

## Training and pruning deciduous fruit trees in the home garden

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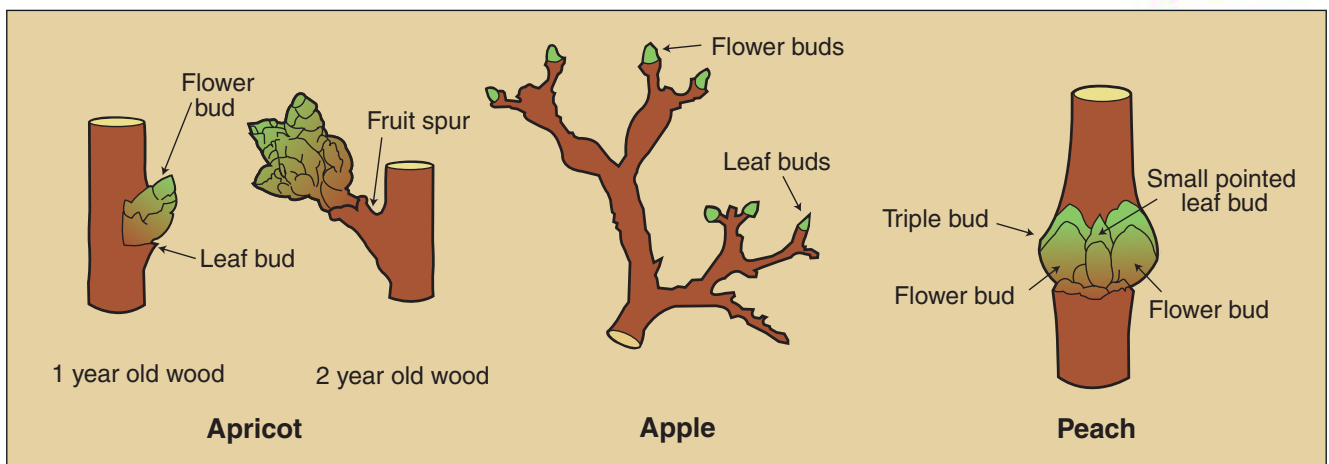


Figure 1. Various types of fruiting wood.

### Introduction

Trees that are properly pruned and trained will yield high quality fruit much earlier and live significantly longer.

Training and pruning:

- produces a tree with a strong framework, capable of supporting a good crop;
- continually renews optimal fruiting wood;
- allows light and air into the tree to maximise photosynthesis and prevent shading;
- improves access for spraying, thinning and harvesting; and
- removes dead, diseased, or broken limbs.

### Basics

- Some fruit trees (peaches and nectarines) flower exclusively on one-year-old wood, others predominantly on two-year and older wood (some apples), and still others on both (plums). Gardeners need to be able to distinguish between fruit and leaf buds, and determine which type of wood to prune.

*Leaf buds* are small, thin and pointed. They grow close to the stem as a single bud (Figure 1).

*Fruit buds* are usually plump, often found in groups and can contain four to six flower buds all of which can produce fruit (Figure 1).

- Traditionally pruning is done in winter when trees are dormant. However, summer pruning can be very effective and is recommended for trees that need large branches removed. This includes species susceptible to gummosis, such as apricots, almonds and cherries.
- Correct tools are essential. Good quality secateurs, loppers and pruning saws will make the job easier. Keep them clean and sharp. Prune in dry weather to prevent fungal and bacterial diseases.

Heavy pruning promotes unproductive growth at the expense of fruit.

- *Types of pruning cuts:* Two stages in the life of a tree require radically different approaches to pruning. Pruning during the first few years (1 to 4) establishes the basic framework of the tree and is referred to as **training**. Pruning which is done once the tree framework is set and fruiting occurs is called **renewal**. The two basic types of pruning cuts used in training or renewal are heading back and thinning out. In heading back, a branch or shoot is shortened (Figure 2). Older wood is headed back to an outward

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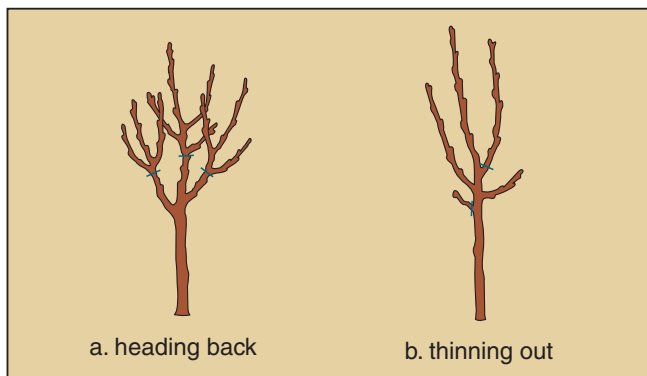


Figure 2. Basic pruning cuts.

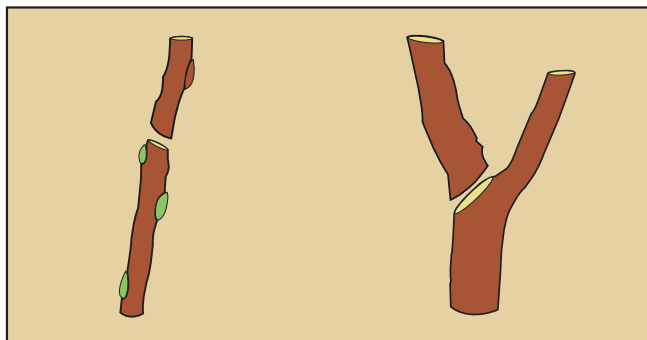


Figure 3. Smooth cuts that are parallel with the remaining growing points will heal over rapidly.

growing lateral. Heading back encourages lateral growth or branching. In thinning out, entire shoots or branches are removed back to a lateral branch, scaffold branch, or the main trunk (Figure 2).

- Make close, clean cuts. Stubs encourage decay and canker in the parent branch or trunk (Figure 3). Under cut branches to be removed to prevent bark tearing.

## Training

Training young fruit trees is essential for developing a suitable structural framework that will last the tree's lifetime. Well-trained trees are also much easier to prune than untrained trees. There are many different ways to

train fruit trees. This Gardennote discusses two common systems: central leader and vase.

### Central leader training

A central leader tree has one main, upright trunk, referred to as the leader. Branching begins on the leader 75 to 100 cm above the soil surface to allow movement under the tree. In the first year, three to four branches, collectively called a *scaffold whorl*, are selected. The selected scaffolds should be uniformly spaced around the trunk, not directly across from or above one another. Space scaffold whorls every 50 to 60 cm up the central leader, leaving alternating areas without any branches to allow light into the centre of the tree to the desired maximum tree height. See Figure 4, (a) to (e).

The shape of a central leader tree is like that of a Christmas tree. The lowest scaffold whorl branches will be the longest and the higher scaffold whorl branches will be progressively shorter to allow maximum light penetration into the entire tree.

### Vase or Open-Centre training

With the vase or open-centre system, the main central limb is removed at a young age, leaving an open centre. Instead of having a central leader, the open-centre tree has three to five major limbs or leaders, coming out from the trunk. This training system allows for adequate light penetration into the centre of the tree, minimising shading problems prevalent in higher vigour trees such as apricots.

### At planting

At planting, the vase-shaped tree should be set so that the graft union will be at least 10 cm above the soil surface. As the buds begin to swell, the unbranched tree (whip) is generally headed about 75 to 85 cm above the soil surface. New branches will come from the buds that are 15 to 25 cm below the heading cut.

Trees that are branched at planting are handled differently than the whips. Remove branches that are too low. If there are three to four uniformly spaced branches around the tree select these as leaders. The tree is

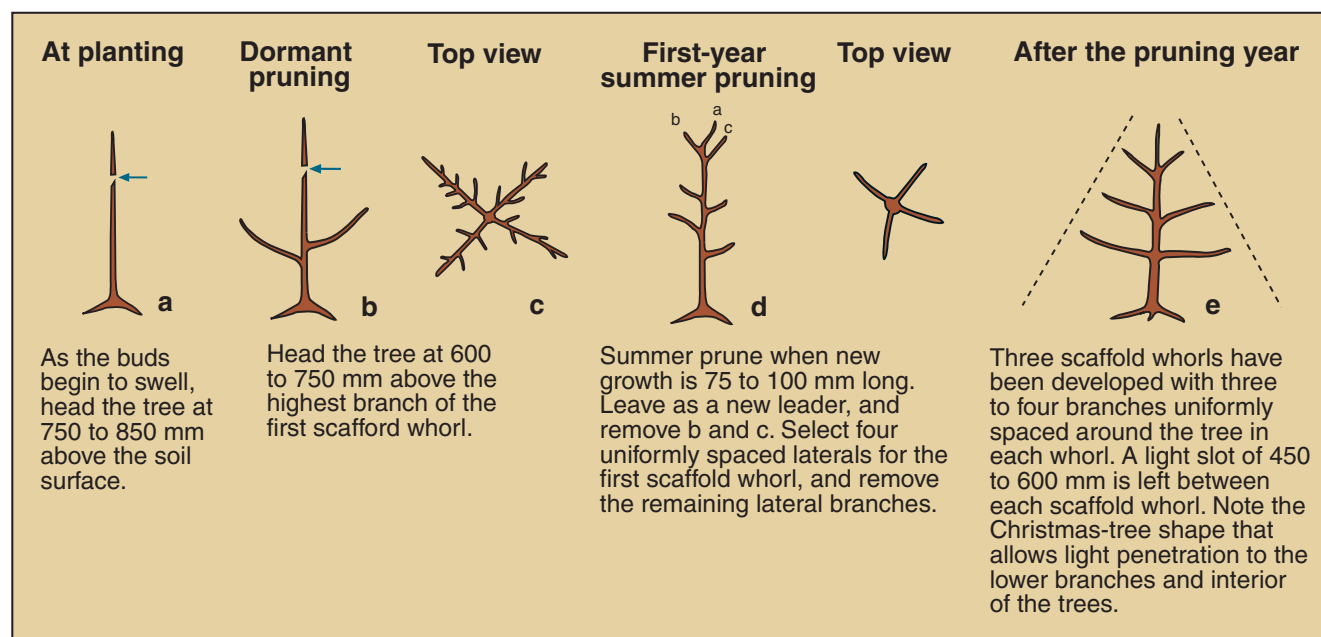


Figure 4. Central leader training.

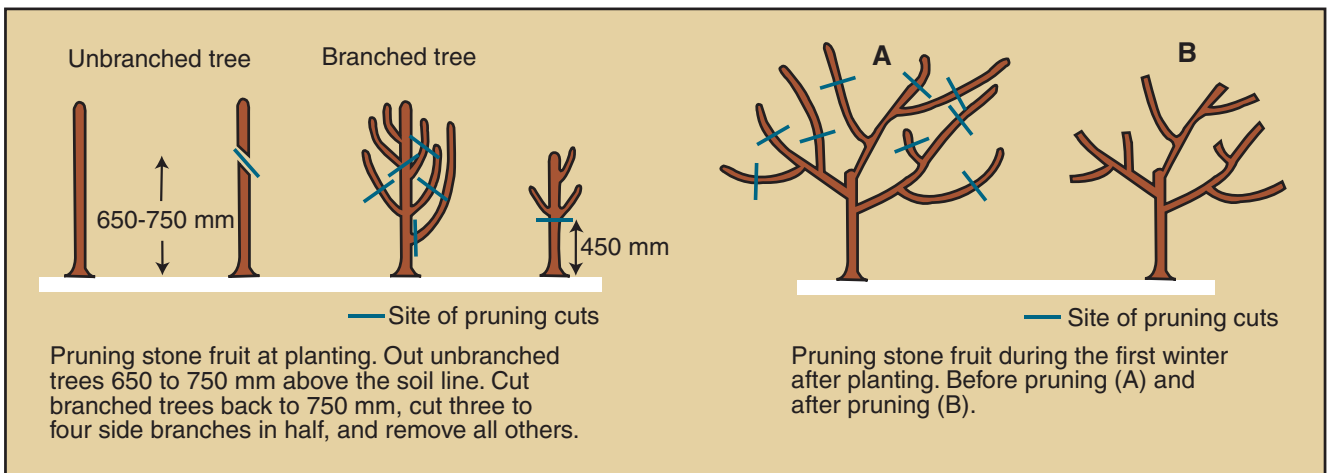


Figure 5. Vase shaped training.

headed just above the highest selected leader and any remaining branches not selected as leaders are removed (Figure 5). However, if there are less than three leaders the tree should be cut back to a whip and the side branches removed.

## Pruning

### Central leader

#### Dormant pruning

In the training or development years (1 to 4) pruning is designed to ensure that the central leader is dominant and whorls are correctly spaced. It is important to ensure that no limbs are allowed to grow to more than one-third the diameter of the central leader as this will threaten its dominance. Limbs that do should be removed and replaced with a smaller limb. Remember that the pyramid or Christmas tree shape should be maintained. Whorls that become too long should be shortened back.

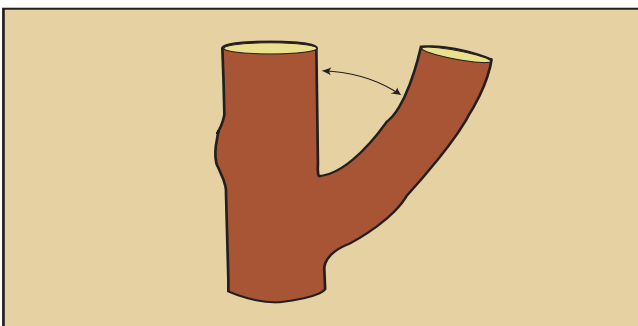


Figure 6. Crotch angle.

For established trees, dormant pruning aims to maintain the structure of the tree, replace older less productive wood, prevent limb crowding and crossover and remove diseased or broken limbs.

Branches with narrow crotch angles, less than 60 degrees (Figure 6), should be removed. Space smaller fruiting lateral branches uniformly around the leader and whorl branches to prevent crowding as the limbs grow in diameter.

#### Summer pruning

Summer pruning is used to remove vigorous upright shoots that are growing in the wrong place and to allow light into the tree. This stimulates growth in the remaining shoots and reduces the amount of pruning that needs to be done in winter.

## Vase or open-centre

#### Dormant pruning

The primary leaders should be maintained and properly trained outward. Leaders should be headed during the dormant season of the first three years to promote continued lateral branching and to stiffen and strengthen the leader. Leaders should be headed to outward growing buds or shoots similar or greater in angle to those being removed to ensure the open centre is maintained (Figure 7).

#### Summer pruning

With summer pruning, undesirable shoot growth can be removed as soon as growth starts. Summer pruning can

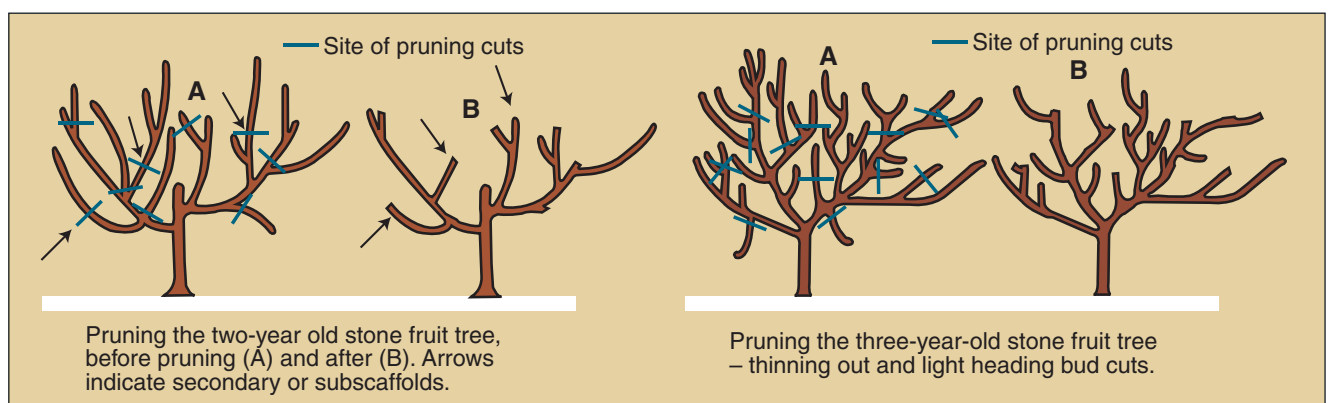


Figure 7. Pruning open centre trees.

also be used to direct leader growth outward to the desired growing points instead of waiting until the dormant season.

## General pruning guide

Different types of fruit trees (apples, pears, plums, peaches, and cherries) differ in growth habit and require slightly different approaches to pruning and training in order to obtain adequate production and quality.

There are also differences in growth habit between varieties of the same fruit type. For example, Fuji apple has a weeping growth habit while Cripps Pink (Pink Lady™) is upright. Tailoring pruning and training to suit the tree's growth characteristics will enhance performance.

### Pears, plums and cherries

Fruit is produced on spurs and trees often do not make much lateral growth. The Japanese plum produces fruit on spurs one to three years old. European plums grown in the lower South West of WA bear fruit on lateral spurs from wood two to three years old. Pruning is mainly restricted to occasional thinning of spurs and reducing most laterals. Selected remaining laterals are reduced to 20 cm to encourage new spur development.

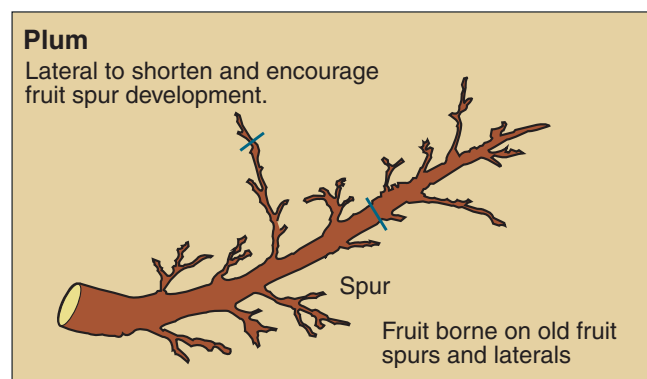


Figure 8. Reducing plum laterals.

Old spurs become unproductive. Avoid heavy pruning which induces development of water shoots and overly vigorous terminal growth. Six to eight limbs should be developed to maintain the principle of a vase framework, with even distribution of laterals and spurs (see Figure 5). This pruning method allows sunlight and air into the Cherries are highly susceptible to bacterial canker which is most active in wet conditions. Bacterial canker enters the plant through exposed pruning cuts. Heavy pruning during the dormant season (winter) increases the risk of bacterial canker, which can kill limbs prematurely. Because of this post-harvest (summer) pruning is recommended. Removal of major limbs should be avoided.

### Peaches and nectarines

Peaches and nectarines produce fruit on the new season's fruiting wood and require annual pruning of lateral growth.

- Remove water-shoots (vigorous upright shoots) growing in the open centre of the vase.
- Reduce vigorous laterals near the framework by half to produce the best fruit.
- Remove side-shooting growth from laterals to obtain a spacing of 6 cm between fruit-bearing shoots.
- Remove all weak and overcrowded laterals.

**Note: While the tree is dormant, spray to run-off point with a registered copper fungicide to control leaf curl infection.**

### Figs

Figs normally bear two crops a year and two main factors control pruning: the early light crop is borne on last year's old wood; the main crop is borne on the current season's wood.

Pruning reduces fruit production and can be restricted to lightly thinning excessive growth. To promote new fruiting wood, tip-prune selected old leaders. No other pruning is necessary.

Spreading trees may require occasional attention to the framework to maintain a compact shape. Large branches can be pruned back to shooting wood after harvest in March. Avoid cutting into barren wood where there are no leaf shoots. Pruning cuts should be sealed with fungicide to restrict the entry of fungus spores.

### Mulberry (*Moraceae*)

Mulberries belong to the same family as the fig, and do not normally require pruning. If necessary, prune in winter as for figs. Weeping ornamentals are pruned carefully to maintain shape. Shorten long, weak laterals by one-third. Remove occasional overcrowded, old thick laterals.

### Apples

Train to establish an even framework with minimum pruning. Fruit can be produced on spurs and laterals. All apple varieties bear the best fruit on two-year and older wood (see Figure 1). Some varieties such as Cripps Red (Sundowner™) will also bear fruit on one-year-old wood.

Granny Smith and Delicious varieties are spur-bearing and require only light pruning. Shorten old fruit laterals by half and thin old crowded fruit spurs. Where necessary, remove weakened laterals. This encourages the more vigorous ones to develop new fruit spurs.

Tip-pruning young fruiting laterals promotes overcrowding and should be avoided. Maintain the vase-shape framework.

### Apricots and Almonds

Regular crops of good fruit are produced on unpruned trees grown in good conditions. Trees are very susceptible to wood-rotting fungi entering through pruning cuts, so prune in summer after harvest. Spray with copper-based fungicide in winter to control fungus diseases.