about citrus diseases and their control is given in Gardennote 320, 'Common diseases if citrus in home gardens'.

Other disorders

Unfavourable weather causes considerable damage to citrus fruits. Excessive heat will cause heavy shedding of young fruits, and strong sunlight conditions can lead to sunburn causing internal decline. When cut open, sunburnt fruit will be normal on one side but have brown pulp and dry flesh on the burnt side.

Fruit drop may be minimised with good management, such as adequate watering and mulching (See Gardennote 38).

Vegetables amongst citrus trees

Vegetables may be grown amongst citrus trees, provided enough nutrient and water is supplied to meet the needs of both crops. Be careful not to plant vegetables too close to the tree, as this will disturb the tree's feeder roots which are concentrated near the surface beneath the tree canopy.

Further reading

Department of Agriculture and Food, Gardennote 38 'Citrus fruit loss in the home garden'.

Department of Agriculture and Food, Gardennote 235 'Common pests of citrus in home gardens'.

Department of Agriculture and Food, Gardennote 320 'Common diseases of citrus in home gardens'.

Specimen identification requirements

When sending or delivering samples, the following information is required:

- Collector's name, location (where the specimen was found), full address, telephone number and e-mail address, description of the damage and date collected.

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