

Part 4

OTHER USEFUL INFO ...

Plants for free

Some fruits are easy to propagate, and this can save you a lot of money. *Make sure you propagate from a healthy plant!*

Grafting and budding

These are the methods for propagating most fruit trees, but they are fairly tricky. Find a local workshop to get some experience with them, or check out the instructions on these websites:

www.sces.org.nz/pmwiki.php/Content/Grafting

www.sces.org.nz/pmwiki.php/Content/TakingCuttingsFromOldVarieties

Growing from seed

This is not a good method for most fruits, as the 'offspring' often aren't as good as the 'parent'.

Also, they can take several years to bear fruit, and for all that time you won't know whether the fruit is any good! Cape Goosberry and Passionfruit are the exceptions.

Easy and reliable methods

Instructions for the easiest propagation methods are in the section 'Part 3 – Essential Plant Info', under the heading of the fruits for which they are suitable.

Examples:

- *Runners* – strawberry
- *Layering* – blackberry, boysenberry, blueberry
- *Suckers* – raspberry.

Propagating by hardwood cuttings

	Blackcurrant	Blueberry	Fig	Gooseberry	Grape	White/Redcurrant
Best time	Autumn	Midwinter	Autumn or winter	Autumn	Midautumn	Autumn
Cutting length	20–30cm	10–15cm	20–30cm (1–2cm thick)	30–38cm	Stem section with 3 buds	30–38cm
Preparing the cutting	Leave all buds on the stem, but remove all leaves	Use the bottom 2/3 of strong shoots of the previous season's growth	Choose stems with some 2-year-old wood at the base	Leave all buds on the stem, and the top 2 leaves	Choose stems that are just thicker than a pencil	Remove all but the top 4 or 5 buds, and all leaves
Planting	Insert upright in a trench or pot, leaving 2 buds showing	Insert upright in a pot, leaving 1–2 buds showing	Insert upright in a pot, leaving a few buds showing	Insert upright in a pot, to half its length	Insert upright in a pot, leaving the top bud showing	Insert upright in a pot, to half its length
What to expect	Should have roots and 3 or 4 good stems after 1 year	Should be ready to plant out after 1 year	Can take more than a year to develop a good root system	Should be ready to plant out after 1 year	Pot up after leaves and roots form in summer, plant out next winter	Should be ready to plant out after 1 year

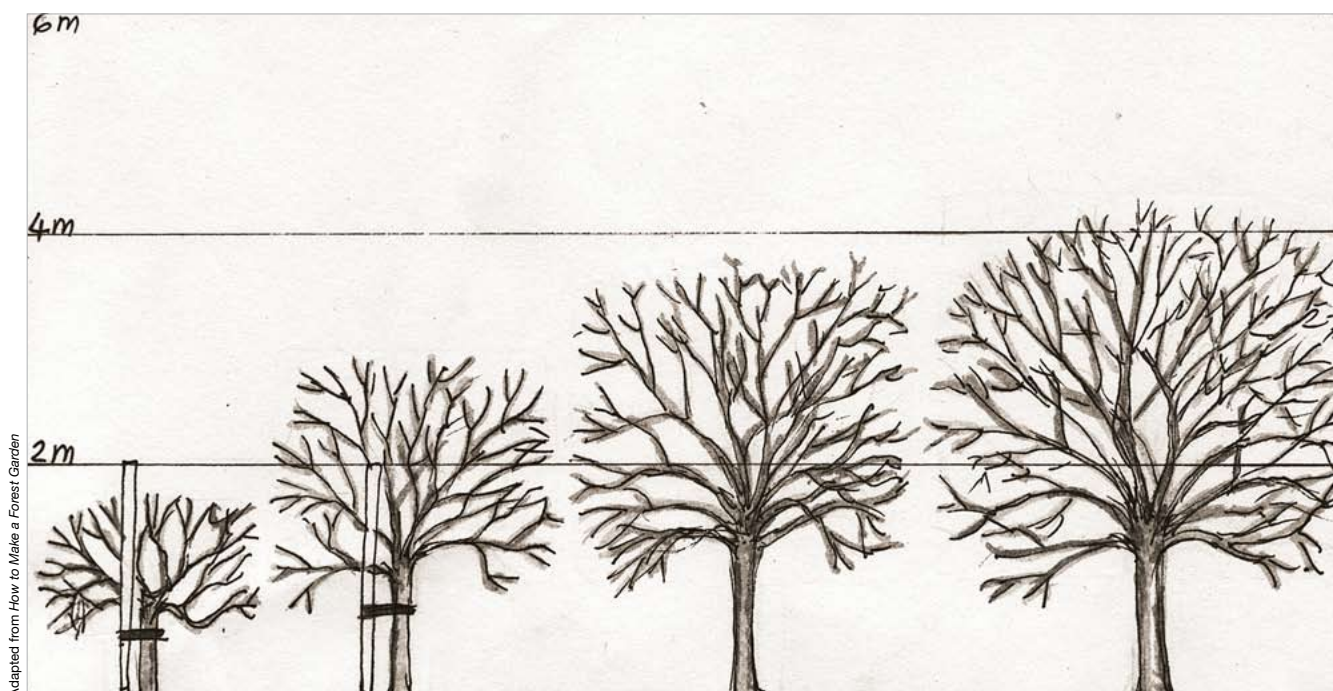


Choose the right rootstock

It is the rootstock of a fruit tree that determines how big the tree gets and what soil conditions it can handle. This especially applies to apples.

Useful information about types of apple rootstock is listed below, and the best rootstocks for other types of fruit are on the next page.

Rootstocks for apple trees



Adapted from How to Make a Forest Garden

M27 Super dwarf M9 Dwarf

- Suits well-drained, fertile soils – NOT heavy clay soils
- Fruits well in 2nd year
- Shallow roots – needs a sheltered spot, permanent stakes, and plenty of mulch
- Espalier is best – train along a fence or wires
- Lives about 30 years

M26 Dwarf

- Best in fertile, free-draining soil – cannot cope with waterlogging
- Can be grown without staking in sheltered areas

MM106 Semi-dwarf

- Good on most soils, except poorly drained sites
- Has a strong frame and roots, does not need staking – good in exposed areas
- Semi-vigorous – can be kept smaller with pruning
- Fruits in the 3rd or 4th year and can be a heavy cropper
- More resistant to woolly aphid



Rootstocks

Rootstocks for other trees

Pear

On heavy, fertile soils, grow pears on quince rootstock (grows to about 3m tall).

Apricot, plum, peach, nectarine

On heavy soils, use trees grown on plum rootstock (grows to 4–6m). On dry soils, use peach rootstock (grows to 5–8m). To save space, you can prune them to size as a standard tree, or as a *fan* against a wall.

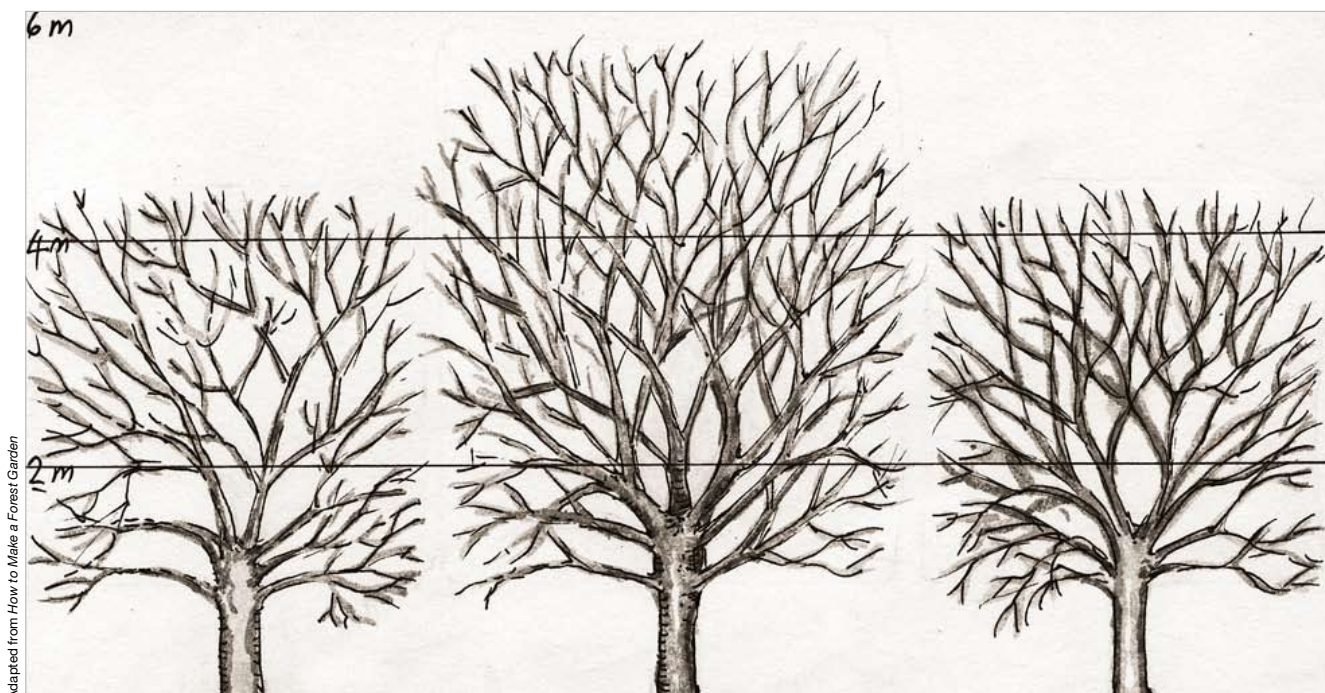
Cherry

Choose trees grown on Tangshe rootstock (grows to 4m). Prune to an appropriate size for your section, as a standard tree or as a *fan*.

Citrus

Use trees grown on Flying Dragon (grows to 2.5m), or if you're on heavy clay soil, Trifoliata (grows to 2.3m).

(Apple rootstocks cont.)



Adapted from How to Make a Forest Garden

M116 Semi dwarf

- Better suited to difficult soils (heavy or clay) than other rootstocks
- Vigorous, looks chunkier than the M106, and has a more upright framework and branches
- Needs regular pruning, or growing as espalier, to control size
- Has good anchorage
- Fruits strongly in the 5th year
- More resistant to woolly aphid and collar rot

M793 Tall

Northern Spy

- An especially good rootstock for heavy clay soils
- Suits conditions in Golden Bay
- Grows into a large strong tree – needs regular pruning, or growing as espalier, to keep it smaller
- Shows resistance to woolly aphid

Pests & diseases

Before you turn to toxic chemicals, make sure you follow these steps to reducing the likelihood of getting pests and diseases in your fruit trees:

1. Choose the right kind of fruit, and the right specific variety, to suit the conditions at your place. For the varieties that suit home gardens, see the 'Tried & True' chart overleaf.
2. Allow enough space between trees for good airflow, and also prune to keep the inside of the tree open.
3. Summer prune to remove the lush growing tips, so the plants are less attractive to sucking insects.
4. Keep your plants appropriately fertilised and watered, so they don't become vulnerable to pests and diseases.
5. Attract a range of helpful insects into your garden to control the pests for you:
 - plant 'good companions' for your trees (see the 'Companions' page)

Tonics for your trees

Regular doses of tonic food (e.g. compost, comfrey leaves, seaweed) help plants resist diseases and survive the effects of insect attacks.

You can either put the tonics on the soil as a mulch, or make a 'tea' out of them:

- Put one of the above tonics in a bucket of water, cover it with a lid, and leave it for a few weeks. (It will smell terrible!)
- Put a cup or two of the liquid in a bucket or watering can and dilute it with water to the colour of weak tea.
- Pour this over the leaves, or strain the bits out and spray the tree.

- keep some rocks, logs and long grass on the property for helpful animals to hide in (or under) and live and breed safely.

Helpful insects

Ants	eat	fruit flies, codling moth and some caterpillars	
Birds	eat	heaps of insect pests	BUT also your fruit
Centipedes	eat	caterpillars and slugs	
Hedgehogs	eat	millipedes, snails and slugs	BUT also ground-nesting bird's eggs, skinks, geckos
Hoverfly larvae	eat	aphids, scale insects, mites, young caterpillars and the larvae of pear/cherry slugs	
Lacewing larvae	eat	HEAPS of aphids, scale, mealy bugs, mites and whitefly	
Ladybirds	eat	scale, aphids, whitefly and mealy bugs	
Praying mantises	eat	caterpillars, bugs, beetles, aphids	BUT also beneficial insects
Spiders	eat	flies, mosquitoes, codling moth, caterpillars, butterflies	AND anything else that strays into their web!
Parasitic wasps	invade	caterpillars and their larvae eat the caterpillars from the inside	



Hygienic habits

Good garden hygiene is ESSENTIAL.

- Clean up all fallen fruit, 'mummies' and prunings, as pests and diseases can live on them until next season. Remove them from your property.
- When you're pruning, wipe your tools with methylated spirits or bleach between trees, to avoid spreading diseases.

Lotions & potions

If you think you've discovered a problem in your fruit trees, first of all find out exactly what's going on:

- Is it *really* a pest attack or outbreak of disease? If it's a nutrient deficiency or a problem with the soil, then spraying for diseases won't get rid of the problem!
- Take some samples (in a plastic bag) to your local nursery to get advice, or compare the sample with pictures in library books (e.g. *Managing Pests and Diseases* – Rob Lucas) or on websites (e.g. www.hortnet.co.nz/publications/hortfacts/hfinal.htm).

Not all pests require action from you e.g.

- Pear leaf slug dries up on a hot day.
- Beneficial insects multiply when there's a lot of their favourite pest food around, and sometimes they can restore the balance without your 'help'.

Some growers do a copper spray at leaf fall and again at bud burst to control diseases.

- Always read spray labels carefully and apply as recommended.
- Wear protective gear.
- Make sure you know what else is living in the target zone – even a 'natural' spray can wipe out both the pest you're targeting, and also every other friendly insect in the area.
- Spray in the morning before many insects are out and about, and when there is no wind so the spray doesn't drift.

Don't give up!

If your trees develop a pest or disease problem, don't give up on your efforts to provide the best conditions possible.

Controls you can make

Problem	Solution
Sucking insects (e.g. aphids)	Blend together 2–3 garlic cloves, 6–12 chilli peppers, 1tbsp cooking oil, 7 cups of water, and a few squirts of detergent. Spray it directly on the pest.
Fungal diseases	Mix 1tbsp baking soda with 4.5l of water, and spray it on the affected areas.
Powdery mildew	Mix equal parts of milk and water, and spray it on affected areas.
Codling moth (apples)	Wrap corrugated cardboard around the base of the tree when it's fruiting so the moths hibernate in it. Take it off in early winter and burn it.

For more spray recipes see www.urbanorganics.org.nz/node/35

'Natural controls' you can buy

Problem	Solution
Slugs, snails, caterpillars	Diatomaceous earth – a natural rock-based powder
Sucking insects (e.g. aphids)	Neem oil or sprays based on fatty acids – useful if numbers seem to be building up.
Codling moth	Pheromone-based traps that you hang in trees at a certain time of year – they don't control the moth, but they help you know if you have a lot and need to take some action
Fungal diseases	Copper or sulphur-based sprays – read the labels, use only as recommended, and wear protective gear.



Companion plants

Some plants are known to benefit each other when they grow together. Also, some plants are known to be bad companions, so try to avoid having them near your fruit trees – e.g. grass.

Planting 'good companions' under your fruit trees will mean less work for you, as your trees will be healthier.

How good companions help

1. They provide food for:
 - bees to pollinate the blossoms
 - predatory insects to eat the pests
 - birds to pollinate the blossoms and eat pests.

Examples:

- yarrow (*Achillea millefolium*)
- sweet cicely (*Myrrhis odorata*)
- sage (*Salvia*)
- lemon balm (*Melissa officinalis*)
- borage (*Borago officinalis*).

2. They collect nutrients for other plants in two ways:

- Their deep roots bring up minerals and nutrients to their leaves, which end up rotting on the soil's surface and then the tree's roots can absorb them.

Examples:

- comfrey (*Symphytum officinale*)
- chicory (*Cichorium intybus*)
- dandelion (*Taraxacum officinale*)

- They absorb nitrogen from the atmosphere and when they die, other plants can use it.

Examples:

- red clover (*Trifolium pratense*)
- lucerne/alfalfa (*Medicago sativa*)
- peas and beans.

3. Groundcovers protect the soil and plant roots from the sun and heavy rain.

Examples:

- oregano (*Origanum vulgare*)
- nasturtiums (*Tropaeolum majus*)
- roman chamomile (*Anthemis nobilis*)
- strawberries (*Fragaria*).

The top 10 companions

Think about:

- what herbs you like using
- what flowers you like
- what other plants like the same conditions as your tree.

Then choose some of these examples:

- Bergamot (*Monarda didyma*) for bees
- Bulbs (eg snowdrops, daffodils, jonquils, garlic, chives) to help with soil nutrients
- Calendula/marigold (*Calendula officinalis*) for insects, and as a herb
- Fennel (*Foeniculum*) for insects, and as a herb
- Lavender (*Lavandula*) for insects – good in drier soils
- Lovage (*Levisticum officinale*) for insects, and as a herb
- Rosemary (*Rosmarinus officinalis*) for bees, and as a herb – good in drier soils
- Sorrel (*Rumex acetosa*) as a groundcover, vegetable
- Tansy (*Tanacetum vulgare*) for insects
- Violet (creeping – (*Viola odorata*) for bees, and as a groundcover

Ideas for specific companions for each type of fruit are given in the section 'Part 3 – Essential Plant Info'. For more information about Companion Planting, look at:

www.urbanorganics.org.nz/node/36



Tried & true varieties for home gardens

The varieties listed below have been recommended for home gardens by growers in this region. There's also a list of more apple varieties, including heritage types, on our website.

These lists are a selection only – there are other varieties that also do well. Talk to other organic growers in your area to find out about their successes, or contact the local branch of the NZ Tree Crops Association.

Almond	CY750, 403, Fabi, Monovale	Kiwifruit	Hayward
Apple	<i>Early:</i> Akane, Gravenstein Stripey <i>Mid:</i> Priscilla, Prima, Sir Prize <i>Late:</i> Liberty, Sturmer, Jonagold	Lemon	Meyer, Genoa, Yen Ben
Apricot	<i>Early:</i> Katy Cot, Sundrop <i>Mid/late:</i> Trevatt, Fitzroy	Lime	Bearss, Tahitian
Blackberry	Black Satin, Navaho	Mandarin	Clementine, Encore, Miho for containers
Blueberry	<i>Rabbit eye:</i> Tifsblue, Powder Blue <i>Highbush:</i> Duke, Dixie, Bluecrop	Nectarine	<i>Early:</i> Snowqueen <i>Late:</i> Fantasia, Red Gold, Sunglo
Boysenberry	Tasman, McNicholls Choice, Mapua	Orange	Washington Navel, Ruby Blood, Harward Late
Cherry	<i>Early:</i> Burlat, Summit, Rosann <i>Mid:</i> Dawson, Bing, Compact Stella <i>Mid-late:</i> Lapins	Peach	<i>Mid:</i> Redhaven, Black Boy <i>Late:</i> April White, Golden Queen
Currants	<i>Black:</i> Magnus, Tai Tah <i>Red:</i> Myra McKee, Gloriade de Versaille	Pear	<i>Early:</i> Williams Bon Chrétien <i>Mid:</i> Princess, Beurre Hardy, Conference <i>Late:</i> Beurre Bosc, Doyenne du Comice <i>Very late:</i> Winter Cole, Winter Nelis
Feijoa	<i>Early:</i> Apollo, Gemini, Unique <i>Mid:</i> Kakapo, Wiki Tu <i>Late:</i> Triumph	Plum	<i>Early:</i> Duff's Early Jewel, Wilson's Early <i>Mid:</i> Fortune, Purple King, Greengage <i>Late:</i> Omega
Fig	<i>Early:</i> Brown Turkey <i>Mid:</i> Brunswick, San Pedro No 2 <i>Late:</i> Lesa, Preston Prolific, French Sugar	Prune Plum	<i>Mid:</i> Cacak Fruitful <i>Late:</i> Italian, Stanley
Grape	<i>Early:</i> Himrod, Buffalo, Shuyler <i>Mid:</i> Iona, Albany Surprise <i>Late:</i> Niagara	Quince	<i>Early:</i> Van Deman <i>Mid:</i> Vranja
Gooseberry	Invicta, Pax	Raspberry	<i>Early:</i> Waiiau <i>Late:</i> Autumn Bliss, Manna Yellow
Hazelnut	Whiteheart, Alexandra, Barcelona, Ennis	Sour Cherry	<i>Mid:</i> North Star, Fanal, Kelleris <i>Mid/late:</i> Montmorency, Richmorency
Kiwiberry	Takaka Green	Tangelo	Seminole



Terms used in this booklet

- Bud** – a little lump on a shoot that will grow either a leaf or a flower
- Central leader** – a tree trained with one main stem or trunk
- Cordon** – a fruit tree grown as a main stem with spurs but no side branches
- Deciduous** – leaves fall off the tree in winter
- Espalier** – a fruit tree trained to grow with horizontal branches flat against a wall or fence, or on wires
- Evergreen** – has leaves all year round
- Fan** – the shape of one method of growing fruit trees on wires against a wall or fence
- Forest gardening** – using all the space around and under trees, including vertical space, to grow more plants
- Frost tender** – a plant that gets damaged by frost
- Fruiting arm** – a main branch that grows sideways from the leader
- Graft** – fusing a piece of living tissue from the shoot of one plant onto the root system and stem of another plant
- Grafting union** – the place where the new tissue was fused to the rootstock tissue
- Hardwood cutting** – a piece of a plant that is cut at the end of the growing season, when the new growth has matured
- Head back** – cut a shoot back to a suitable bud
- Lateral** – a thin, fruit-producing side shoot
- Leaders** – strong upright stems that sprout from the central stem and form the main framework of the tree – there might be one central leader or several leaders
- Microclimate** – the climate conditions in a smaller area that are noticeably different from the rest of the area
- Mulch** – a layer of organic matter (e.g. straw, compost, shredded material) spread over the soil to retain moisture and suppress weeds
- Mummified fruit** – the shrivelled, brown fruit left on the tree after the harvest is finished
- Pollinate** – pollen is transferred from one flower to another, which fertilises the flower so it can turn into a fruit
- Prune** – deliberately cut the plant in certain places to control its size and shape, and to encourage the development of more fruiting wood
- Rootstock** – the living roots and stem of a plant that has tissue from a different plant grafted onto it to grow into the upper form of the plant
- Self-fertile** – the flowers are fertilised by the pollen from the same plant, which means they don't need a different variety to pollinate them and form fruit
- Spurs** – short, stubby clusters of fruit buds growing on leaders and fruiting arms
- Sucker** – shoot growing from the base of the tree
- Thinning cut** – cut a shoot right back to where it sprouts from the branch or trunk, in order to thin out some of the growth
- Vase** – a tree trained with several upright leaders creating a 'bowl' shape in the centre



Bibliography

General websites

www.treecrops.org.nz/
www.garden-nz.co.nz/growers-nurseries/2.html

Climate

www.niwa.co.nz/our-science/climate

Planning

www.edible.co.nz/calendar.php
www.edibleforestgardens.com/about_gardening
www.permaculture.co.uk
www.agroforestry.co.uk/forgndg

Site considerations

www.sces.org.nz/pmwiki.php/Content/ChoosingFruitTrees
www.edible.co.nz/growing.php

Growing in containers

www.edible.co.nz/growing.php#container

Planting

www.sces.org.nz/pmwiki.php/Content/PlantingAndCaringForFruitTrees
www.urbanorganics.org.nz/node/18

Training & Pruning

www.newplymouthnz.com/VisitingNewPlymouth/Attractions/ParksAndReserves/GardeningTips/PruningFruitTrees.htm
www.sces.org.nz/pmwiki.php/Content/Pruning

Pests and diseases

www.urbanorganics.org.nz/node/35
www.landcareresearch.co.nz/research/biosystematics/invertebrates/invertid/index.asp
www.hortnet.co.nz/publications/hortfacts/hfinal1.htm
www.urbanorganics.org.nz/node/35

Companion planting

www.urbanorganics.org.nz/node/36

Propagation

www.sces.org.nz/pmwiki.php/Content/Grafting

Books

- Ballinger, R & J (1981) *Fruit gardening in New Zealand*. Christchurch: The Caxton Press.
- Baxter, K (2007) *Koanga garden guide*. Havelock North: EK Body & Soul Publishing.
- Baxter, K (2008) *Design your own orchard*. (Rev. ed.) Kaiwaka: Body & Soul Publishing.
- Beazley, M (1997) *The complete book of plant propagation*. London: Reed International Books Ltd.
- Cuthbertson, Y (2006) *Success with organic fruit*. East Sussex, UK: Guild of Master Craftsman Publications Ltd.
- Lucas, R (2009) *Managing pests and diseases*. Nelson: Craig Potton Publishing.
- Lyle, S (2006) *Discovering fruit & nuts: A comprehensive guide to the cultivation, uses and health benefits of over 300 food-producing plants*. Auckland: David Bateman Ltd.
- Ministry of Agriculture and Fisheries (1986) *Aglink information pack: Subtropicals*. Wellington: Ministry of Agriculture and Fisheries.
- Pears, P (2001) *HDRA Encyclopedia of organic gardening*. London: Dorling Kindersley Ltd.
- Sunset (1975) *Pruning handbook*. California: Lane Publishing Co.
- Whitefield, P (1996) *How to make a forest garden*. Hampshire, England: Permanent Publications.
- Williams, D (1985) *Home fruit growing in New Zealand*. Wellington: Government Printer.



This Guide is available on:
www.nec.org.nz/growing-fruit-and-nuts/

For more information on growing food at home and in Open Orchards go to:
www.healthyas.org.nz/fresh-foods/grow-your-own/

ISBN 978-0-473-17487-3