Part 2

PLANTING, TRAINING & PRUNING

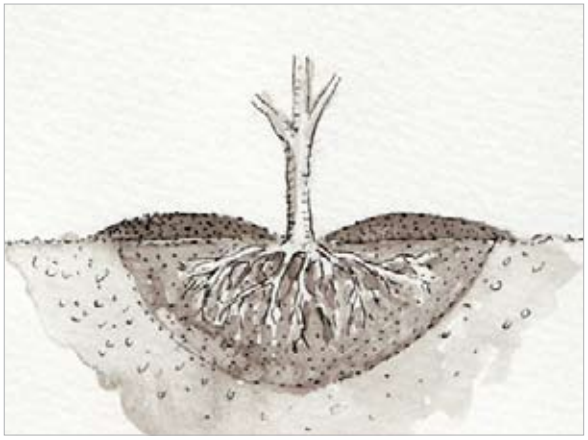
Planting a fruit tree

Plant fruit trees in winter, so the roots can get established before the leaves start to grow. For frost-tender plants (e.g. subtropicals and some citrus), wait until spring, when the worst frosts are over.

- Prepare the site first – clear all weeds and grass from an area about 1m square.
- Soak the tree (up to two hours maximum) in a bucket of water before removing the bag or pot.
- Prune off any damaged pieces of root. If the roots are circling around the root ball, slice them from top to bottom in several places with a sharp blade, so new roots will grow outwards instead of continuing in a circle.

1. **Prepare the planting hole**
   - Dig a large hole, about half a metre deep, piling the soil near the edge of the hole. Keep the topsoil separate from the subsoil so you can replace them in the same order.
   - Mix some well-rotted organic matter (e.g. compost, old sawdust) into the pile of soil.
   - Loosen the bottom and sides of the hole with a fork. Add gypsum if you're planting into clay.

The mulched planting hole



2. **Place the plant on a mound**
   - Put a pile of the mixture in the middle of the hole and place the tree on top of it, carefully spreading the roots. On poorly drained soil, build up the planting mound to 0.5m above the normal soil level.
   - Check that the tree is straight and will be buried to the same level as before.
   - Make sure the grafting union is well above the soil level.
   - For a free-standing tree, drive in stakes on two sides so you can support it for the first two years.
3. **Fill in the hole**
   - Carefully fill in the soil around the roots, filling any air pockets, firming the soil down, and watering a little as you go.
   - On a dry slope, make sure the soil is level so that rainwater stays in the root zone.
4. **Firm the soil and stake the tree**
   - When the hole is full, press the soil down with your heel.
   - Use flexible ties (e.g. old pantyhose, strips of bike inner tube) to tie the tree to the stakes. Check them regularly to make sure they're not restricting growth.
5. **Water and mulch**
   - Water the soil well.
   - Spread rotted manure or compost over the soil and cover with mulch. Leave a clear space around the trunk so it doesn't rot.
   - For the first year or two, water the tree regularly and deeply during dry periods, and keep the area weed free.
6. **Trim the branches**
   - Prune to shape the tree. If it has a lot of branches but a small root ball, prune off about a third of the branches to help the tree adjust while it forms new roots.

Training & pruning

Why train & prune fruit trees?

- You'll get more good-sized fruit.
- The tree is less likely to get diseases and broken branches.
- It will be easier to pick the fruit.
- You can train the tree to the size and shape that suits your property, and still get plenty of fruit.

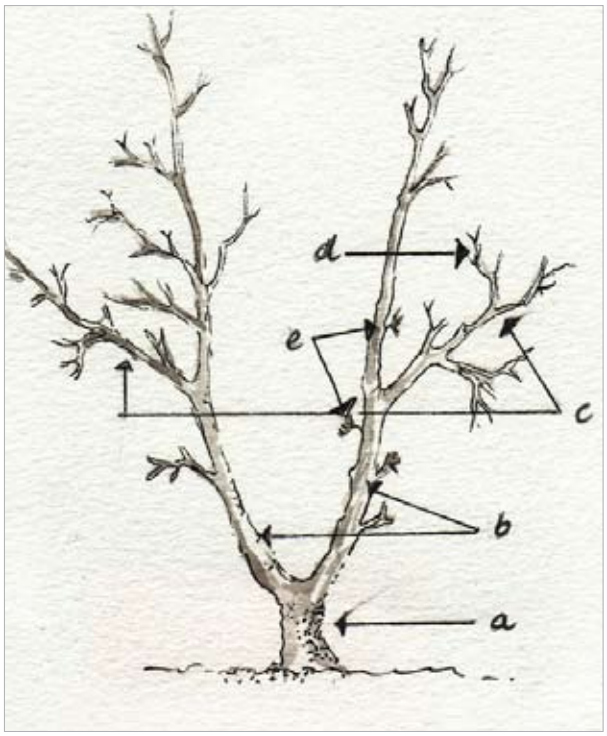
Terms for parts of a tree (see diagram)

a) ***Trunk (central leader)***: The new plant's central stem becomes the tree's trunk.

b) ***Leaders***: Strong upright shoots that sprout from the central stem and are trained as the 'framework' of the tree.

c) ***Fruiting arms***: Main branches that grow sideways from the leaders.

d) ***Laterals (or 'shoots')***: Thinner, fruit-producing side shoots that grow from the fruiting arms or leaders.



Adapted from *Fruit Gardening in NZ*

When to prune

- **Winter pruning** is best for shaping a young tree or reshaping an older tree. It encourages the growth of vigorous new leafy wood.
  Do this before the sap begins to rise in spring.
- **Summer pruning** encourages the growth of less-vigorous fruiting wood, so it is the best time for trimming branches and renewing fruiting wood.
  Do this when the new growth is several centimetres long, and again after the fruit is harvested.
- **Stonefruit trees should ONLY be pruned in summer, to reduce the risk of diseases.**

e) ***Spurs***: Stubby clusters of fruit buds that develop on leaders and fruiting arms.

Fruiting spur

Adapted from *Fruit Gardening in NZ*

- ***Buds***: The little lumps on a shoot are either leaf buds or fruiting buds (see below). It's easier to tell which is which in spring.

Leaf buds (pointed)
Fruit buds (rounded)

How & where to cut

The most important thing to know is what kind of wood each type of tree carries its fruit on, so you don't accidentally cut it off. This information is included in the section 'Part 3 – Essential Plant Info'.

Trees that bear fruit on an earlier seasons' wood

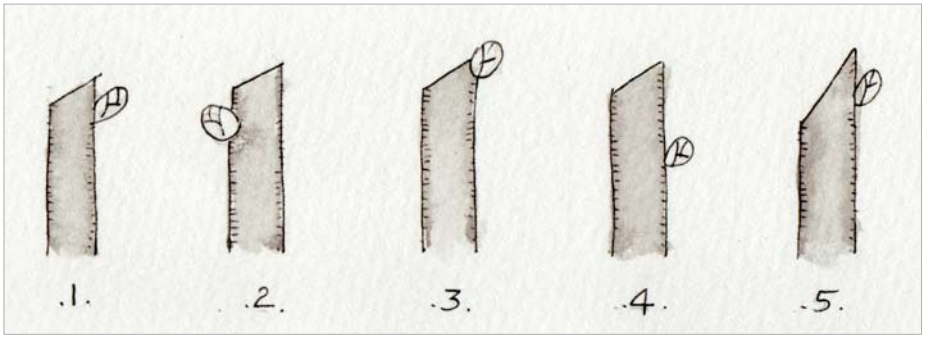
- You'll need to shorten some of the laterals (called *heading back*) to encourage the development of fruit buds.
- Make this kind of cut a little above a bud, sloping away from it at about 45 degrees (see below) so that rainwater runs down the other side instead of collecting on the bud.
- If you leave a longer stub, it can die back; if you cut too close to the bud, the wound might not heal (see below). Both of these can be an entry point for diseases.

Trees that bear fruit on the new season's wood

- Shortening the laterals would cut off the future fruit. Instead, you'll *thin out* some of them by cutting them right back to where they sprout from the branch or trunk.
- Cut exactly beside (but not into) the 'collar' – the rings where the shoot joins to the bigger branch. The bark grows fast in this area and will quickly heal over the cut.

Orchard hygiene

- Make sure your secateurs and loppers are sharp, so you don't make jagged cuts or tears.
- Between trees, wipe the blades with methylated spirits or bleach (e.g. Janola wipes) to avoid carrying diseases between trees.
- Use a pruning saw for thicker branches. Start by 'undercutting' the underside of the branch, then cut through the rest from the top. This stops the bark tearing away as the branch falls, leaving a wound that diseases can get into. If the branch is heavy, cut it in several sections to ease some of the weight.
- For apples and stonefruit, seal the cuts with pruning paint so diseases can't enter the tree there. Some advisors believe it's better to let the tree heal itself – but growers in this region say the risk of disease is too high in the climatic conditions here.
- Remove all the prunings from your property, especially dead or diseased branches and 'mummified' (brown and shrivelled) fruit.



Pruning cuts:

1. Correct
2. Cut in the wrong direction (sloping down towards the bud)
3. Cut too close to the bud
4. Cut too far away from the bud
5. Cut too slanted

Early training

Choose the shape

The best shape for a fruit tree depends on:

- which season's wood it bears fruit on
- how vigorously it grows
- whether its branches are flexible or stiff
- whether you want a free-standing tree or you want to train it on wires.

It's best to decide on the shape for a new tree right from the start and train it to set up a clear framework. It will be easy to maintain after that. It's harder to correct the shape later on with pruning.

If your new tree has no side branches, cut the main stem back to a healthy-looking bud – side branches will develop below that cut during the next growing season. The height you should make this cut depends on which shape you've chosen (see the next four pages).

Recommended shapes

Citrus

Bush

Stonefruit, fig, persimmon

Free-standing: Vase

On wires: Fan

Apple

Free-standing: Central leader, Vase

On wires: Espalier, Cordon

Pear

Free-standing: Modified central leader

On wires: Espalier, Cordon

When the new shoots grow in spring, choose the strongest ones that are in the position to create the shape you want. Cut off the other shoots for this season, then follow the steps required to create that shape. For all the shapes, remember that upright branches grow more vigorously, and flatter branches are more likely to develop fruiting wood.

Adapted from *Fruit Gardening in NZ*

Vase

The best shape for stonefruits. Several fruiting arms form a 'bowl' that makes it easy to climb into the tree for picking and pruning – this also makes it a popular shape for home-grown apple and pear trees.

How to train

1. Head back the central stem at the level you want the 'bowl' to be.
2. In spring, choose four or five of the strongest shoots that are growing in the directions you want as the main 'leaders'. Shorten them to a healthy bud to force the growth of laterals below that point. Shorten or remove all other shoots for this season.

Maintain the shape

- From then on, remove any shoots that would clutter the centre of the bowl.

Central leader

The best shape for an apple tree – lets light into the tree to encourage the development of new fruit buds.

Pyramid-shaped, with one central trunk and tiers of fruiting arms starting at about 0.6m above ground level.

How to train

1. Choose four or five branches in an approximate layer at about 0.6m from the ground – they will be the fruiting arms. Make sure they don't all sprout at exactly the same level, as this weakens the tree.
2. Shorten the central stem to about 1m above this tier. New shoots will grow below this cut. Choose one of them to continue as the central stem, and keep four or five that are in the right places to be the next tier of fruiting arms. Cut off the unwanted shoots.
3. During summer, flatten the fruiting arms down a little, to encourage the development of fruit buds – tie the end of the branch to a stake, or just let the fruit weigh the branch down.
4. Repeat this until the tree has reached the height you want.

Maintain the shape

- Each year, cut the central leader back to a weak shoot to keep the tree at the height you want.

Modified central leader

A good shape for controlling the height of vigorous trees such as pear and cherry.

How to train

1. Training starts as for the Central Leader tree, with one central trunk with tiers of fruiting arms.
2. When the top tier of fruiting arms is at about 1.8m from the ground, head back the central stem to a strong outward-growing branch.

Maintain the shape

- Rub off any shoots that grow from the top of the trunk, so the crown stays open.

Training trees on wires

Choose the shape that suits both the type of tree and your section. For all of them:

- Choose trees grown on dwarf rootstock where possible.
- Set up galvanised wires against a fence, wall, or between strong posts, with the bottom wire about 60cm from the ground.
- Use eyebolts to fix the wires onto walls or fences, to allow air circulation behind the plant.
- Insert pieces of cane between the branches and the wires, so that rubbing doesn't damage the bark.
- Set the plant in the ground about 30cm out from the wires.

Why train dwarf fruit trees on wires

- You can fit vigorous trees into a small or medium-sized garden.
- The trees don't cast so much shade.
- They make great dividers within the property.
- You can grow tender trees, which wouldn't normally survive in your area, against a wall that radiates extra heat.
- Pruning, picking, netting against birds, and spotting pests and diseases are all much easier.
- Branches that have been damaged (e.g. by cicadas) or are heavy with fruit are supported and less likely to break.

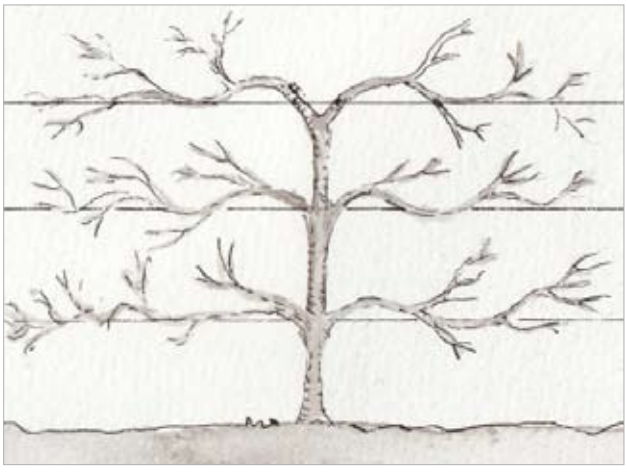
Espalier

Training

1. At planting, head back the leader to about 5cm above the level of the first wire – make sure there are at least three good buds below this cut.
2. The tree will grow new shoots below the cut. Choose the best three and pinch off the rest.
3. Select one shoot to continue as the centre stem, and two to gently tie down along the bottom wire as the horizontal arms. Let the tips of the arms point upwards.
4. When the centre stem has passed the next wire, cut it off just above the wire.
5. Repeat these steps until the tree is the height you want – up to six wires high, depending on the tree's rootstock. As they grow, keep tying down the fruiting arms until they've filled the wires.

Maintain the shape

- Rub off any vertical shoots that sprout from the top of the central leader.
- Each winter, head back new growth on the 'arms' by one third to a downward-facing bud. Prune the laterals back to 7cm. Pinch off any unwanted shoots.
- In summer, shorten the branch tips to the start of the new growth and remove a quarter of the old spurs.

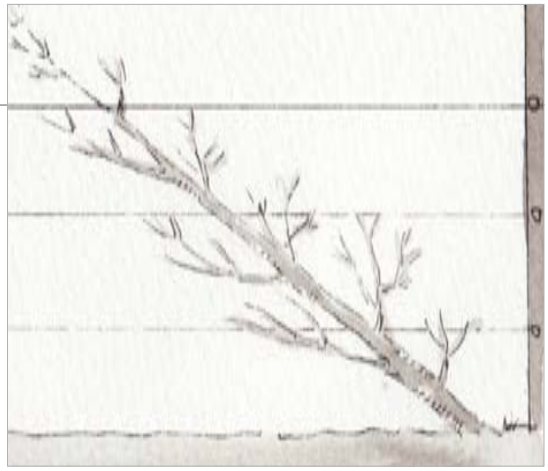


Adapted from *How to Make a Forest Garden*

Espalier

Suits apple, pear, nashi, persimmon, grapes.

Dimensions of structure: up to 2.5m x 4.5m, with wires 30–60cm apart.



Adapted from *How to Make a Forest Garden*

Cordon

Suits apple, pear, nashi, quince, gooseberries, red/whitecurrants.

Dimensions of structure: up to 1.8m x 75cm, with wires 60cm apart.

Fasten a piece of cane to the wires at a 45-degree angle.

Cordon

Training

1. At planting, head back the main stem by a third and fasten it to a piece of cane that you've placed at a 45-degree angle. Shorten side shoots to 7cm, to a downward-facing bud.
2. Remove all flowers during the first spring.
3. In summer, shorten all the side shoots coming from the main stem to 7cm. Shorten secondary shoots to 3 leaves.
4. Next winter, head back the new growth on the main leader by a third.
5. Repeat these steps until the tree reaches the required height.

Maintain the shape

- Shorten the new growth on the main shoots to 7cm, and on the secondary shoots to 3 leaves.

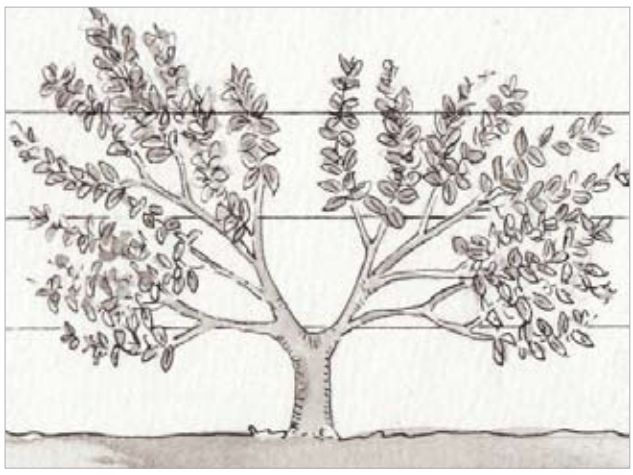
Fan

Training

1. In spring, head back the central leader to the level of the first wire. New shoots will grow from below that cut.
2. Select the best shoots for the fan 'ribs' – either radiating from one low central point, or from two evenly spaced laterals trained in each direction. Tie them loosely to pieces of cane that are tied between the wires.
3. The next season, shorten all the leaders to about 45cm of new growth, to force new shoots to sprout below that point.

Maintain the shape

- Each season, cut out any laterals that are growing in the wrong direction, and in midsummer, shorten to six leaves any shoots that are not part of the 'ribs'.
- Stonefruit, figs, persimmons and berries fruit on 1- or 2-year-old wood. Remove these shoots after they've fruited, to encourage the growth of new fruiting wood.



Adapted from *How to Make a Forest Garden*

Fan

Suits almond, cherry, apricot, nectarine, peach, fig, quince, persimmon, berries, redcurrants, whitecurrants.

Dimensions of structure: up to 2.5m x 3.5m, with wires 15cm apart.

Annual pruning

After the first few years of training, you'll need to establish a cycle of renewing the fruiting wood.

For this, you need to know where your tree carries its fruit (see the section 'Part 3 – Essential Plant Info' for each type of fruit).

You can tell new wood from old wood if you look closely at the new growth at the ends of branches in spring – it's a different colour from the wood further back down the branch, and there's often a clear line between the two.

Fruit on tips – *e.g. stonefruit, figs, persimmons*

- Bear fruit on the tips of 1- or 2-year-old wood.
- Thin out new shoots so they're well spaced, and head back weak shoots by two-thirds.
- In early summer, completely remove any strong new growth that will crowd or shade the lower branches.
- After the shoots have fruited, cut them right out to encourage the growth of new replacement shoots.
- Prune stonefruit in summer, to reduce the risk of diseases.

Prune each year

The aims of pruning are to:

- remove diseased, damaged and crossing branches
- control the tree's size and shape
- prevent shading and overcrowding inside the tree
- cut out some of the older 'worn out' fruiting wood to encourage the growth of new fruiting wood
- remove any suckers (shoots growing from the base)
- make spaces around the tree for placing a ladder if needed for picking and pruning.

Seal all cuts with pruning paint to reduce the risk of diseases.

Fruit on spurs – *e.g. apples, pears*

- Bear fruit mainly on fruiting spurs that develop on 2-year-old wood and last for several years.
- Cut out a quarter of the old spurs each winter, and head back older laterals to a bud close to the tree's framework.
- Either shorten some of the newer laterals, or tie them down to encourage the formation of fruit buds.

Main points to remember for success

- Prepare the planting hole beforehand, including plenty of organic matter.
- Plant the tree carefully and water, mulch and stake it if necessary.
- Find out where the tree carries its fruit, so you can choose the best shape and pruning methods to use.
- Train the tree when it's young.
- Once the tree is established, prune it each season to keep it healthy and productive.
- Pay attention to good orchard hygiene to reduce the risk of diseases.
- You don't have to get it exactly right!
- As long as you cut out any dead, diseased or damaged wood, and any branches that cross over one another, most trees will keep on producing fruit without too much fuss.
- If you accidentally cut off the wrong branch, or go away for a few years, you can still sort out the tree another season.
- It can take a while for a tree to recover from a major pruning. Just be patient ...