Home Grown

A practical guide to growing your own fresh organic food

CITY OF GREATER BENDIGO

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Text by City of Greater Bendigo 2019 and Mary Trigger of Green Gecko Publications www.greengeckopublications.com.au

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Acknowledgement of Country

The City of Greater Bendigo is on Dja Dja Wurrung and Taungurung Country.

We acknowledge and extend our appreciation for the Dja Dja Wurrung and Taungurung People, the Traditional Owners of the land.

We pay our respects to leaders and Elder's past, present and emerging for they hold the memories, the traditions, the culture and the hopes of all Dja Dja Wurrung and Taungurung Peoples.

We express our gratitude in the sharing of this land, our sorrow for the personal, spiritual and cultural costs of that sharing and our hope that we may walk forward together in harmony and in the spirt of healing.

Contents

Why grow your own produce?

Growing your own delicious fresh food is rewarding, healthy and fun!

From a simple container to extensive garden beds you can plan to grow seasonally fresh food. In addition, choosing locally grown, unprocessed foods is the most effective way to reduce your environmental footprint, eat healthily and support the local economy. Locally grown food also increases community food security, our ability to feed ourselves. As Bendigo and the region embraces the idea of Gastronomy and all that this entails – thinking about food in terms of health, the environment, the local economy, sustainability and the sharing of culture – we are looking for ways to grow and share more healthy fresh food.

Home Grown provides you with practical produce growing advice on how to avoid chemicals, use less water and energy, reduce food miles and increase your well-being and health. All good for the planet, good for the body and good for the soul. You can't get much better than that!

Growing and exchanging produce within communities has become an important grassroots movement across Australia. *Home Grown* will also provide you with information on how to connect with your local food growers.

Planning

Start small...but plan BIG!

Considerations

1. Site analysis

Have a good look at your garden, preferably at varying times of the year. Draw up a rough mud map and note:

- Where are your sunny and shady areas in summer and winter? (Produce should have at least 5 hours of full sun per day)
- Do you or your neighbours have any large deciduous trees?
- Where are your sheltered areas and wind tunnels?
- Are there any areas that get water logged?
- Are there any micro-climates? (local isolated areas where the climate differs from the surrounding area due to buildings or existing vegetation).

2. Access

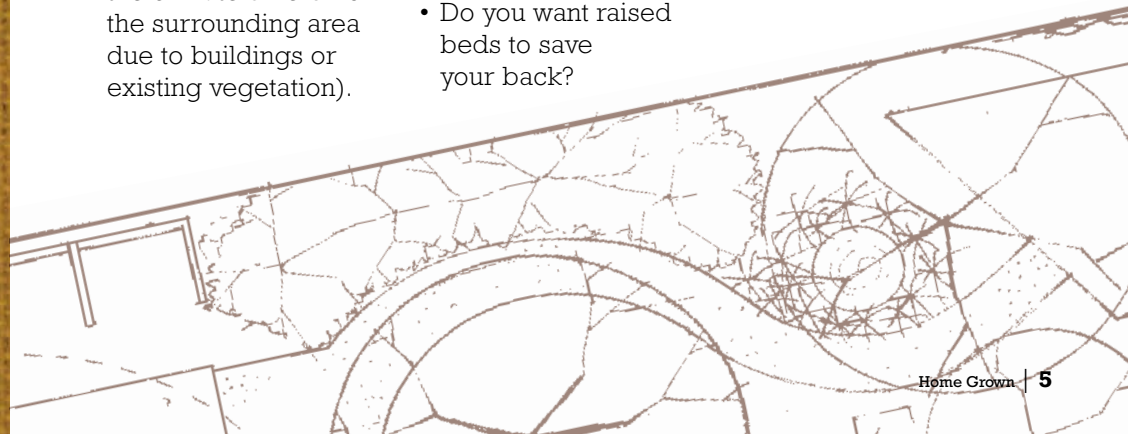
You want to ensure you have ease of access to your produce garden.

- Should it be close to the house for gathering vegetables and herbs?
- Where is the best spot to locate your compost or worm farm for managing waste and accessing compost for your beds?
- Where are your existing storage areas for tools and equipment?
- Where are your water outlets?
- Do you need a rainwater tank dedicated to your vegie patch?
- Do you want raised beds to save your back?

3. Size

You can grow a lot of produce from a small productive patch. Think about what you like to eat and what space it will require. Look at your garden and decide:

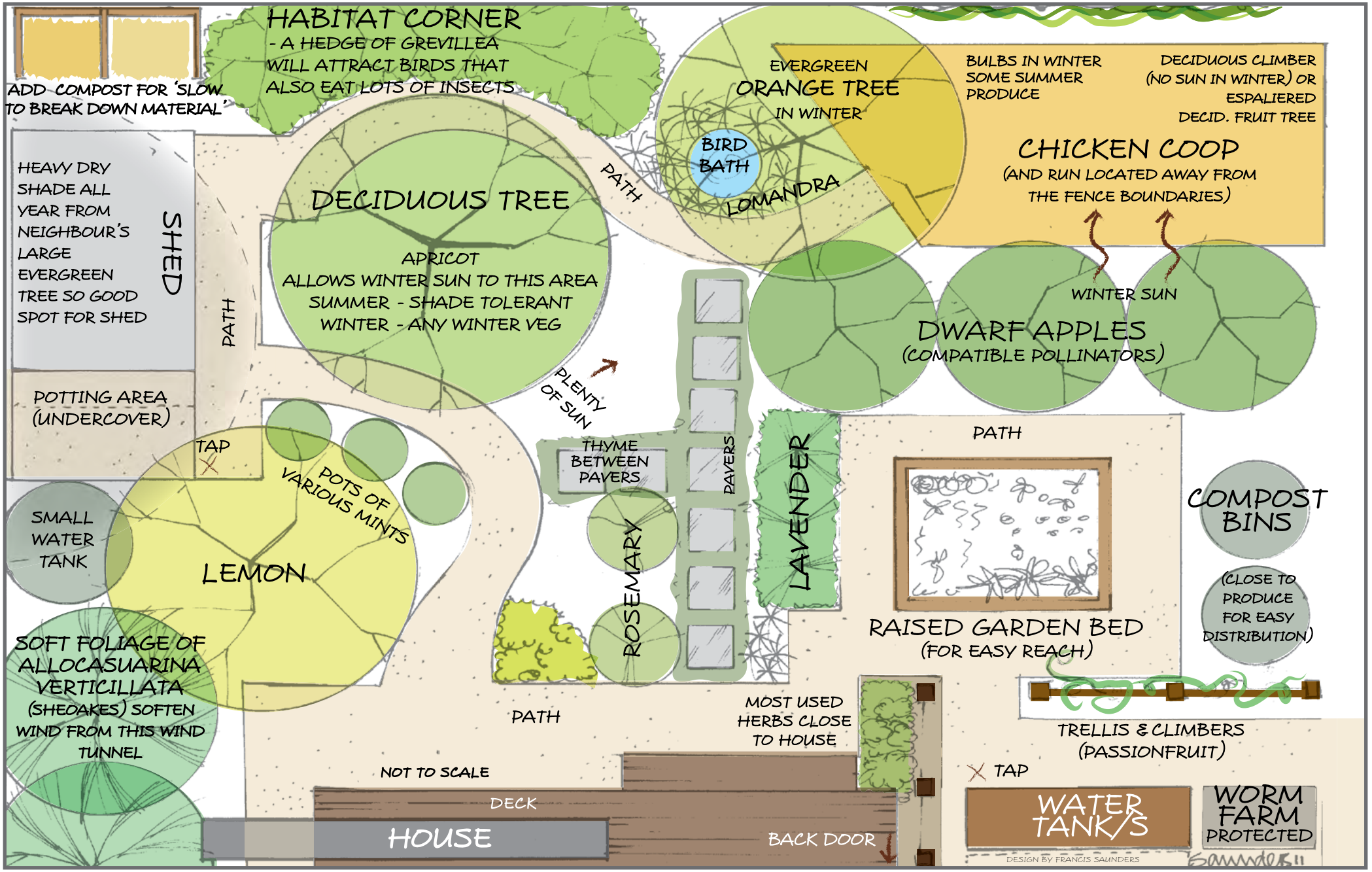
- Do you want to incorporate produce with ornamentals or have stand alone vegetable beds?
- Can your produce be grown in a container, pot or hanging basket?
- Can you espalier (refer to page 56) fruit trees along walls or fences?
- Can you incorporate vines to grow vertically?



4. Your garden plan

Example of a garden plan. Start small and plan big!

- What would you like to achieve this year, next year and in five years time?
- Identify your limitations with regard to space, water, time and money
- Aim to have the right plants in the right position.



Building your produce garden

In general, you have three options for where you grow your produce. You can add produce to your ornamental garden beds, build a dedicated veggie bed, or grow your edibles in containers. You may decide on a combination of all three!

An important consideration is what you want to grow and what sort of soil depth it will require. If you want to grow leafy produce, root vegetables, climbers, low growing bushes and dwarf fruit trees, your beds only need to be 30 – 50 cm deep. If you want to grow large fruit trees you will need a soil depth of at least 100cm.

If you decide to grow in containers and pots, they will need more watering as they dry out faster than garden beds.

Containers

If you decide to plant in containers, pots or hanging baskets there are a huge range of options available from designer pots to recycled containers. You need to take into account a few considerations specific to containers.

- **Planning**
  Containers look great when they are grouped together with pots of all different shapes and sizes closely clustered. It has a greater visual impact and creates some mini-biodiversity. It is beneficial to group plants that require similar levels of watering together. Terracotta pots look great but will dry out faster than glazed pots as they are more porous.
- **Position**
  All produce plants will do best in full sun. Remember this will vary considerably from summer to winter but the advantage of planting in containers is that you can move them as required. Place your pots somewhere convenient for you – the closer they are to the house the more likely they are to be watered and the produce picked and eaten.

  If you have limited space why not consider going up, rather than down? Strawberries grow brilliantly in hanging baskets and wall pots are great for herbs. They are excellent in light starved courtyards, balconies or those spaces dominated by pets.
- **Potting mix**
  Do not use garden soil in pots! It can drain poorly and tends to break down quickly. Use an organically certified potting mix. Good organic potting mixes will break down over time, so you need to top them up with fresh potting mix every so often.

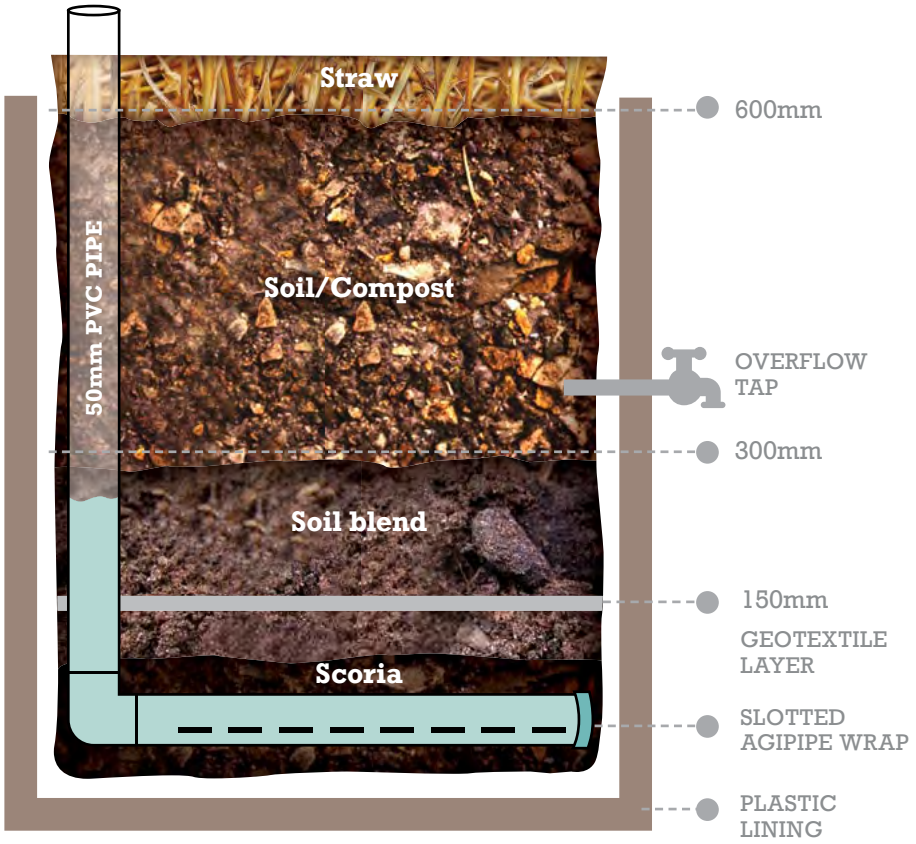
  As in the garden, mulch the top of your pots with a straw-based mulch to slow down water loss and prevent weed infestation. Ensure you leave enough room inside your container for your mulch or it will blow away.

Wicking beds

A wicking garden bed is designed to draw water up from a reservoir below, hence 'wicking' the water through the soil directly to the plant roots. It is one of the most efficient ways to deliver water to your thirsty vegies. There is also the added advantage of reducing the incidence of fungal growth on plant foliage by watering to the roots. As the majority of produce plant's roots grow in the first 300mm of soil it is a good idea to mix compost through this layer of soil to maximise growth.

For a wicking bed to work it does need to be constructed with care, ensuring your bed has the correct depth and appropriate medium both for drainage and growing your plants. For a vegetable wicking bed you will need a flat location in full sun. They can be built on the soil of your garden, on hard surfaces in a courtyard or even using a polystyrene box.

Wicking bed diagram



A wicking garden bed is designed to draw water up from a reservoir below, hence 'wicking' the water through the soil directly to the plant roots.

Existing garden bed

If you decide you want to convert your existing garden bed or beds into produce beds, the soil should be improved well before you start planting out your vegetables. Initially you will have to dig over the soil to about 30cm and incorporate a great deal of organic matter, such as compost, at roughly 3 parts soil to 1 part compost. Don't do this when the soil is wet as you'll ruin the delicate structure of the soil, and end up with a compacted mess!

Aged compost, worked lightly through the soil with a garden fork or rake, will do wonders.

If you have a heavy, clay soil, apply a layer of gypsum to the surface, much like a layer of icing sugar to a cake, before adding compost.

Raised garden beds

Any suitable frame from a minimum height of 40cm upwards can be used to form a raised bed as long as it's sturdy and will not collapse. Popular materials include corrugated galvanised beds, sustainably harvested CCA (copper chrome arsenate) free timbers, straw bales or recycled apple crates. The most popular form of raised garden bed is the No-Dig garden that incorporates the layering of different materials within the bed. The beauty of a No-Dig garden is that it is possible to grow plants where the site is generally not suited to gardening such as compacted soils, in courtyards, on balconies and even on rooftops. You build up and not down!

No-Dig gardens as the name suggests do not require digging. Because the materials in the bed are organic they start to break down (compost) and eventually become a nutrient rich growing environment. The medium can be so rich that you don't need to add any supplementary fertilisers. These composting organic materials are moisture retentive providing a reservoir of water for the garden bed even on hot days, and the heat generated from the decomposing organic materials accelerates plant growth.

Building a no-dig garden

- Locate a level space that benefits from at least 5 hours per day of full sun.
- Construct or position your frame.
- If your bed has a base e.g. apple crate, ensure it has adequate drainage holes.
- If the bed is on compacted soil or concrete you may need to install a small drainage channel for run-off from the bed.
- Start by laying your bottom weed barrier layer. This can be un-waxed corrugated cardboard or multiple layers of newspaper to a depth of 2-3cm. Dampen well.
- Add your 'bulk layers' in alternating order, each about 5cm thick. Dampen well:
  - **green** materials e.g. finely chopped garden waste, comfrey and borage leaves
  - **brown** materials e.g. autumn leaves, pea straw, shredded newspaper
  - **manures and composts** e.g. aged animal manures and garden compost.
- Keep alternating until about 10cm from the top of your bed. Finish with an aged animal manure before adding your planting layer.
- Add your 'planting layer' which consists of a growing medium such as compost mixed with garden soil or a purchased soil mix. This should be around 3cm deep.
- If possible allow the bed to 'rest' for a couple of weeks before planting out so the mix can stabilise. Top up with more planting layer after this if necessary.
- Plant out as you would a normal garden bed.
- Mulch with straw to a depth of 3-5cm once seedlings have emerged.
- At the end of each growing season restore the height of the bed with layers of compost, aged manures and straw mulches. These can be lightly forked into the loose layers.

Maintenance

Good maintenance practices lead to a more productive harvest!

Soil

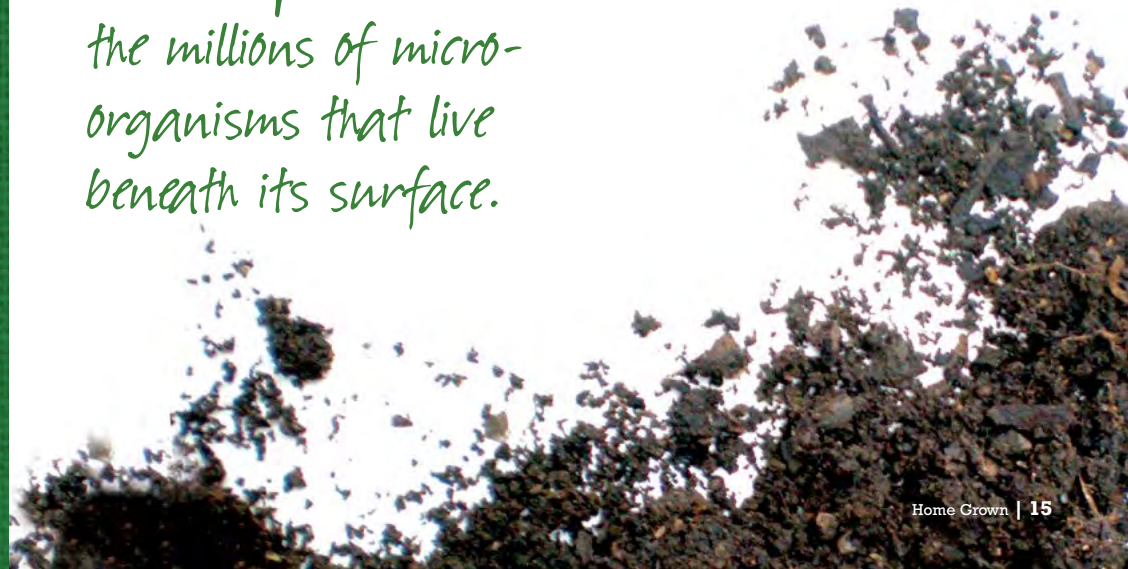
Good soil is the most important element in your produce garden. Soil is a mixture of mineral particles (the gritty bits), air, water and a very small but crucial amount of organic matter. The health of your soil is dependent on the millions of micro-organisms that live beneath its surface. To grow lush vegetables your soil needs to be crumbly to touch, dark in colour and moisture retentive.

Ideally your soil should be within a pH range of 6.0 to 7.5 where most plant nutrients are readily available. A good investment is a soil pH testing kit that has everything you need to check whether your soil is acid or alkaline or something in between. Such kits are readily available from garden centres and hardware stores. If your soil pH is too low (acid), it can be raised with dolomite or lime. If the pH is too high (alkaline), it can be lowered with an application of sulphur. However altering pH takes time so don't expect immediate results.

The health of your soil is dependent on the millions of micro-organisms that live beneath its surface.

Test your soil pH routinely but particularly at the end of each growing season and before you prepare for the next crop. Slight variations are normal within a garden bed. Some produce plants have a fairly specific pH range (e.g. blueberries need acid soils) but most prefer to be grown in a slightly alkaline soil which is why most gardeners sprinkle a little dolomite or lime over the bed about 6 weeks before planting out seedlings.

Keeping soil healthy is an ongoing process and is especially important in a productive garden where plants are continually removing nutrients from the soil. These need to be replaced regularly using organic compost, aged animal manures and organic fertilisers.



Bendigo soil

The City of Greater Bendigo mainly sits upon sedimentary rocks that generally produce shallow, poorly structured and rather infertile soils. They vary from sandy to silty loams depending on grain size and are known as duplex soils because they typically have a thin grey top-soil layer, and a yellowish sub-soil between this and the bedrock. Sedimentary soils tend to have poor water holding capacity and be low in organic matter. This makes them unattractive to the abundant micro-organisms essential for producing soil nutrients. Seasonally improve your soil by adding plenty of compost and other organic materials. This will improve your soil's moisture holding capacity, make it attractive to worms and micro-organisms and promote better plant growth.

Alluvial soils are found in the stream valleys to the north of Bendigo and tend to be deeper and more fertile. As with sedimentary loams they will benefit from the addition of compost, aged animal manures and mulch, particularly with respect to growing produce.

Some local soils can be contaminated due to past activities, such as mining or chemical use. Contaminants can include heavy metals, petrol-chemicals and pesticides.

If you are unsure of past land uses and you plan to grow your own food, it is advisable to have the soil tested by a reliable and accredited expert.

A number of local companies offer this service, their contact details can be found online or in the yellow pages. Should your soil be identified as contaminated ensure you only rely on expert advice to prevent impacts on your family, community and environmental health.

Fertilisers

Produce requires large amounts of soil nutrients for optimum growth. This is particularly true for fast growing annual crops. Adding compost and aged manures to your vegie garden soil will provide most of your plant's nutritional needs. Existing soil nutrients can be made more available by regulating the soil pH.

If fertilisers are necessary, feed the soil rather than the plant. This allows the plant to take up what it needs as it needs it. Before the autumn and spring growing periods begin, apply slow release pelletised fertiliser. Then during the growing period apply supplementary organic fertilisers fortnightly. Choose an organic liquid fertiliser such as worm tea, seaweed solution or fish emulsions. Avoid synthetic fertilisers as these often have synthetic nitrogen and the salt content can burn young seedlings.

For information and treatment of some common plant nutrient deficiencies, refer to pages 28-30.

Organic waste recycling systems

Organic waste consists of food scraps, grass, autumn leaves and garden clippings. When organic waste is broken down into compost it becomes an excellent soil improver. Compost can be made at home or bought commercially from garden centres and hardware stores.

Aged animal manures and vermicompost (worm castings) are rich in nutrients and are excellent for the food garden. Compost does not have to be dug into the soil. Unless your soil needs to be improved, the compost can be laid on top. Straw-based mulch will also break down over time to add nutrients to your soil.

Add to or keep out of your home compost

ADD TO YOUR COMPOST

- **Fruit and vegie scraps**
- **Coffee grounds**
- **Tea bags**
- **Herbs**
- **Leaves**
- **Egg shells** – crushed
- **Pizza containers**
- **Egg cartons**
- **Vacuum cleaner dust**
- **Onion** – outer skin
- **Finely chopped citrus peel**
- **Grass clippings** – thin layers 3 to 4cm
- **Chopped prunings**
- **Weeds** – not bulbs or seed heads
- **Shredded newspapers**

KEEP OUT OF YOUR COMPOST

- **Meat and fish scraps** – they can attract vermin
- **Dairy** – again they attract vermin
- **Office paper** – bleached or glossy
- **Weed seeds and bulbs** – you will only spread them around your garden
- **Bird, dog and cat poo** – can be a health risk
- **Large tree branches** – unless you've put them through a chipper
- **Citrus fruit** – too acidic in large quantities, okay in small quantities
- **Diseased plants** – spreads disease

Kerbside organics bin

The City's kerbside organics collection service is a great way for those who don't compost, to divert organics from landfill and recycle the nutrients in your food and garden waste. **Remember all food can go in the organics bin; even meat and bones.**

A caddy and caddy liners are provided to make this easy and as mess free as possible for you at home.

Aside from general food and garden waste, you can also add the following:

- Paper towels and tissues
- Hair from your hairbrush
- Vaccum dust
- Toothpicks, skewers and wooden icy pole sticks
- Raw brown, matt-type cardboards, e.g. toilet rolls, egg cartons, McDonalds takeaway bags, fish and chip wrapping, pizzas boxes etc
- Please do not add shiny, colourful cardboards to your Organics bin, e.g. cereal boxes. These are for the recycling bin only.

Compost products from the organics collection service can be purchased from local nurseries.

Contact Biomix to find your local nursery (reseller). Tel: 0488 993 066
www.biomix.com.au

Contact the City for more handy hints and information about the kerbside organics collection service.

www.bendigo.vic.gov.au/Services/General-Waste-Recycling-and-Organics/Organics-Bin

Join the Compost Revolution

Residents who live outside the designated Organics Collection zone are eligible to receive 70% off a compost bin with FREE delivery from the City of Greater Bendigo.

The bin provided is 100% recycled and made locally in Victoria!

Visit **www.compostrevolution.com.au/bendigo** to order your bin and start the online tutorials and quizzes to assist with the use of compost bins, worm farms, and bokashi bins.

Benchtop kitchen fermentation kits

Specially designed bench kits are a convenient way to break down kitchen waste. These kits are a fermentation system that converts waste to a nutrient rich soil conditioner for your garden. The system is air tight and requires you to sprinkle a handful of the manufacturer's rice husk and wheat bran that has been infused with micro-organisms, over a layer of kitchen waste to rapidly break down food scraps. The fermented product is then dug into the soil where it continues to breakdown.

Compost bins

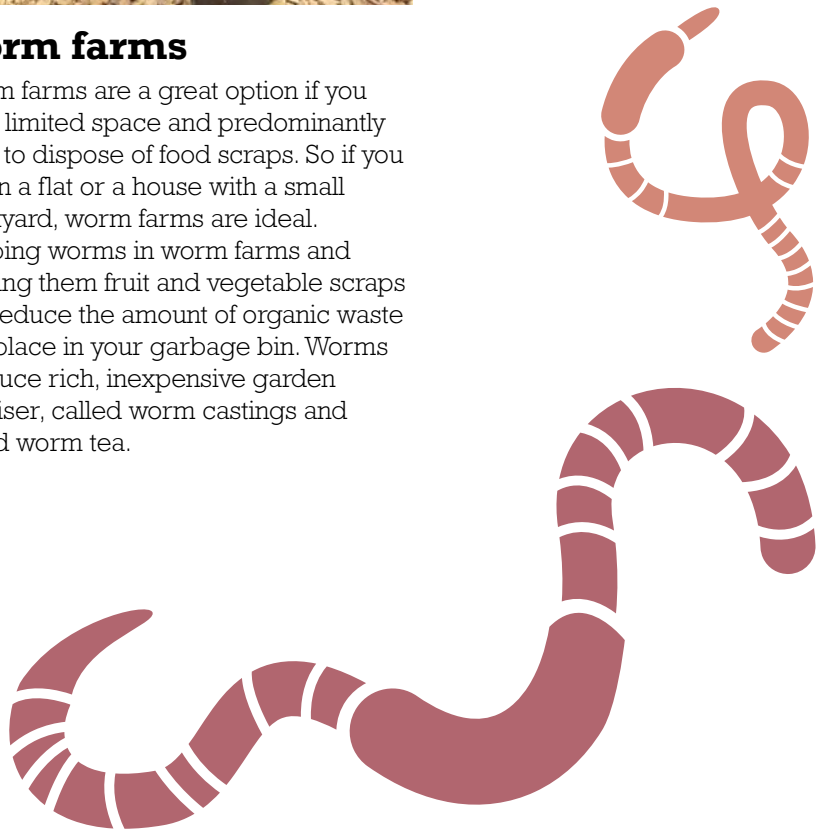
Compost bins are compact and a closed system restricting vermin access. Locate in a sunny position to assist breakdown, and on soil so that liquid drains well and worms can enter the bin to aid composting. Fasten a piece of mesh wire under the bin to prevent rats and mice digging underneath. Add alternate layers of high nitrogen ingredients (e.g. food scraps, manure, grass clippings, soft prunings) to low nitrogen ingredients (e.g. dry leaves, straw, garden waste, shredded newspaper). Aim for layers of 1 bucket of high nitrogen followed by 3 buckets of low nitrogen. Keep moist but not too wet. Cover with a layer of hessian to retain heat and moisture. The compost should be ready in 12-16 weeks.

Compost heaps

This is an open system that requires more space and will attract vermin if kitchen scraps are added. The system needs to be a minimum of 1m³ in order to generate enough heat to work. Build a large heap of organic materials 1.2m high by 1.2m wide. This can be on soil or on a hard surface. Alternate your organic materials between high nitrogen (e.g. garden cuttings, lawn clippings and aged animal manures) and low nitrogen (e.g. dry leaves, straw, shredded newspaper) with each layer being 10-20cm deep. As you build, spray each layer so that the materials are moist but not saturated. Cover your finished heap with hessian and secure. Turn your heap twice a week. The heap should generate enough heat to obtain compost in 6-8 weeks.

Worm farms

Worm farms are a great option if you have limited space and predominantly want to dispose of food scraps. So if you live in a flat or a house with a small backyard, worm farms are ideal. Keeping worms in worm farms and feeding them fruit and vegetable scraps will reduce the amount of organic waste you place in your garbage bin. Worms produce rich, inexpensive garden fertiliser, called worm castings and liquid worm tea.



Food

When you introduce the worms to the worm farm they may take a few weeks to start eating and slowly build up their appetite. Add fruit and vegetable scraps, cut up as small as possible. Avoid meat, bread, onions and citrus. If you are adding more food than the worms can eat your worm farm may become smelly as the food is rotting. Be sure to monitor and adjust the amount of food you are giving your worms.

Moisture

In order to breathe, worms need to keep their skin moist and cool. Keep a few moist layers of newspaper or hessian over the top of your worms before placing the lid on your worm farm.

Do not flood your worms and take care not to leave your worm farm uncovered if it rains. A sign of a worm farm being too wet is a large number of small vinegar flies (a small amount are fine). Likewise if you find drowned worms in the worm tea at the bottom of your worm farm your system is too wet. Add some shredded newspaper to absorb the excess moisture.

Temperature

Worms stop eating if they are too cold and will die if they are too hot. They perform best at temperatures between 18 - 24°C so it is important to keep your worms in a shady place out of direct sunlight in summer and warm in winter.

Using your worm castings and tea

Worm castings will never burn your plants and can be mixed directly into the soil around your plants or before you add your seedlings. Use as much as you like. Worm tea on the other hand is a strong nutrient boost for your plants and needs to be diluted at a ratio of 1 part tea to 10 parts water before you add to your plants.

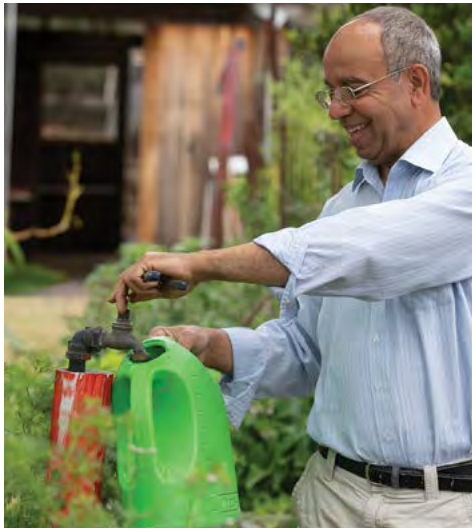
Watering

Australia is the driest inhabited continent on Earth, and, as such we need to use water responsibly in the garden. It is important to check current rules about water use: www.coliban.com.au.

Water is essential for growing healthy herbs and vegetables. Produce in particular requires a large amount of water compared to native plants. How and when you water is important for growing healthy plants and reducing pest and disease problems.

Considerations

- **Install a rainwater tank** specifically for your vegie garden. Even a small tank will allow for the more frequent watering regime required to grow seasonal vegetables or to ensure trees set fruit. You can keep watering independently of any potential mains water restrictions. Water fed by gravity from a rainwater tank is perfect for dripline irrigation systems. A pump may be required where the site has an incline. Be aware of potential contaminants coming from your roof surface and consider installing a 'first flush' device. For more information on choosing the size and type of rainwater tank and irrigation systems for your garden visit: www.sgaonline.org.au
  For information on rainwater tank rebates visit Coliban Water www.coliban.com.au
- **Group plants** according to their water needs. Different plants have different water needs. Group your plants according to their thirstiness.
- **Pots** are porous and will dry out quickly, especially in summer. To reduce the impact of evaporation the best option is light coloured glazed pots. Include a saucer and consider double layering the pot (a smaller pot within a larger pot).
- **Water storage crystals** are petro-chemically based and therefore not appropriate for an organic garden. It's much better to ensure your soil is rich in compost which will effectively store water in your soil.



- **Test your soil** before you water. Don't just water for the sake of watering. Test the soil with your finger before watering – if the soil sticks to your finger, the soil is damp and probably doesn't need watering. If it's dry, water it! This is especially important in the cooler months, when overwatering can lead to root rot, fungus, mildews and very cold soil.
- **Water the roots** not the foliage. Plants take up water through their roots, so direct the water there. Water on the leaves can encourage fungi and mildew. The easiest way to do this in a vegie patch is through a sub-surface irrigation system, where a dripline or porous hose delivers water directly to the thirsty root zone of plants.
- **Water in the morning** to allow your plants to take up water before the heat of the day and to keep the soil cool. Watering in the evening allows for fungal diseases to take hold, particularly in warmer months.
- **Greywater** and vegie gardens don't mix! Untreated greywater (household water directed from the laundry and bathroom to the garden) should never be used on vegie gardens where food is grown for consumption.
  Greywater can contain all manner of bugs, detergents, fats and oils. It can be used around fruit trees and shrubs as long as it is applied sub-surface by drippers. It should be regularly alternated with fresh water to prevent a build up of toxins in the soil. Phosphorous free and low sodium detergents should be used if using greywater in the garden. For more details visit **www.epa.vic.gov.au** and search 'greywater'.
- **Mulch** your produce garden with a straw mulch, particularly in summer, to reduce surface water evaporation.

Mulching

Mulching is essentially the application of a layer of organic material to the surface of the soil. There are a wide range of mulches available, but, for produce gardens and fruit trees, a straw-based mulch is best.

These mulches (pea straw, lucerne and sugar cane) are high in nutrients and break down rapidly compared to wood mulches. When applied to a depth of 3 to 5cm, mulch will help keep the soil moist, prevent weed infestation, minimise temperature fluctuations in the soil, and, as they break down improve both the structure and nutrient content of the soil. Grass clippings are not a good mulch as they tend to mat together and form an impenetrable barrier, preventing water and air from reaching the plant's roots.

Top up your mulch every six months as a general rule, although it is only really necessary to mulch your spring patch. Don't mulch right up to the stems of your plants as this can cause collar rot. Leave a gap of a least 4cm around the stem and monitor. If you do mulch your autumn patch, check regularly for fungal disease over the cold winter months.

Mulching can increase the incidence of insect pests like weevils and earwigs, so set insect traps to deter them (Refer to the Garden pest section starting on page 33).

Frost and sun protection

Seedlings in particular can be badly damaged by extreme heat and overnight frosts.

If a hot day is forecast protect your produce by attaching shade cloth or even an old sheet to tomato stakes to shade them during the heat of the day. Likewise if frost is forecast, attach a cloth to stakes to protect your crop. You can also purchase 'cloches' from garden centres and hardware stores.

Garden health

Prevention is better than the cure!

Plant problems

Sometimes our plants don't grow or perform as we expected they would. Maybe a plant was expected to grow lushly in a shady spot but looks spindly and tired. It could even be covered with a black or white powdery bloom. A stone fruit tree with leaves thickened, curled or covered in orange pustules definitely suggests problems.

Before jumping to any conclusions you need to assess the situation. A tree losing leaves may simply be deciduous. A tree with drooping leaves may be thirsty (in summer) or waterlogged (in winter). Before you do anything:

- Confirm the plant's identity and check its position. Perhaps a sun loving plant is in a shady spot?
- Check out the soil. Maybe the plant roots are drying out or sitting in a swamp.
- Think about recent weather conditions. Could it be that high winds, hail, frost or scorching heat has damaged the plant?
- Does the plant show signs of a nutrient deficiency e.g. yellow leaves (Refer to pages 28-30).

Clean your secateurs by wiping the blades thoroughly with eucalyptus oil before moving between plants.

Garden hygiene

Many of the diseases that attack our plants do so because of poor garden hygiene practices. Make sure that you:

- Sharpen your pruning tools so cuts are clean and bark isn't torn.
- Clean your secateurs by wiping the blades thoroughly with eucalyptus oil before moving between plants.
- Prune diseased or damaged wood from trees before they cause bigger problems.
- Remove fallen leaf litter and infected fruit from around the base of trees.
- Avoid putting diseased leaves, fruit or other plant parts in your compost bin.
- Keep pest insects under control as they are often transmitters of viruses between plants.
- Minimise insecticide use so that natural predators are not harmed.
- Avoid using high nitrogen fertilisers that produce soft, sappy growth that is easily colonised by diseases.
- Source seeds and plants from reputable suppliers.

Crop rotation

There are many soil borne diseases that can become problematic in our gardens. Preventing these diseases is critical in vegetable gardens. Crop rotation is the practice of alternating vegetable plants between different garden beds on consecutive seasons.

No plant family should be repeated in the same bed on two consecutive years. If you grow solanums (tomato, eggplant, chilli, potato or capsicum) this summer you should not grow them again in that bed until two years have passed. This will reduce the risk of diseases that attack solanums from taking hold in the soil. It is okay to use that bed to grow a crop from a different plant family e.g. onion or garlic from the allium family.

Certain plants also act as soil fumigants. Brassicas (particularly mustards) are recognised for their ability to exude chemicals that are toxic to soil nematodes (microscopic roundworms) and harmful soil fungi. For this reason brassicas are often grown in beds that previously grew solanums. However, brassicas should then be rotated the following season/year as they too can succumb to soil borne fungal diseases that attack their family.

Keep a diary or blackboard in the shed to record what was planted when and where!

For further information on crop rotation and family groups visit: www.sgaonline.org.au

BACTERIAL WILT OF TOMATOES

WHAT: A soil borne bacteria that rapidly kills previously healthy looking plants. No obvious leaf discolouration but the inside of the plant stem is brown and decaying. When cross sections of the infected stem are placed in water they exude a milky sap.

AFFECTED: Solanum family (tomato, capsicum, chilli, eggplant and potato).

DAMAGE: Previously healthy plants wilt and die within a couple of days. Virulent in hot and wet summers.

CONTROL: Prevention is the only control available with this disease. Ongoing measures include:

- Sourcing clean seeds and plants from a reputable source.
- Practicing crop rotation to avoid a build up of bacteria in the soil.
- Follow a solanum crop with a mustard crop to fumigate the soil.

BLOSSOM END ROT

WHAT: A nutrient disorder due to a calcium deficiency caused by:

- Soil pH less than 5.5 (acidic).
- Insufficient water in the growing season.
- Waterlogged soil high in ammonium (smells sour).
- High nitrogen fertilisers have produced excessive leaf growth drawing calcium from the forming fruit.

AFFECTED: Tomato, capsicum, zucchini, pumpkin, melon and cucumber.

DAMAGE: Brown, sunken areas at the blossom end of fruit.

CONTROL: A number of methods can be used including:

- Test the soil pH before planting.
- Watering regularly and deeply. Do not overwater heavy clay soils.
- Mulch with straw.
- Grow in pots if drainage is poor.

6 common **plant problems**

POWDERY MILDEW

WHAT: A fungal disease that occurs in shady areas during warm, humid spring and autumn weather.

AFFECTED: Cucurbits (pumpkin, cucumber, zucchini and melon), grape, strawberry, apple and sage.

DAMAGE: Powdery white bloom appears on all plant parts.

CONTROL: This fungus can be controlled in a number of ways including:

- Avoiding high nitrogen fertilisers that produce soft, sappy growth.
- Spraying the infected plant with one part full cream milk to nine parts water when mildew appears.
- Spraying the infected plant with potassium bicarbonate.
- Applying water via drippers in the early morning.
- The Australian ladybird (*Illeis galbula*) feeds on powdery mildew without damaging the plant.

SOOTY MOULD

WHAT: A fungal disease that appears on plants under stress from insect attack e.g. scale and aphids. These insects produce honeydew secretions (frass) that allow the fungus to grow and reproduce on the affected plant parts.

AFFECTED: A wide range of plants.

DAMAGE: Plant appears covered in a black soot, particularly leaves and stems.

CONTROL: This fungus can be controlled in a number of ways including:

- Controlling insects that produce frass secretions e.g. aphids and scale.
- Frass producing insects are often protected by ants so consider banding the plant with sticky traps to prevent the ants from climbing up.
- Hosing the plant down with jets of water or wiping branches clean of fungus in young plants.

6 common **plant problems**

IRON DEFICIENCY

WHAT: Iron deficiency occurs for a number of reasons :

- Soil pH greater than 7.0 (alkaline).
- The soil temperature is too low.
- Plant roots are damaged or diseased.
- Lime has recently been added to the soil.
- The soil is waterlogged.

AFFECTED: Citrus and blueberry.
DAMAGE: Yellowing between leaf veins of young plants. In severe cases older leaves turn completely yellow.
CONTROL: A number of methods can be used including:

- Test the soil pH before planting. Apply sulphur to lower pH if too high (takes a long time).
- Avoid alkaline fertilisers such as poultry manures and mushroom composts.
- Apply iron chelates as a foliage spray (temporary only).

MAGNESIUM DEFICIENCY

WHAT: A magnesium deficiency occurs when the soil pH is less than 5.5 (acidic). More prevalent on sandy soils.

AFFECTED: Citrus and raspberry.

DAMAGE: Can be confused with an iron deficiency. The difference is that the older leaves are affected rather than the younger leaves. Yellowing occurs between the leaf veins and a V-shaped green area at the base of the leaf.

CONTROL: Magnesium deficiency is easy to correct:

- Spraying the foliage with Epsom Salts.
- Fertilising with a complete organic fertiliser in spring and autumn.
- Sprinkling a little dolomite of lime on the soil surface to raise the pH.

Garden pests

Your garden is a living place, green with the plants you like to grow and home to a wide variety of wildlife. Only a tiny fraction of wildlife that enters your garden could be considered pests and in fact the opposite will often apply.

Ladybirds, spiders, dragonflies, frogs, lizards and many birds are predators that hunt and eat the pest insects in your garden. Their presence is keeping everything under control. In an environmentally sustainable garden total pest control is never an objective.

Integrated Pest Management (IPM)

IPM is a system that manages garden pests by learning more about them and their role in the environment. Tolerance levels for pests are set and, if necessary, the most environmentally sensitive control methods are chosen to keep the pest activity below these tolerance levels.

These control methods may be a combination of:

- **Mechanical** e.g. hand removal of pests or by building barriers
- **Cultural** e.g. reducing fertilisers, planting repellent plants such as basil or decoy attractant plants such as alyssum
- **Biological** e.g. attracting predatory insects such as praying mantis or lacewings by planting flowering plants such as carrot and coriander
- **Chemical** e.g. spraying with botanical oils or natural soaps.

Ladybirds, spiders, dragonflies, frogs, lizards and many birds are predators that hunt and eat the pest insects in your garden.

Ladybird eating powdery mildew

Companion planting

Growing masses of any single plant species (a monoculture) will result in an infestation of a single garden pest species.

A healthy biodiverse garden will have a broad mixture of different plants that attract, feed and shelter beneficial and predatory insects, birds and lizards. Whilst these plants may play host to the predators, it is the pests that are the main food source of the predator. To keep predators in the garden some pest activity must be tolerated in return for chemical free pest control.

Some of the plants that attract predatory insects such as ladybirds, include alyssum, dill, coriander, cosmos, lemon balm, feverfew, marigolds, parsley, tansy and yarrow.

A healthy biodiverse garden will have a broad mixture of different plants

13 common **garden pests**

APHIDS

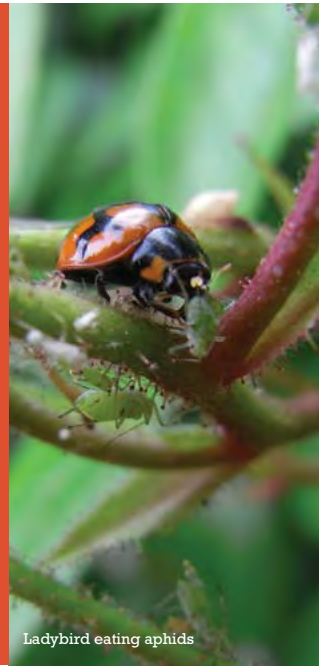
WHAT: A sap sucking insect that reproduces rapidly in spring and autumn. Aphids also transmit plant viruses.

AFFECTED: Stone fruit trees, apple trees, brassicas (broccoli, cauliflower, cabbage etc) and alliums (onion, leek, chive etc).

DAMAGE: Growing tips of plants become misshapen. Leaves, flowers and fruit are distorted. Yellowing and wilting can occur. Honeydew secretions appear leading to sooty mould.

CONTROL: Aphids rapidly develop resistance to chemical controls. Natural controls include:

- Squashing aphids by hand.
- Hosing off with a water jet.
- Spraying with a homemade garlic and oil spray.
- Using a botanical soap.
- Encouraging predatory insects e.g. ladybirds and lacewings by growing companion plants.



Ladybird eating aphids

CABBAGE WHITE BUTTERFLY CATERPILLAR

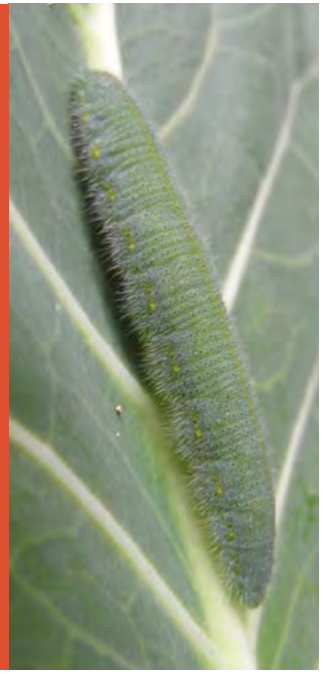
WHAT: The butterfly lays eggs on the underside of leaves. Caterpillars hide on leaf veins during the day.

AFFECTED: Brassicas including cabbage, cauliflower, kale, broccoli, brussel sprouts etc. Also rocket and Asian greens.

DAMAGE: Young seedlings lose most or all of their leaves.

CONTROL: Protect plants by using a variety of controls such as:

- Planting scented herbs e.g. mint, dill or sage nearby to mask the scent of brassicas.
- Planting white violas or placing eggshells amongst brassiacs to mimic other adult butterflies and act as a deterrent.
- Remove by hand.
- Covering bed with wildlife friendly netting.
- Spraying plants with *Bacillus thuringiensis* bacteria, a poison for caterpillars.



CITRUS GALL WASP

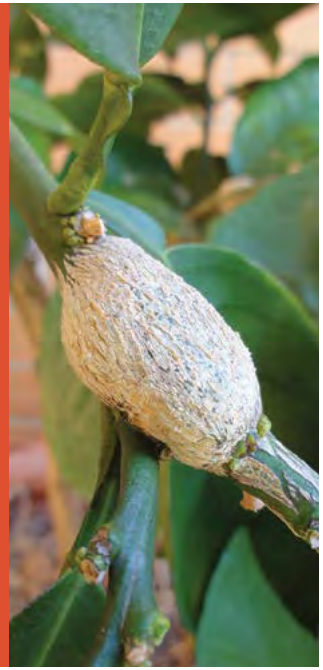
WHAT: A native insect that is a serious pest of citrus trees. The adult female wasp emerges from the gall in late winter and lays her eggs in the soft stem of the same tree. The larvae grow in the stems for 9-12 months until they pupate and reinfest the tree.

AFFECTED: Citrus trees.

DAMAGE: Infected trees defend themselves by forming calluses or galls around the growing pupae.

CONTROL: Difficult but damage can be minimised by:

- Avoiding high nitrogen fertilisers in late winter and spring.
- Removing all newly formed galls before the end of winter. Old galls have already been vacated by the adult wasps.
- Hanging yellow sticky traps on infected trees in late winter to trap emerging adult wasps.
- Destroying infected stems by burning.



CITRUS LEAF MINER

WHAT: The larvae of a moth that lives beneath the cuticle of the leaf.

AFFECTED: Citrus trees.

DAMAGE: Larvae tunnel in the soft underside of new leaves, particularly in late summer and autumn. Leaves appear silvered. Leaf rolling occurs just before pupation of the mature larvae into adult moths. Most damaging to younger trees.

CONTROL: Protect plants by using a variety of controls such as:

- Avoiding high nitrogen fertilisers.
- Removing infected leaves by hand and bagging.
- Spraying leaves with a botanical oil spray.

NOTE – Do not spray in high temperatures.

13 common **garden pests**

EUROPEAN EARWIGS

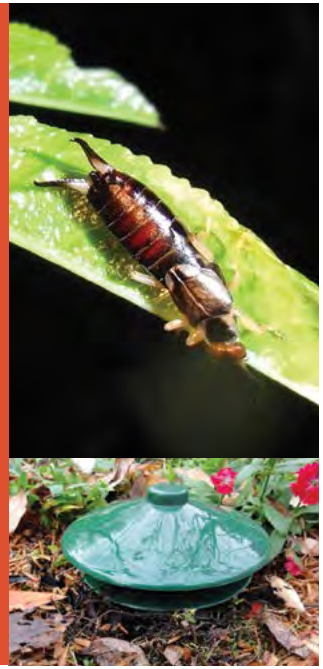
WHAT: Distinctive pincers on their rear. Active at night and hide in mulch during the day.

AFFECTED: Seeds and seedlings. Fruit trees. Note – also eat other insects, caterpillars and woolly aphids.

DAMAGE: Growing tips, stems, leaves, flowers and fruits are damaged. Seedlings are eaten leaving bare stalks. Leaf edges on older plants appear torn.

CONTROL: Trapping earwigs is the most effective control. Try:

- Filling upturned pots with scrunched newspaper and emptying each morning.
- Placing covered snail traps with fish or linseed oil in garden beds. Empty every few days.
- Putting rolled up newspapers in garden beds and empty daily.



MITES

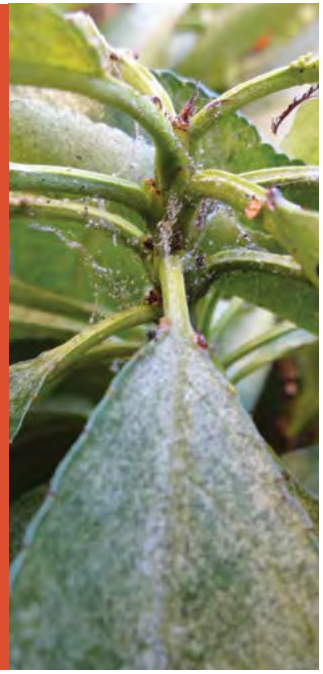
WHAT: Mites are tiny spiders that lay their eggs on the underside of leaves. Empty egg casings are easier to spot than the mites. Webbing on the tips of plants and silvering on the leaves are typical of mites.

AFFECTED: Most vegetables and fruit trees.

DAMAGE: Silvering appears on leaves before they go yellow and drop off. Plant looks tired and grimy.

CONTROL: :Natural controls include:

- Keeping plants clean by hosing down with a jet of water if mite presence is suspected.
- Removing infected leaves and plant parts.
- Using crop rotation.
- Cleaning up weeds and leaf litter around the plant base.
- Spraying with botanical oils and soaps.



PEAR AND CHERRY SLUG

WHAT: Muddy-green, slimy larva of a sawfly wasp. Eggs laid on leaves in late spring. Larvae feed on the leaves before dropping to the soil to pupate. Adults re-emerge the following spring.

AFFECTED: Pear, cherry, plum and quince trees.

DAMAGE: Larvae rasp across the upper leaf surface peeling off the cuticle.

CONTROL: Protect plants by using a variety of controls such as:

- Squashing or removing larvae with a gloved hand.
- Dusting leaves with a small amount of lime or potash when larvae first appear. Repeat a month later. Do not overuse as it may alter the soil pH.
- Hosing larvae off trees with a strong water jet. Immediately allow chooks to forage around and eat the fallen slugs.

SCALES

WHAT: There are many different types of scales. Each scale lives beneath its own hard, soft or fluffy 'bump' that appears on leaves and stems.

AFFECTED: Citrus, olive, bay and pear trees. Honeydew secretions also lead to sooty mould problems.

DAMAGE: Scales suck sap from the young plant tissue.

CONTROL: Early control of scales is effective through a combination of:

- Removing with a soft toothbrush or by flicking off.
- Spraying with botanical oils or soaps.
- Cutting off heavily infested plant parts and destroying.
- Encouraging predatory insects and small birds to your garden by growing companion plants e.g. marigolds.

13 common **garden pests**

SNAILS AND SLUGS

WHAT: Molluscs with or without shells. Active at night and hide in moist, shady places during the day.

AFFECTED: All leafy plants, particularly seedlings.

DAMAGE: Entire leaves or seedlings eaten. Larger leaves have holes in them or shredded leaves.

CONTROL: Natural controls include:

- Hand removal.
- Spraying plants regularly with black coffee.
- Sprinkling used coffee grinds around seedlings.
- Placing snail traps with beer or soapy water at soil level.
- Mulching beds with strong smelling herbs like mint.
- Creating barriers around plants with an exclusion band of copper tape.

WEEVILS

WHAT: Many different species of these long nosed insects. Females lay eggs in the soil in spring. Larvae pupate in mid-summer. Both feed at night and shelter during the day. Active all year.

AFFECTED: Vegetables, apple trees, cane fruit and brassicas.

DAMAGE: Larvae feed on the roots, adults on the leaves and stems of young plants. Causes scalloped edging on leaves or the death of seedlings.

CONTROL: Weevils can be difficult to eradicate from the garden as they live mainly in the soil. Control can be attempted by removing the feeding opportunities of the larvae. If weevils were evident last season try:

- Turning over the soil to disrupt the pupating larvae.
- Growing peas or beans in winter instead of brassicas.
- Allowing beds to go fallow for a season but take care to also prevent weeds from growing.

13 common **garden pests**

WOOLLY APHID

WHAT: A sap sucking insect that secretes a fluffy frass. Adults lay eggs in bark before winter. Can also live in the soil and feed on roots

AFFECTED: Apple trees.

DAMAGE: The sap sucking can weaken the tree and cause galls to form. Can also lead to sooty mould problems.

CONTROL: Ironically earwigs are a very effective predator of the woolly aphid.

If this is not an option try:

- Planting apple trees that are grafted onto M102 or MM106 rootstock. These are resistant to woolly aphids.
- Wiping off infestations with a soft cloth.
- Spraying with botanical oil.
- Painting colonies with methylated spirits.
- Encouraging predatory insects to your garden by planting companion plants e.g. marigolds.

WHITEFLY

WHAT: Sap sucking insects that appear in large numbers in early summer and die off in winter.

AFFECTED: Vegetables, particularly tomato, bean, zucchini, cucumber and pumpkin.

DAMAGE: Silvering of leaves potentially causing leaf curling and wilting of plants. Affects the vigour of the plant and fruit production. Also transmits plant viruses.

CONTROL: Whiteflies can be difficult to control because they swarm about when disturbed. Try:

- Hanging yellow sticky traps near infected plants.
- Vacuuming whiteflies from the plant.
- Using botanical oils. Effective but it can be difficult to make contact with airborne whiteflies.
- Encouraging predatory wasps by growing companion plants.

Queensland fruit fly (QFF)

Queensland fruit fly (QFF) populations have unfortunately been identified in the Bendigo region. QFF attacks a wide range of fruits and fruiting vegetables such as apples, stone fruit, citrus fruit, pear, tomatoes, grapes, capsicum, chillies, strawberries, avocadoes and eggplant. If left uncontrolled QFF can lead to significant crop losses for the home gardener and local agricultural industries.

QFF garden management

- Learn to recognise and visually inspect your fruit and vegetables regularly for signs of QFF.
- Grow only the amount of produce that you can manage and use .
- Protect your fruit trees and vegetables with exclusion netting.
- Use liquid protein traps when QFF infestations are high during spring, summer and autumn. This helps reduce populations of the female QFF.
- Maintain monitoring traps year round and inspect regularly for signs of QFF activity.
- Keep fruit trees well pruned, remove ripe fruit from the plant and ground.
- Solarise or freeze all infested fruit. To kill any larvae (maggots) place infested fruit into a strong plastic bag, double bag if necessary. Seal the bag and place in the sun for at least 3 days, up to a week in cool conditions (temperature below 30c). You can also kill larvae by freezing bagged fruit for up to two days.
- Once solarised or frozen, bagged fruit should be placed in your rubbish bin, not your compost or green waste bin as this may cause an infestation in another area.

Meet Ernie the fruit fly. View our informative videos at:
www.bendigo.vic.gov.au/fruitfly

Further advice is also available at **www.agriculture.vic.gov.au/agriculture/QFF**; **www.preventfruitfly.com.au;** and the Bendigo Fruit FlyAction Group facebook page.

Wildlife

Many birds, bats, rats and possums like to snack from our vegie patch on a regular basis. It is often a dilemma for gardeners who are happy to share some produce, but see red when an entire crop is taken out overnight.

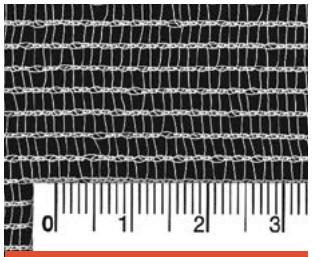
Tree netting is a popular way to protect fruit and vegies from wildlife, but the wrong type of netting can be deadly to native bats, birds, reptiles and small mammals.

Wrong loosely woven net

- If you use netting choose a densely woven net with a mesh size less than 1cm².
- Cover the whole tree and tightly secure your densely woven netting to the trunk of the tree or fixed to the ground.

Tree wrapped in netting

- Leave a couple of trees without netting to draw animals away from the netted trees
- Protect your groundcover fruits e.g. strawberries, with some hoops and firmly secured, densely woven netting.



Densely woven nets

- Remove nets promptly after fruiting to prevent damage to new growth.
- Check your nets regularly. If an animal is caught visit **www.fauna.org.au** to find a wildlife carer in your area.

Information and photographs supplied by Wildlife Friendly Netting.

For more information on Wildlife Friendly Netting visit **www.wildlifefriendlyfencing.com**

You can also purchase Fruit Protection Bags and cover individual fruit.Or recycle plastic, paper or orange mesh bags to protect fruit.

Some people discourage birds by using visual scare devices such as CDs, plastic owls and rubber snakes.

You need to move or change these around regularly to avoid wildlife becoming used to them. Also on the market are ultrasonic repellers, roost inhibitors and taste aversions.

There are a number of possum repellents on the market. However a study by Deakin University showed that these repellents have mixed results. For further information visit **www.depi.vic.gov.au** and search 'possums'.

You can attach collars (ring of hard plastic or thin metal) to protect fruit trees.

You can also build a floppy fence around your vegie patch. Use 80cm wide heavily galvanised chicken wire, bury the bottom 20cm and support the remainder on lengths of flexible, high tensile fencing wire. Bend the wire to curve the upper section outwards. When the possum attempts to climb the fence it will bend over and then spring back. Another option is to make portable wire frames to cover your prize crops.

You can attach collars (ring of hard plastic or thin metal) to protect fruit trees.

Preparing for harvest

The fun part!

Seeds or seedlings?

Seeds:

- Are much better value than seedlings.
- You can collect and store your own seeds at the end of each growing season.
- Certified organic and untreated seeds are now relatively easy to obtain.
- Unusual or heritage varieties are often only available by seed.
- Some seeds can be grown directly in the soil but others need to be grown first in seed trays and transplanted.
- Hot weather can prevent germination of autumn seeds or give a poor germination rate.
- Some seeds have naturally low viability and germination rates. Check the packet for details.
- Seeds sown too thickly will need thinning out.

Seedlings:

- Easier and less time consuming than growing from seed.
- Gives you a 'kick start' into the season. May save up to 6 weeks of growing time.
- Allows you to grow only what you need thus minimising wastage.
- Can be difficult to obtain organic vegetable seedlings or unusual varieties.
- Plants may suffer from transplant shock if not properly removed from punnets.

Annuals or perennials?

Annuals are plants that are grown for one season and need to be replaced the following year unless they self-seed e.g. tomatoes. Perennials are plants that grow in your garden for a number of years e.g. rosemary. Perennials can be planted in ornamental garden beds, but annual vegetables are usually planted in a dedicated vegie garden. This is because they tend to require higher amounts of water and fertiliser, and have a fast turnover that will cause soil disturbance that may result in damage of the root zone of permanent plants.

Perennials can be planted in ornamental garden beds.

Annual seedling planting guide

PLANT	J	F	M	A	M	J	J	A	S	O	N	D
Asian Greens*	●	●	●	●	●	●	●	●	●	●	●	●
Asparagus				●	●	●	●	●	●			
Basil*	●	●									●	●
Bean* (summer)	●									●	●	●
Beetroot	●	●	●						●	●	●	●
Broad Bean*			●	●	●	●	●	●	●			
Broccoli	●	●	●	●	●	●	●	●	●	●	●	●
Brussel sprouts	●	●	●	●								●
Cabbage/Kale	●	●	●	●	●	●	●	●	●	●	●	●
Capsicum										●	●	●
Carrot*	●	●	●						●	●	●	●
Cauliflower	●	●	●	●	●	●					●	●
Celery			●	●				●	●	●	●	
Chilli										●	●	●
Coriander		●	●	●	●	●	●	●	●	●	●	
Cucumber	●									●	●	●
Eggplant											●	●
Endive	●	●	●	●	●	●	●	●	●	●	●	●
Globe Artichoke			●	●	●	●	●	●	●	●		
Leek	●	●								●	●	●
Lettuce	●	●	●	●	●	●	●	●	●	●	●	●
Onion					●	●	●	●				
Parsley	●	●	●	●	●	●	●	●	●	●	●	●
Parsnip*	●	●	●						●	●	●	●
Pea*			●	●	●	●	●	●	●	●		
Potato								●	●	●	●	●
Pumpkin	●									●	●	●
Radish*	●	●	●	●	●	●	●	●	●	●	●	●
Rocket	●	●	●	●	●	●	●	●	●	●	●	●
Silver beet	●	●	●	●	●	●	●	●	●	●	●	●
Spinach				●	●	●	●	●	●			
Spring onion	●	●	●	●	●	●	●	●	●	●	●	●
Sweet corn	●										●	●
Tomato										●	●	●
Zucchini										●	●	●

*Best grown from seed

Home grown favourites

Autumn

Plant as seedlings or seed which you have propagated into seedlings by autumn.

Pea - Snow, Sugar snap and Garden

- Likes plenty of sun, a fertile, well drained soil and a pH of 6.5 to 7.5. Add a little dolomite or lime to the soil at planting.
- Prefer temperatures below 20°C for germination and growth.
- Can be ready to start picking in 10 to16 weeks. Snow peas bear earlier than Sugar snap peas. Repeat sow every 4 to 6 weeks for an extended season.
- Climbing varieties are more productive than the bush varieties, but will need an upright support.
- Companion plant: carrot.

Spinach - English and European

- Likes a fertile, well drained soil and a pH of 6 to 7. Plants dislike excessive root disturbance at all stages.
- Prefers temperatures below 20°C for germination and growth. Warm temperatures will give poor results.
- Apply liquid fertiliser and ample water throughout the growing season.
- Ready to pick at 8 weeks. Pick leaves as needed for a continual harvest. If removing spinach heads, leave stems to re-sprout.
- Will run to seed in warm weather.
- Companion plant: strawberry.

Winter Lettuce - Mignonette and Mesclun

- Need a warm, sunny, position. Choose cold hardy varieties. Seeds will not germinate over 30°C. Growth will slow in cold temperatures.
- Heavy feeder – likes a rich, moist, well drained soil, pH of 6 to 7.
- Can be ready to start picking in 6 to 8 weeks. Pick only leaves as needed for a continual harvest or repeat sow.
- Lettuces can become bitter if water stressed so apply ample water and regular liquid fertiliser during growing period.
- Can also be grown in pots, but do not allow to dry out.
- Companion plant: celery.

Beetroot and Silverbeet

- Likes a moist, well drained soil with a pH of 6.5 to 7. Add a little dolomite or lime to the soil at planting. Avoid using high nitrogen fertilisers.
- Seeds benefit from soaking in warm water for a couple of hours prior to planting. Beetroot seedlings must be thinned as needed to allow for good root development.
- Beetroot and/or silverbeet should be ready to pick in 4 to 6 weeks.
- Beetroot will be tough if water stressed or over mature. Apply ample water during the growing period and harvest at 10cm root width.
- Companion plant: onion.

Carrot and Parsnip

- Light feeder – too many nutrients will produce excessive top growth at the expense of the roots.
- Likes a deep, loose friable soil with a pH of 6.0 to 7.0. Build up beds in clay soil areas.
- Root crops can be slow to germinate, so keep weeds down to prevent competition with young seedlings as they emerge. Carrot seed should be sown late in the season.
- Thin out young plants to allow for the development of larger root size.
- Companion plant: pea.

Asian Greens – Chinese Cabbage, Bok Choi and Pak Choi

- Generally faster growing than European varieties.
- Heavy feeders so plant after legumes.
- Likes plenty of sun and a well drained soil with a pH of 6.0 to 7.0.
- They are shallow rooted so need ample water and frequent feed of liquid fertilisers.
- Outer leaves can be picked as needed for continuous harvesting but do not defoliate.
- Companion plant: lettuce.

Cabbage, Cauliflower, Kale, Broccoli and Brussel sprout

- Heavy feeder – likes a rich, well drained soil with a soil pH of 6.5 to 7.5.
- Prepare beds well with aged compost and add dolomite or lime for calcium.
- Mound the soil around plants to support leggy growth.
- Apply ample water during the growing season and feed weekly with a liquid fertiliser.
- Brassicas will run to seed and heads fail to form if weather is too warm at harvest time.
- Heads can be harvested at between 10 and 14 weeks.
- Companion plant: dill.

Home grown favourites

Spring

Plant as seedlings or seed which you have propagated into seedlings by spring. Do not plant out until the winter frosts in your area have finished.

Tomato

- Need a warm, sunny, position but never in the same spot as the previous season.
- Large varieties are heavy feeders but small cherry tomatoes are less fussy.
- Calcium deficiency can be prevented by adding dolomite or lime or gypsum to the soil prior to planting.
- Prefers a soil pH of 6.0 to 6.8.
- If using seedlings plant up to the first set of leaves to encourage root development. Support large plants with stakes.
- Pinch out top growth to encourage more lateral growth.
- Apply liquid fertiliser and ample water.
- Companion plant: basil.

Capsicum and Eggplant

- Cultivation is similar to tomatoes but need good airflow.
- Calcium and magnesium deficiency can be prevented by adding dolomite or lime to the soil prior to planting.
- Prefers a soil pH of 5.8 to 6.8.
- Apply liquid fertiliser and ample water throughout growing season.
- Shade on days of extreme heat.
- Pick capsicum at desired stage of ripeness.
- Individual eggplants should produce 8 to 10 fruit.
- Companion plant: bean.

Cucumber

- Heavy feeder - likes a rich moisture retentive soil.
- Prefers a soil pH of 6.0 to 7.0.
- Seed can be sown directly into warm soil. Important to choose a variety to suit your climate.
- Quick to grow and ready to harvest in 6 to 8 weeks.
- Can be grown up a trellis or in pots.
- Pinch out the top growth to encourage laterals.
- Each plant produces 8 to 10 fruit.
- Companion plant: corn.

Pumpkin

- Often appears as a 'volunteer' crop when using home made compost.
- Heavy feeder – likes a rich, well drained soil. Can become rampant.
- Prefers a soil pH of 5.5 to 7.0.
- Can be grown on mounded beds or on a trellis.
- Apply ample water during the growing season.
- Has both male and female flowers so pollination by bees or by hand is necessary.
- Harvest when top stalk dries and hardens.
- Companion plant: eggplant.

Bean

- Replaces nitrogen in the soil after a heavy feeder crop. Add some blood and bone to the soil before planting.
- Likes plenty of sun and a well drained soil.
- Prefers a soil pH of 6.5 to 7.5.
- Can be ready to start picking in 10 weeks. Sow repeatedly every 4 to 6 weeks for an extended season.
- Climbing varieties are more productive than the bush varieties but will need a trellis support.
- Companion plant: broccoli.

Leafy vegetables e.g. Lettuce, Rocket and Mesclun

(as per Autumn planting)

Root vegetables – Carrot, Parsnip and Beetroot

(as per Autumn planting)

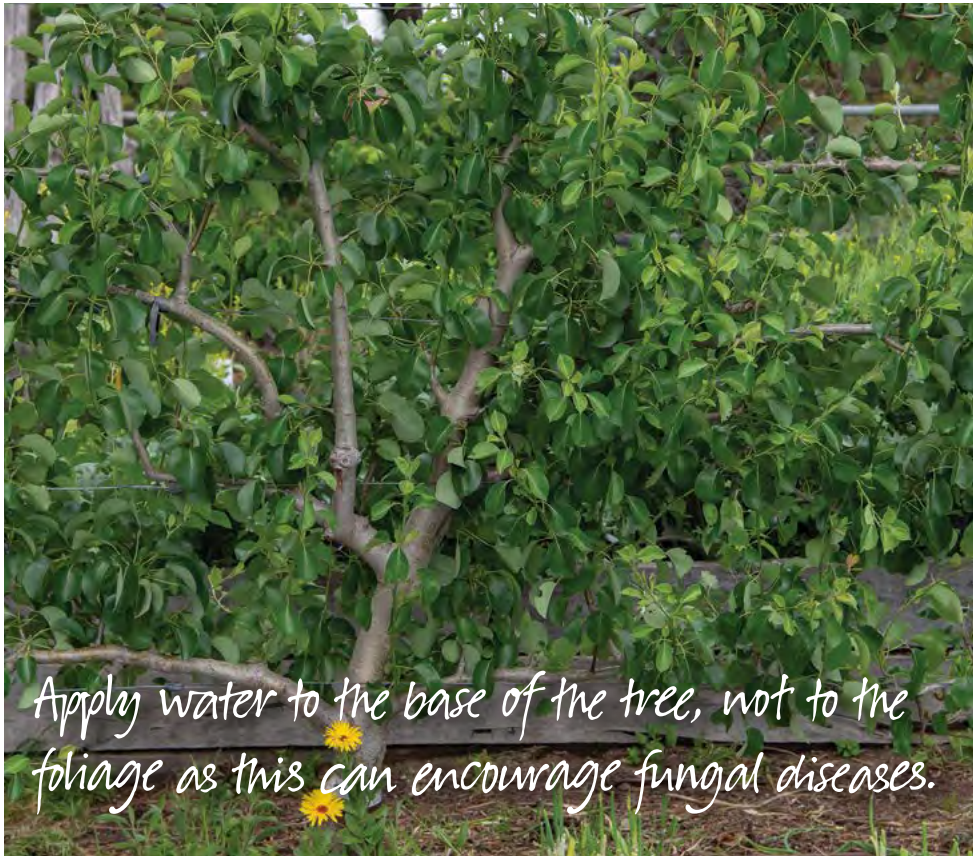
Sweet corn

- Heavy feeder so plant after legumes.
- Likes plenty of sun, water and a well drained soil.
- Prefers a soil pH of 6.0 to 7.0.
- Has male and female flowers that are wind pollinated.
- Grows to about 1m in height.
- Beans are traditionally grown with corn as the beans provide nitrogen and the corn provides support.
- Companion plant: bean.

Fruit trees

If your long term garden plan includes permanent fruit trees, then plant them first.

- All fruit trees require plenty of sun and good drainage.
- Select dwarf varieties if you have limited space or want to use pots.
- Be aware that some fruit trees require cross pollination to flower and fruit i.e. two apple trees. Ask at your local garden centre before you purchase your tree/s.
- Deciduous fruit trees such as pears, apples, peaches and plums are best planted in winter when they can be purchased as bare rooted.
- Evergreen fruit trees such as lemons, limes and oranges should be planted in spring when the soil has warmed up.



Planting techniques

Bare rooted plants

- Trim bare rooted trees by about a third, removing any weak, damaged or overlapping growth.
- Check for damage or diseased roots and trim back.

Potted plants

- Choose young, well shaped plants that have not outgrown their pot size.

All plants

- Soak your fruit tree in a bucket of water for about two hours prior to planting. A mild seaweed solution or compost tea can also be added.
- Dig a hole in prepared soil to a depth of the plant pot and twice the width. Use a stick to check the depth. The hole should have rough edges.
- Fill the hole with water and allow to drain naturally.
- Place the plant in the hole and backfill with soil creating a slight 'saucer' depression at the base of the plant to direct water to the base of the plant.
- Water well. Do not stomp around the roots as watering will remove any air pockets.
- Mulch with a straw-based mulch.

Preventing fruit tree problems

- Do not overfeed your trees with high nitrogen fertilisers. This produces soft, sappy growth that pests and diseases love.
- Apply water to the base of the tree, not to the foliage as this can encourage fungal diseases. Apply water via driplines.
- Regularly check that your mulch is pulled back from the trunk of the tree to prevent collar rot.
- Deciduous stone fruit trees need a winter wash to break any disease cycles such as peach leaf curl.

For more information visit: **www.sgaonline.org.au** and search 'winter wash'.

Espaliering trees

Espaliering trees is a way of making them two-dimensional rather than three. That is maintaining the height and width of a plant, while reducing the depth. It's also a great way of maximising the productivity of a warm sunny spot along a wall or a fence. Effectively, it means you can grow what is normally a big tree (or two) in a much smaller space.

Site preparation

First of all select a nice, sunny spot as almost all trees (especially fruiting ones) will perform best in this type of location (north facing walls are fantastic). Attach either wires, or pre-fabricated trellis frame to the face of the structure, making sure the fence/wall/shed can tolerate some weight as it will be supporting a tree. Generally the easiest and most common type of espalier is a three wire system, where the wire is attached to the structure and spaced about 30-50cm apart. If the fence or wall is prone to getting particularly warm (bricks or colourbond/galvanised steel) you may need to build a trellis frame and sit this about 30cm in front of the surface, as this will stop the plant from cooking in the summer heat.

The process

Select a tree that lends itself to being grown ''flat'', meaning that it has two nice strong horizontal branches, and a strong, straight trunk. Prune back any unnecessary branches and twigs. Also cut back the remaining branches to encourage new growth, which is important if you want the tree to fruit. The middle stem (or central leader) should be allowed to eventually reach the top wire, or wherever you would like the top of your espalier to be, but, when planting, cut this middle stem back to the second wire, leaving buds facing the wire. These will become the next ''layer'' of branches next season. Repeat this in the third season, cutting back the central stem to the third wire, and so on. The branches then need to be attached to the wire or trellis, using flexible clips or old stockings. Ensure you do not do these up so tight that you amputate the branches or trunk.

Ongoing care

Generally, fruit trees are pruned back quite hard over winter, to promote growth and fruit production come spring. This is no different with espaliered trees, although a couple of light prunes during the warmer months (growing season) will also assist in maintaining and training, and should result in a great looking espalier in years to come. Just be aware that some fruit trees bear their fruit on 2 to 3 year old wood, so don't get too enthusiastic and cut off all your fruiting wood.

First of all select a nice, sunny spot as almost all trees (especially fruiting ones) will perform best in this type of location.

Chickens

A few hens in the backyard provide an excellent source of eggs and fertiliser for the garden, plus they love kitchen scraps and garden waste. There are a few things to consider before setting up your hen house…

Council regulations

Within the residential areas of the City of Greater Bendigo you can have up to ten poultry on your property without requiring a permit. If you would like more hens and/or a rooster you will need to apply for a permit. You can download a permit application form from the City of Greater Bendigo website: **www.bendigo.vic.gov.au** . Search 'Local Law 2: Keeping of Animals'. Section 11 refers to the keeping of poultry.

If you live in the rural zone (not including farming) you can keep two roosters and ten hens without a permit.

Please note, it is not permissible to keep poultry in a multi-dwelling unit or multioccupancy residential building.

It is also a good idea to talk to your neighbours about any concerns they may have.

Housing

Chickens are not particularly demanding, but there are a couple of accommodation necessities that need to be considered and constructed prior to the arrival of your girls! Firstly, chickens need to have a house with a comfortable perch that gives them somewhere to roost at night and a place to shelter. Ideally the chook house should allow about 0.5m² of floor space per hen, as well as 23cm of perch for each bird. While you are designing your hen house, remember to incorporate some nest boxes at a rate of one box for every three hens. Line the base with shredded paper and straw and be sure to clean it out regularly.

Your hen house will need to be attached to a 'run', an area where your hens can scratch, feed and roam. A decent rule of thumb is to give your hens about 1m² space each as a minimum. This can be smaller if you plan to let them wander about in the garden regularly. The run should have dirt for a dirt bath, food and water feeders, and a permanently shaded area.

A secure run is essential to keep your chickens in and vermin (foxes, cats and rats) out. Make sure your wire is buried at least 15 cm under the ground and flared outwards.

Ongoing care

You need to ensure your chickens have fresh, clean water in containers that they cannot knock over. Chicken pellets and grain should be stored in vermin proof containers outside your house and excess food such as kitchen scraps removed so as not to attract vermin. Excess droppings in your hen house should be raked up regularly and used as garden fertiliser once they have aged.

Chickens will eat most food scraps but you should avoid giving them the following: avocado, raw potatoes, raw peanuts, dried beans, raw meat, chocolate (!), rotten food and some garden plant leaves such as eggplant, capsicum, tomatoes and potatoes.

Chickens in the garden

Left to free range in the garden, your hens can wreak havoc, especially when there are young seedlings in the patch. Chooks love nothing more than to scratch in some fresh mulch while they hunt for worms, and show little regard for your precious plants. That said, they are fantastic at the end of the growing season in the vegie patch because they will turn the whole lot over, while pulling out the remains and adding fertiliser as they go.

More established vegie patches can benefit from poultry patrol, particularly if you have insect issues and weed worries, and unless the plants are sensitive (e.g. lettuce and spinach) the hens will give them a miss. Sensitive plants can be fenced off with a temporary barrier to prevent attack from roaming hens.

For more details on keeping chickens and council regulations visit: **www.bendigo.vic.gov.au.** Search 'Local Law 2: Keeping of Animals'. Section 11 refers to the keeping of poultry.

Chicken manure fertiliser

Soak aged droppings (plus straw and any garden weeds) in a covered bucket of water for a couple of weeks. Strain and use the liquid to make up a fertiliser tea. Be sure to dilute to a 'weak tea' colour to avoid over fertilising.

Bees

Bees perform the important role of cross-pollinating plants as they collect pollen and nectar. This results in bountiful harvests of fruit and vegetables. The survival of bees is important to our own food security.

There are two main groups of bees in the Bendigo region. The European honey bee was introduced to Australia for honey production almost 200 years ago and is frequently seen buzzing around from flower to flower in the garden. A large and diverse group of native bees may also be seen pollinating plants in your garden. Native bees include the Blue-banded, Resin, Sweat, Reed and Leafcutter bees. Native bees are quite different to honey bees. They are often solitary and nest alone. A single female bee will build a small nest in a burrow in the ground or burrows in soft timber, rock crevices or in tunnels left behind by wood-boring beetle larvae. Some such as the Blue-banded bee are buzz pollinators, vibrating their bodies at exactly the right frequency to cause pollen release. In this respect, they may be better pollinators than honey bees.

Since the 1990's the world's bee population has been in serious decline. Pesticides, disease, habitat loss and climate change are believed to be the main cause of this concerning situation. Bees are active from dawn to dusk particularly in the warmer months. They are highly vulnerable to garden chemicals, even pyrethrum, so avoid using them if you want bees in your garden.

To attract bees and other pollinators to your garden you need to incorporate a wide range of flowering plants such as rosemary, oregano, tomatoes, strawberries, cucumber, capsicum and pumpkin. Nearby beds could include a mix of salvias, geraniums, sunflowers and zinnias that will also attract bees. The more flowering plants the greater the attraction for bees.

Support native bees by installing a bee hotel in your garden. For details visit: **www.backyardbuddies.org.au/habitats/build-a-bee-hotel**

Support your local beekeepers and purchase locally produced honey. Prue 'liquid gold' that hasn't been commercially diluted!

Interested in taking up beekeeping as a hobby? First of all visit the following website to find out what's involved and requirements under the Apiary Code of Practice: **www.agriculture.vic.gov.au/agriculture/livestock/honey-bees#guide**

Contact the Victorian Apiarists' Association website for current local contact details.
www.vicbeekeepers.com.au

Bee hotels

Blue-banded bee (FM)

European honey bee

Clay bee hotels

Chequered Cuckoo bee (MJS)

Beyond the garden...

Gardening fun doesn't stop at your fence.

Prolonging your harvest

Some fruits, vegetables and herbs store well for months if they are kept in the right conditions. Freezing, drying, pickling and bottling are all great options to utilising produce months after harvesting.

Freezing

Freezing is a quick and easy way to preserve your harvest.

Vegetables:

- Blanch vegetables first (briefly boil them, then plunge into ice water).
- Freeze into useable quantities so they can be easily defrosted.

Fruit:

- Freeze into useable quantities so they can be easily defrosted.

Herbs:

- Rinse the leaves, allow to dry.
- Place in a bag and freeze.
- You can also blend herbs with olive oil to make a paste and then freeze in an ice-cube tray.

Fresh storage tips

It happens to all of us – you buy fresh produce and put it in the fridge only to find a sad, shrivelled vegetable when you remember it several days later. To avoid throwing it out, it's important to know where to store fruits and vegetables and also which foods to keep separate from each other. Some fruits give off ethylene gas (a hormone emitted by produce when it ripens), which can make other produce ripen and rot faster. Produce that is sensitive to ethylene will deteriorate quickly if stored nearby.

Ethylene-producing	Ethylene-sensitive
Apricots	Apples
Avocados	Asparagus
Bananas	Broccoli
Kiwis	Carrots
Mangoes	Cucumbers
Nectarines	Eggplants
Peaches	Green beans
Pears	Lettuce and other greens
Plums	Potatoes
Tomatoes	Watermelons

Money saving tip

Many vegetables will come back to life if left in a bowl of very cold water. Even the saddest silverbeet, salad mix and floppy carrots can re-crisp overnight. Storing carrots in water will keep them crisp for a long time and prepped carrots, celery and capsicums kept in a container of water will be lunchbox-ready all week.

Get connected!

Gardening is one of the most popular hobbies in Australia, and many people are keen to grow fresh, organic produce.

Connecting with other food growers in your community is a great way to swap excess produce, source seeds, buy fruit and vegies that you aren't growing, share knowledge and ideas and make new friends. You can join a community garden or local food swap. Volunteer at a school kitchen garden, Neighbourhood House vegie garden, or food focused community group.

Support your local farmers' market or fresh food traders. You can also consider coordinating with your neighbours e.g. if you want fuji apples you need two fuji apple trees to cross pollinate. Bees have no problem crossing the back fence if you don't have enough space to grow two trees.

swap
learn
eat
support
grow
buy
food

Community groups, organisations and networks

Bendigo Regional Food Alliance Inc.

The Bendigo Regional Food Alliance (BRFA) aims to create a healthy, sustainable, local food system through enabling the community to grow, source, cook and share healthy local produce within the region. The group is made up of local food producers and growers, distributors, retailers, food recovery, local government, social entrepreneurs and interested community members who share the vision of supporting our local food system. New members always welcome. The BRFA website also acts as an interactive community food information portal via the website: www.brfa.org.au/

Bendigo Region Fruit Fly

This closed Facebook group aims to share information, success, failures, helpful tips and all things fruit fly for the Greater Bendigo region. Simply search: 'Bendigo Region Fruit Fly' to find the group's page, then click 'join group'.

Food Fossickers

Through education, networking and marketing, Food Fossickers supports producers, growers, retailers and consumers to put local food on local plates. Website: www.foodfossickers.com.au

Bendigo Sustainability Group

The Bendigo Sustainability Group is made up of local people and businesses interested in all aspects of sustainability. Their goal is to create a supportive culture for understanding, inspiration, action and hope from which the wider Bendigo community can grow a sustainable future together. Website: www.bsg.org.au

Produce Swap Bendigo

Produce Swap Bendigo is a Facebook page which connects local people to facilitate swapping of home grown fruit, vegetables, preserves, eggs and meats! Simply search: 'Produce Swap Bendigo' to find the group's page, then click 'join group'.

Farmers' markets and produce sales

Farmers' markets and produce sales are where farmers and local food producers sell their produce directly to consumers. They serve not just as a place for farmers and producers to get the best price and consumers to get the best products, but as venues for producers and consumers of food to come together, forge relationships and exchange ideas. For more information, visit the Victorian Farmers' Market website: www.vicfarmersmarket.org.au

Bendigo Community Farmers Market

Held on every second Saturday of the month, in Sidney Myer Place from 9 am to 1 pm and every fourth Thursday of the month (except December, when it's the Thursday before Christmas) in the Hargreaves Mall, Bendigo from 3 to 6 pm. Regional food, wine, coffee, tea, plants, cooking sessions, music and loads more. **www.bcfm.org.au**

PepperGreen Farm

Held every Saturday from 10 am – 2 pm, the community market offers visitors the chance to purchase a range of hand grown produce, food, handmade crafts and treats unique to the Central Victorian region.

Positioned on the Village Green within the Peppergreen Farm tourist precinct, the market has a relaxed atmosphere often enlivened by local performers. Website:
www.peppergreenfarm.com.au

Bendigo Showgrounds Market

Held every Sunday from 8.30 am to 2 pm at the Prince of Wales Showgrounds in Holmes Road, Bendigo; the market is one of country Victoria's best. Come along and enjoy the family atmosphere, free admission and ample free parking all just five minutes from the City Centre. Local produce stalls onsite. Website:
www.bendigoshow.org.au

Community gardens

If you do not have a space to grow your own produce or you would like to be a part of a collective, a community garden may be perfect for you. Individuals can either have access to their own plot or share a plot with others to grow food to share. Get involved in your local community garden today at the following locations:

Gravel Hill Community Garden

2 Bramble Street, Bendigo
Contact: Salvation Army
Tel: (03) 5440 8410

Karen Community Garden

26 Myers Street, Bendigo (at rear)
Contact: St Andrew's Uniting Church
Tel: (03) 5441 3100
Email: standrewsbgo.axe@gmail.com

The Old Church on the Hill Community Garden

Cnr of Russell and Harkness Streets
Contact: Old Church on the Hill
Tel: 0458 290 402
Email: info@theoldchurchonthehill.com

Quarry Hill Community Garden

60 Havlin St West, Bendigo
Contact: Community of Christ
Tel: (03) 5447 3199

come together, forge relationships, and exchange ideas.

Hope... It Grows, Long Gully

153 Eaglehawk Road, Long Gully
Contact: St Mathews Church
Tel: (03) 5442 2659

Long Gully Community Garden

Energetic Street, Long Gully
Contact: Long Gully Neighbourhood Centre
Tel: (03) 5442 1165

MADCOW Community Garden

Brazier Street, Eaglehawk
Contact: Bendigo Baptist Church,
Tel: (03) 5449 3033

Kangaroo Flat Community House

21 Woolcock Avenue
Contact: Kangaroo Flat Community House
Tel: (03) 5447 9687

Heathcote Community Garden

55 Hospital Street, Heathcote
Contact: Heathcote Community House
Tel: (03) 5431 0930

Heathcote Sensory Garden

39 Hospital Street, Heathcote
Contact: Heathcote Community House
Tel: (03) 5431 0930

Community wicking boxes

The Bendigo Regional Food Alliance have placed water efficient wicking beds in public places for communities to access. Residents can help grow and access fresh, local produce from the wicking boxes located out the front of: The Discovery Centre, The Good Loaf, Bendigo Library, Lyttleton Terrace and LaTrobe University Bendigo (within the grounds).

Involving your children in the garden

Creating a home garden provides new opportunities to grow, cook and eat food together as a family. Involving children in the home garden has many benefits including promoting:

- A willingness to try new foods and experience new flavours and textures
- An appreciation of where our food comes from
- A practical understanding of environmental sustainability
- Enjoyment of physical activity

Many schools also have school vegetable gardens that may be open for anyone to use or volunteer at. For help starting or improving a school vegetable garden, check out the City's community grant options: **www.bendigo.vic.gov.au/Services/Community-and-Care/Community-grants**

CITY OF GREATER BENDIGO

Further information / Contact us

City of Greater Bendigo
195-229 Lyttleton Terrace, Bendigo
Postal PO Box 733, Bendigo 3552

Telephone 5434 6000

Hearing or speech impaired?
Call us via the National Relay Service
on 133 677

Email requests@bendigo.vic.gov.au

Website www.bendigo.vic.gov.au

After Hours/Emergency Number
5434 6000

Operating Hours (Main Office)
8.30am - 5:00pm, Monday to Friday

Home Grown