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Contents

Why Grow Your Own Produce?2
A Home Food Garden4
Organic Garden Systems 5
Planning6
Building Your Food Garden 10 Raised Garden Beds Existing Garden Beds Containers
Soil
Fertilisers
Compost
Worm Farming20
Mulch 22
Watering
 Planting
Crop Rotation
Annual Planting Guide for Seedlings34
Home Grown Favourites (autumn)
Home Grown Favourites (spring)40
Home Grown Favourites (spring) 40
Pests and Diseases44
Pests and Diseases



Why Grow Your Own Produce?

The creation of local food systems is an important step in the development of more sustainable communities. Home produce gardens are an integral part of this process.



Rewarding Educational Healthy

Home produce gardens provide individuals and families with food that

- can be grown successfully in the local soil and climatic conditions
- is seasonally appropriate and naturally ripened
- uses less water, energy and chemical inputs than crops grown in large scale monocultures
- reduces food miles and eliminates energy associated with packaging and transportation.

Home produce gardening can also bring

- increased physical and mental well being
- improved diet and nutritional outcomes
- a greater connection with the local community through a common activity and purpose
- support for and from local businesses
- cost savings in a time of rising food prices.

Because it's....

- fun
- healthy
- educational
- · rewarding.

And it's easy.....you just need

- a little knowledge
- a lot of enthusiasm
- some help along the way!



A Home Food Garden

It doesn't have to conform to any 'system' but you should aim to design and manage your garden sustainably.

- Choose natural and organic soil improvement regimes.
- Create plant diversity to minimise pests and diseases.
- Practice crop rotation and plant hygiene to prevent diseases.
- Comply with local water regulations or capture rainfall onsite.
- Prevent uncontrolled seed dispersal by wind, birds or animals.
- Avoid water, chemicals or fertilisers from leaching off site.
- Choose products that are sourced sustainably.

Organic Garden Systems

Most home produce gardeners aim to grow healthy, nutritious food, without the use of artificial chemicals and fertilisers.

Generally home gardeners are not purists and will tolerate some inputs that would not be allowable in stringent 'certified' organic operations.

For truly organic gardening inputs look for legitimate certified organic symbols on gardening products.









Check the SGA Green UP product guide for an extensive range of low environmental impact horticultural products.

Planning

Do a site analysis.

Identify the garden's:

- sunny and shady spots - these can differ in winter and summer (remember most produce performs best in full sun)
- deciduous treesyours and your neighbours
- sheltered areas and wind tunnels
- micro-climates
 (local isolated
 zone where the
 climate differs from
 the surrounding
 area) created
 by buildings and
 existing vegetation
- site drainage and any water logging areas
- soil pH in different areas of your garden.

Think about the physical location and ease of access to the produce garden.

Should it:

- be close to the house for gathering vegetables, fruit and herbs when desired?
- include raised garden beds for older people or those with poor backs?
- have nearby storage areas for tools and equipment?
- be close to the compost heap or worm farm for managing waste and accessing the end compost?
- include tanks for storing rainwater?
- include a propagating area?

Be realistic about the limitations of your garden size.

Consider:

- mixing in produce plants with ornamental plantings
- using containers, pots and hanging baskets
- incorporating vertical plantings such as climbers and vines
- using food producing hedges or espaliered (formal pruning to increase horizontal growth) trees along walls or instead of fences.



Example of a Garden Plan

Start small... but plan big!

Be realistic and decide what vou would like to achieve this year, next year and in the next five or 15 years. Identify your limitations with regard to time, space, water and money. Turn any problems into solutions - know what you've got and aim to work with it.





Decide whether you would like to:

- create a dedicated garden area for long term use
- modify your existing garden to include produce
- start small with containers and pots

... or a combination of all three!

Consider the depth of your beds

How deep the soil of your produce garden is will affect what you can grow. If the soil in your veggie garden is 30cm deep you can grow leafy produce, climbers, low growing bushes and dwarf fruit trees, but not root vegetables or large fruit trees. If your soil depth is in excess of 100cm you can grow all types of home produce.



Raised Garden Beds

How to create one in 10 steps:

- 1. Locate on a level spot that benefits from full sun, as most veggies like this best.
- Consider pedestrian access and whether the spot can be used permanently. Once full, moving the garden bed will be difficult.
- **3.** Mark out and form the walls, these should be at least 30cm high. You can use anything including old rocks, sleepers, bricks, blocks or pavers.
- **4.** If using timbers check out **www.sgaonline.org.au** and search "sustainable timbers".
- **5.** If the garden bed has a base, ensure there are adequate drainage holes.
- **6.** Build a no-dig garden by first lining with multiple layers of newspaper or cardboard before filling with compost/soil mix.

- 7. Stack alternating layers of fine and coarse compostable materials. For example, start with a layer of pea straw, then a layer of aged cow manure, a layer of compost, and repeat the layers finishing with a thick compost layer.
- 8. Planting can be done into the top compost layer. Make a small hole to fit the seedling in and plant. Water in well. The plant will eventually establish a strong root system in its nutritional base.
- 9. Mulch around your seedlings well with a straw-based mulch and dig this into the soil as it rots down, before topping the mulch up.
- **10.** As the layers rot down, top up with more layers of aged manure and compost.



Existing Garden Beds

If you decide that you want to convert your existing garden beds into a veggie garden, the soil should be improved well before you start planting your veggies. Traditionally, this involves digging over the soil to about 10cm and incorporating a great deal of organic matter, like compost, at roughly a 3:1 soil compost mix. Just don't do it when the soil is too wet; 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 and rake, will do wonders. If working with a heavy clay soil, dust gypsum over the surface of the soil (like icing sugar on a cake) before adding compost.

Containers

Planting a productive potted plot is no different to getting going in a garden – it's all about planning, position, potting mix, patience and productivity.

Position

This is all about the best position, not just for your plants, but for you as well. Almost all edible plants will do best in a full sun spot. Remember, this will vary considerably from winter to summer, but the beauty of planting in pots means 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 eaten.

If you have limited space why not consider going up, rather than down? There are many plants that can be grown in hanging and wall pots, and this is often an excellent solution for light starved courtyards, or those spaces dominated by pets.

Planning

Containers look best when they're grouped together, with pots of all different shapes and sizes closely clustered. It has a greater visual impact, cuts down on watering and creates some mini biodiversity. Group plants that require similar levels of watering together, bearing in mind that plants in terracotta pots will dry out a bit faster than others.

Potting Mix

When planting productive pots, the growing medium is incredibly important, but the hot tip here is not to use garden soil in pots! Healthy garden soil contains a fantastic mix of microbes, bacteria, fungi and worms which are great in the garden, but generally don't perform that well in containers. Garden soil in pots can drain poorly and tends to break down quickly.

Use a certified organic potting mix. Good organic potting mixes will break down over time, so you will need to refresh the pots with new potting mix every so often.

Mulch the tops of all pots with a straw-based mulch to slow down water loss and prevent weed infestation.

Soil

Soil is, without question, the most important element in your food garden. Without it, nothing will grow. So, first things first, get to know your soil!

Ideally, soil should have a mixture of mineral particles, air, water and a small (but important) portion of organic matter and living critters. Great veggie growing soil should have a mixture of large and small particles, be crumbly to touch, dark brown in colour and retain some moisture.

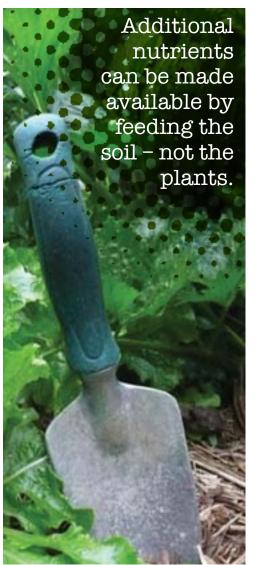
Invest in your soil. The first. and possibly most important purchase should be a soil pH testing kit. Readily available from good garden centres and hardware stores, pH test kits will let you know how "acidic" or "alkaline" your soil is. Nutrients essential to healthy plant growth are all available, at the correct amounts, within a pH range of 6.5 - 7.5. If the pH is too low (acidic), it can be raised with Dolomite of Lime. If the pH is too high (alkaline), it can be lowered with sulphur.

In addition to this, some veggies and herbs have a fairly specific pH range in which they will do best, and it is always best to test the soil to know if you are on the right track. One pH test kit should last years, just don't forget to test regularly, and in different areas of the patch.

Keeping soil healthy is an ongoing process, and this is especially important in productive gardens. As your incredible edibles grow, they remove nutrients from the soil, which need to be replenished fairly regularly using composts and organic fertilisers.



Fertilisers



Australian soils are naturally low in nutrients. Vegetables and fruit usually require large amounts of soil nutrients for optimum growth. This is particularly true for annual crops. Existing soil nutrients can be made more available by regulating the soil pH. Additional nutrients can be made available by feeding the soil – not the plants.

Before the autumn and spring growing periods apply organic slow release pelletised fertiliser.

During the growing period most food producing plants will benefit from supplementary fertilisers applied fortnightly. Choose an organic liquid fertiliser such as worm tea, seaweed solution or fish emulsions. You can also make your own compost teas from some homemade compost or dried animal manures.

Avoid synthetic fertilisers; these often have synthetic nitrogen and heavy metals. The salt content can also burn young seedlings.

For information on plant nutrients check out **sgaonline.org.au** and search "Plant Nutrients".

Compost



Compost is what organic material turns into when it has been broken down. Composting your food scraps, grass and garden clippings (organics) can provide you with an excellent source of free garden food and soil improver. Compost can be made at home or is readily available commercially.

Aged animal manures and vermicompost (worm castings) are rich in nutrients and are excellent for use in the home

Add

to your compost $\,$



- Fruit and veggie 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

vegetable garden. Compost does not have to be dug into the soil. Unless the soil needs to be improved, the compost can be laid on top. Mulch layers will also break down over time to add nutrients to the soil.

Composting organics is one of the best things you can do in your garden – as well as creating great fertiliser, it reduces greenhouse gases, saves water and reduces your waste.

Keep out

of your compost



- Meat and fish scraps
- Animal droppings
- · Large citrus peel
- Onion
- Bleached or glossy office paper

Many local councils hold community workshops on composting and worm farming and sell compost bins, turners, worm farms and kitchen fermentation kits.

Contact your local council or visit their website to find out more.

Methods of Composting

Compost bins operate as a closed system restricting vermin access and therefore allowing kitchen scraps to be added. In addition, compost bins are compact and preferable if space is limited. Place your compost bin in a sunny position to assist breakdown, and on soil so that liquid drains well and worms can enter the bin to aid composting. Keep moist but not too wet. The compost should be ready in three to six months.



A compost heap is an open system that requires more space and will attract vermin if kitchen scraps are added. A system of bays are constructed with the material forked from one to the other as it breaks down. The heap needs to be a minimum of one cubic metre in order to generate enough heat to breakdown efficiently. Garden cuttings, lawn clippings and manures are added to the heap in layers to assist decomposition. The heap should generate enough heat to compost in three to six weeks.



Kitchen fermentation kits are specially designed bench kits that are a convenient way to compost kitchen waste. These kits are fermentation systems that break down waste to nutrient rich soil conditioner for your garden. The air tight system works when you sprinkle a handful of the manufacturer's rice husk and wheat bran, that has been infused with microorganisms over a layer of kitchen waste which then begins to breakdown. The fermented product then needs to be dug into soil.



Making Compost Is Easy With Two Bins

The best compost is made when the amount of green material (nitrogen rich) and brown material (carbon rich) are balanced in a ratio of 1:2.

Examples of green material:

- Food scraps
- Fresh grass clippings
- Manure
- Tea bags
- Coffee grounds



BIN 1

- For each bucket of green material, add 2 or 3 of brown material. Store a bag of brown material in easy reach so you don't forget.
- Water the brown layer and give the heap a stir.
- When the bin is full leave the contents to break down and start on Bin 2.
- Once a week stir with a fork or compost turning tool; check for moisture and add water occasionally.

Examples of **brown** material:

- Dry leaves
- Straw
- Shredded paper
- Dried grass



BIN 2

- Start the whole process again.
- By the time Bin 2 is full, the compost in Bin 1 should be ready to use.



Common Compost Problems

Why is my compost...

1. Left with half decomposed lumps?

Adding smaller pieces to the bin/heap should ensure that it all decomposes evenly. Avoid avocado seeds, pineapple tops, twigs and other woody items unless they can be crushed or chopped before adding.

2. Smelly?

Either: Too much green material and not enough brown material. Add a layer of brown material such as dry leaves and straw.

Or: Make sure you aid decomposition by using a garden fork and turn over the bin/ heap occasionally (maybe once a week) to introduce more air. This prevents anaerobic bacteria from taking over and producing the bad smells. In a compost bin you can add lengths of holey irrigation pipe to increase aeration.

3. Crawling with ants and slaters?

The heap is too dry. Add a sprinkling of water or less dry matter. Ants and slaters are not harmful; however they do indicate that your compost will not decompose fast enough.

4. Attracting flies?

If you see tiny flies (*Drosophila spp.*) every time you open the lid, rest assured that they are there because they enjoy the contents of your bin/heap, especially if you have been adding fruit peelings. Add a blanket cover to the contents of your bin/heap, such as hessian sacking or carpet felt underlay.

5. Visited by rats or mice?

Meat scraps and fish bones are best avoided since they do encourage vermin, especially over summer. Rats and mice enter the bin by digging underneath, so fasten a piece of fine mesh wire under the bin before commencing.

How do I know when my compost is ready to use?

It should look like rich, brown, moist soil and it should not smell offensive.



Worm farms are a great way to reduce the amount of food waste you put in your garbage bin. They're ideal for people who mainly dispose of food scraps such as people living in flats or houses with small backyards.

You should start your farm with a minimum of 1,000 Red Wrigglers or Tiger Worms. These are different from your regular garden worms, in that they only eat food scraps and produce rich, inexpensive garden fertiliser, called worm castings and worm tea.

Worms and worm farms can be purchased from garden centres, councils and direct from local worm suppliers.



Food – when starting your worm farm, worms may take a few weeks to start eating and slowly build up their appetite. If you are adding more food than the worms can eat your worm farm may become smelly as the food rots. Be sure to monitor and adjust the amount of food you are giving your worms. If your worm farm is attracting rats and mice you are adding the wrong foods such as meat and bread.

Moisture – worms need to keep their skin cool and moist to breathe. Keep a few layers of moist newspaper, or a moist worm "blanket" (available at hardware stores), over the top of your worms before placing a lid on your worm farm. Do not flood your worms and take care not to leave your worm farm uncovered if it rains. If your worm farm is too wet you may have huge numbers of small vinegar flies (a small amount are healthy).

Likewise, if you find worms drowned in the worm tea at the bottom of your worm farm your system is too wet. Add some torn up newspaper to absorb the excess moisture.

Temperature – worms stop eating if they are cold and will die if they are too hot. They like a temperature 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.

Worm tea - castings can be mixed directly into the soil around your plants or before you add seedlings to the soil. Because worm castings will never burn plants you can use as much as you like. Worm tea is a strong nutrient boost for your plants and needs to be diluted 1:10 in water before you add to your plants.

Mulch

Mulching is essentially the application of a layer of organic material to the surface of the soil. There is a huge range of mulches available, but, for food gardens, a straw based mulch is the best. High in nutrients, straw based mulches (pea straw, lucerne and sugar cane mulches), when applied to a depth of about 7-10cm, will help keep soil moist, prevent weed infestation, minimise temperature fluctuations in the soil, and, as they break down, will improve both the structure and the 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. Don't mulch right up to the stems of your plants as it can cause nasty fungal diseases to occur. Leave a gap of at least 4 cm around the stem and monitor often.

Watering

Australia is the driest inhabited continent on Earth, and, as such, we need to use water responsibly in the garden. Get advice and tips about how to use water efficiently in your garden at www.savewater.com.au.



Watering

Water is essential for growing healthy plants. How and when you apply that water is important with regard to achieving full production and reducing pest and disease problems.

1. Put the water where it's needed - the roots!

Plants take up water through their roots, so direct the water there. Water on the leaves of plants can encourage fungi and mildew. The easiest way to do this in a veggie patch is through a subsurface irrigation system, where dripline or porous hose delivers water directly to the thirsty root zone of plants. Make a shallow trench (about 2cm), lay your dripline, check it's working, cover lightly with dirt, and then mulch. Adding a timer will take the guesswork out of watering.

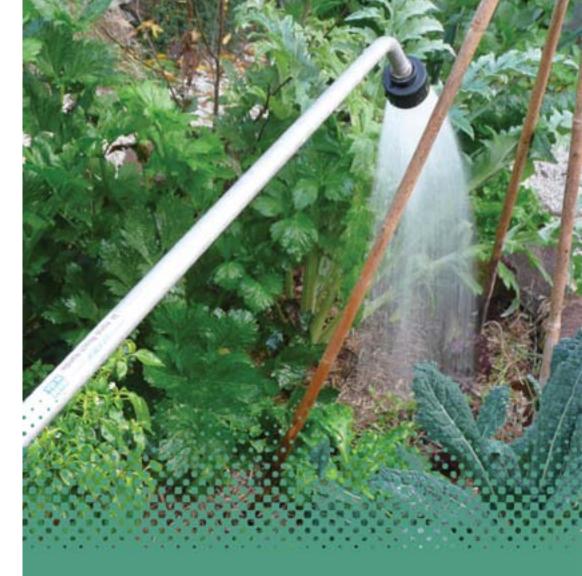
2. Group plants according to their water needs

Different plants have different water needs. So, save yourself time, effort, and money (replacing dead plants) by grouping your plants according to thirstiness.

3. Think about alternate sources of water

Consider the installation of a rainwater tank, even if it is a small one just for the veggie patch. This will allow for the more frequent watering regimes needed to grow seasonal vegetables or to ensure trees set fruit. 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 'firstflush' device. SGA online has fact sheets on choosing the size and type of rainwater tank and irrigation systems for your garden.

The earlier in the day you water your plants, the happier they will be.



4. Water in the morning

The earlier in the day you water your plants, the happier they will be. A morning drink allows the plants to take up water before the heat of the day, keeps the soil cooler, and avoids wet soil as the day time temperature cools. Watering in the evening or overhead watering allows for fungal diseases to take hold, particularly in warmer periods.

Different plants have different water needs. 26

Watering

5. Test the soil before you water!

Don't just water for the sake of watering. Test the soil with your finger before watering—if your finger has soil stuck to it, the soil is damp and probably doesn't need a drink. If it's dry, water it. This is especially important in cooler months, where overwatering can lead to root rot, fungus, mildews and very cold soil.

6. Greywater and veggie gardens don't mix!

Untreated greywater (that is, household water directed from the laundry and bathroom to the garden) should never be used on veggie gardens where food is grown for household consumption.

It 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 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. Class A treated greywater is considered safe to use in the garden.

For more details visit www.epa.vic.gov.au.

7. Pots

If using pots to grow produce be aware that they will dry out quickly, especially in summer. To reduce the impact of evaporation, try to avoid dark coloured pots; consider glazed pots; include a saucer; consider double layering the pot (a smaller pot within a larger pot), installing a dripper irrigation system with a timer (great for when you go away for the weekend) or adding a simple two litre drink bottle dripper.

8. Water Storage Crystals

As these crystals are petrochemically based they are not appropriate for an organic garden. It's much better to store water in your soil with a rich compost.

9. Mulch

To prevent surface water evaporation throughout the year, produce gardens should be mulched with a straw mulch. However mulching can increase the incidence of insect pests like weevils and earwigs, so set up insect traps to deter them.



Planting

Fruit Trees

If your long term plan includes permanent vegetation, then plant these first.

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



Planting

Planting technique

Potted plants:

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

Bare rooted plants:

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

All plants:

- Allow the plant to soak 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 the 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 taking care not to plant above the existing rootball level.

- Water well. Do not 'heel in' (stomp around the roots) as watering will remove air pockets.
- Mulch, but ensure the mulch is pulled back from the trunk of the plant to prevent collar rot.

Preventing Problems

- For every tree and shrub you plant consider the insect or bird life needed to support it.
 E.g. flowering fruit trees need pollinating insects so provide some habitat and food plants for them.
- Do not overfeed your trees with high nitrogen fertilisers. This produces soft sappy growth that easily succumbs to pests and diseases.
- Do not apply water to the tree canopy as this can encourage fungal diseases. Water via driplines.
- Treat deciduous stone fruit trees with a winter wash to break any disease cycle. For more information on winter wash visit www.sgaonline.org.au and search "Winter Wash".

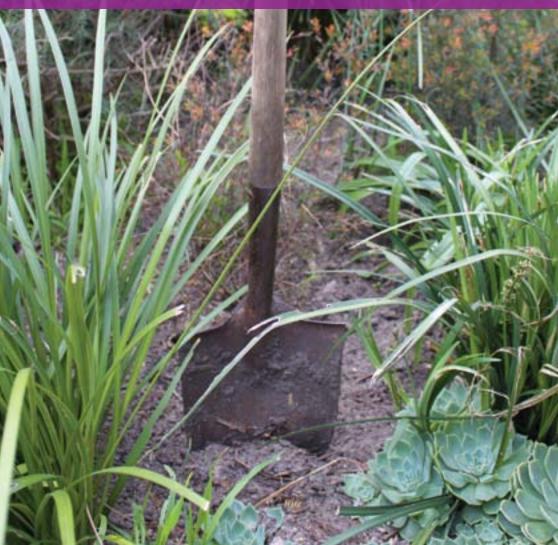
...plenty of sun and good drainage.

Espaliered plum tree

Planting

Annuals and Perennials

Perennials and continuous cropping or self seeding annuals can easily be planted between trees and shrubs if you don't plan to further disturb the soil. However be aware of the need to provide additional nutrients and water because of the increased competition between plants. For other seasonal produce that requires soil cultivation e.g. root vegetables, a dedicated vegetable area should be considered. This avoids any damage to the root zones of more permanent plants.



Seeds or Seedlings?



Seeds:

- Are much better value than seedlings.
- 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.
- Thinning out of seedlings can be time consuming.



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.

Many local councils hold community workshops on veggie propagation and growing. Contact your local council or visit their website for more information.

Crop Rotation When growing annual vegetables it is essential to practice crop rotation. Different plants take up different nutrients and these should be allowed to replenish naturally. Pests and diseases are often associated with particular plants. Crop rotation stops them persisting across seasons. It's not just individual plants but plants from that family that must be rotated e.g. potatoes, eggplants and tomatoes are all in the same plant family. Keeping Track Remembering what was planted when and where from one year to the next can be tricky. A whiteboard in the garden shed, a planting diary or a planting calendar can all help! For more detail on crop rotation visit www.sgaonline.org.au and search "crop rotation".

Crop Rotation

Heavy Feeders include potatoes, tomatoes, cauliflower, broccoli, cabbage, sweet corn, lettuce, cucumbers, zucchini, spinach, lettuce and Asian greens.

Light Feeders include onions, leeks, garlic, beetroot, carrots, parsnips and silverbeet.

Legumes include peas, snow peas, broad beans, runner beans, snake beans and okra.

Green Manure Crops

This is a practice where soil is improved or regenerated by growing plants that fix nitrogen to their roots e.g. legumes, before or between crop rotations. Most plants (and many mulches) draw nitrogen from the soil. Legumes put nitrogen back into the soil as they are growing.

Nitrogen is essential for strong, healthy plant growth. Popular green manure plants include clover, lucerne, peas and beans. Plants should be cut down as they start to flower. The spent plants can be laid as mulch on top of the soil or added to the compost heap. Packets of green manure seeds are readily available from your local garden centre.

Example of Crop Rotation in a Garden Bed

SEASON 1

Grow a **Green Manure Crop** or apply compost

and a straw mulch.

Leave to rest.

SEASON 4

Grow vegetables that are **Light Feeders** e.g. carrots and onions.

SEASON 2

Grow **Legumes** that replace nitrogen in the soil.

SEASON 3

Grow vegetables that are **Heavy Feeders** e.g. cabbage and broccoli.

Annual Planting Guide for Seedlings



- Remember if planting from seed you need to plant 6 weeks earlier than seedlings, or according to the suppliers instructions.
- For monthly
 maintenance
 instructions
 visit: www.
 sgaonline.org.au
 and search "this
 month in your
 patch".

Asian Greens* Asparagus Basil* Beans* (summer) Beetroot Broad Beans Broccoli Cabbage Capsicum Carrots* Cauliflower Celery Chilli Coriander Cucumber Eggplant Endive Globe Artichoke Leeks Lettuce Onions Parsley Parsnip* Peas* Potatoes Pumpkin Radish* Rocket Sjilver beet Spring onions Sweet corn Thyme Tomatoes Zucchini	PLANT	J	F	M	A	M	J	J	A	s	0	N	D
Basil* Beans* (summer) Beetroot Broad Beans Broccoli Cabbage Capsicum Carrots* Cauliflower Celery Chilli Coriander Cucumber Eggplant Endive Globe Artichoke Leeks Lettuce Onions Parsley Parsnip* Peas* Potatoes Pumpkin Radish* Rocket Silver beet Spring onions Sweet corn Thyme Tomatoes	Asian Greens*			•	•	•	•	•	•	•			
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Zucchini • • • •	Tomatoes	•								•	•	•	•
	Zucchini	•									•	•	•

^{*}Best grown from seed



Winter Lettuces - 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 6-8 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.

Peas - Snow Peas, Sugar Snap, Shelling etc.

- Like plenty of sun, a fertile, well drained soil and a pH of 6.5 to 7.5. Add a little garden lime to the soil at planting.
- Prefer temperatures below 20°C for germination and growth.
- Can be ready to start picking in 10-16 weeks. Snow peas bear earlier than shelling peas. Repeat sow every 4-6 weeks for an extended season.
- Climbing varieties are more productive than the bush varieties, but will need an upright support.
- Companion plant: Carrots.

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 resprout.
- Will run to seed in warm weather.
- Companion plant: Strawberry.

Beetroot and Silverbeet

- Like a moist, well drained soil with a pH of 6.5 to 7. Add a little garden 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 to allow for good root development.
- Beetroot and/or Silverbeet should be ready to pick in 4-6 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: Onions.

Carrots and Parsnips

- Light feeders too many nutrients will produce excessive top growth at the expense of the roots.
- Like a deep, loose friable soil with a pH of 6 to 7. 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: Peas.

Cabbage, Cauliflower, Broccoli, Kale and Brussel Sprouts

- Heavy Feeders like a rich, well drained soil with a soil pH of 6.5 to 7.5.
- Prepare beds well with aged compost and add dolomite 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.

Asian Greens - Chinese Cabbage, Bok Choi and Pak Choi

- Generally faster growing than European varieties.
- Heavy feeders so plant after legumes.
- Like plenty of sun and a well drained soil with a pH of 6 to 7.
- 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.





Tomatoes

- 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 lime or gypsum to the soil prior to planting.
- Prefers a soil pH of 6 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 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: Beans.

Cucumber

- Heavy Feeder
 likes a rich
 moisture retentive
 soil.
- Prefers a soil pH of 6 to 7.
- 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 6-8 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 and Zucchini

- 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.
- 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.

Leafy Vegetables e.g. Lettuce, Rocket and Mesclun

(as per autumn planting)

Beans

- Replaces nitrogen in the soil after a heavy feeder crop. Add some blood and bone to the soil before planting.
- Like 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 4-6 weeks for an extended season.
- Climbing varieties are more productive than the bush varieties but will need a trellis support.
- Companion plant: Broccoli.

Root Vegetables - Carrots, Parsnips 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 to 7.
- Has male flowers and female flowers that are wind pollinated.
- Grows to about one metre in height.
- Beans are traditionally grown with corn as the beans provide nitrogen and the corn provides support.
- Companion plant: Beans.



In Your Patch'.

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Pests and Diseases



Sometimes, even in the best of gardens – things go wrong! Don't panic, help is at hand! The most important thing is to accurately identify the problem.

- You can find an extensive list of fact sheets on common garden problems including many pests and diseases from the SGA website.
- If a chemical solution is needed, SGA garden centres are trained to recommend low-impact chemicals. These are marked on the shelf with an SGA label, or check the SGA website: www.sgaonline.org.au and

search 'Green UP Product Guide'.

- If you need further confirmation, take a sample of the damage to your local nursery and seek their help.
- In any garden centre, read the label and information on the product. Looking for an organic certification on the product will also assist you in making your choice.

Integrated Pest Management (IPM)

IPM is a technique that tries to minimise pests and diseases naturally and without the use of harmful chemicals.

- Healthy plants can protect themselves, provided they have a healthy soil, are mulched, not exposed to synthetic fertilisers and are regularly watered.
- Check the micro-climate. Many fungal diseases occur when there is too much shade, poor ventilation due to plants being too close together or more vigorous plants out compete weaker plants.
- Accept that there will be pests, losses and blemishes in every chemical free garden. Get to know your garden visitors and you may discover a predatory insect working hard to control the issue naturally.

- Practice a range of techniques

 companion plants, net fruit
 trees, manually remove weeds
 and encourage biodiversity in
 the garden.
- Consider purchasing some beneficial insects commercially.
 Visit: www.goodbugs.org.au
- Home remedies are often very effective. E.g. Milk spray can be used to combat powdery mildew; beer traps for slugs/ snails; or linseed oil for earwigs.
- Check your veggie patch regularly for pests. When watering is a good time to look for the very hungry caterpillar and friends!



Aphids

What: Sap sucking insects that reproduce in spring and autumn, and transmit plant viruses.

Affected: Apple and stone fruit trees, brassicas (cabbage, cauliflower, kale, broccoli etc.), alliums (onion, leek, chives etc.).

Damage: Tips of plants become misshapen. Leaves, flowers and fruit are distorted. Aphids lead to sooty mould issues, and yellowing and wilting can also occur. Woolly Aphids weaken the tree and cause galls to form.

Control: Aphids quickly develop resistance to chemical controls. Natural controls include companion planting to encourage predatory insects, or

- Squash aphids by hand.
- Hose off with a water jet.
- Homemade garlic spray (pg. 47).
- Use a botanical soap.



European Earwigs

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

Affected: Seeds, seedlings, fruit trees. Earwigs 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:

Traps:

- Fill upturned pots
 with scrunched
 newspaper and empty
 each morning. Feed
 the earwigs to your
 chooks or drop them
 into hot soapy water.
- Place covered snail traps with fish or linseed oil in garden beds. Empty every few days.



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

Affected: Brassicas, rocket, Asian greens.

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

Control:

- Plant scented herbs to mask its scent e.g. mint, dill or sage.
- They're territorial so mimic and deter with white violas or eggshells.
- Cover bed with wildlife friendly netting (pg. 60).
- Remove by hand.
- Bacillus thuringiensis bacteria spray e.g. DiPel, a biological insecticide.



(for Aphids or Mites)

100g garlic, chopped 2 teaspoons liquid detergent 2 teaspoons vegetable oil ½ litre water

Soak garlic in oil for 24 hours.
Mix water and detergent and add to the garlic mix. Stir and strain into a jar. Store in fridge and label as an insecticide.

How to apply: In a spray bottle dilute 5mL of mixture in 1 litre of water, and spray on infestations. Do not use in hot temperatures.

Homemade sprays have a short shelf life and are most effective when fresh.

Source: My Green Garden





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, pumpkin.

Damage: Silvering of leaves resulting in leaf curling and wilting of plants. Affects the vigour of the plant and fruit production, and transmits plant viruses.

Control:

- Hang yellow sticky traps near infected plants.
- Homemade soap spray (½ cup vegetable oil, 1 tablespoon natural soap flakes/grated, 1 cup water).
- Encourage predatory wasps by growing companion plants e.g. marigold.



Bacterial Wilt

What: A soil borne bacteria which rapidly kills healthy looking plants. No obvious leaf discolouration but the inside of the plant stem is decaying. Cross sections of infected stem ooze milky sap when immersed in water.

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

Damage: Plants wilt and die within a couple of days, especially during hot and wet summers.

Control:

- Prevention is the only control.
- Source clean seeds and plants from a reputable source.
- Practice crop rotation.
- Follow a solanum crop with a mustard crop to fumigate the soil.



Citrus Gall Wasp

What: The adult female emerges from the gall in late winter and lays her eggs in the soft stem of the same tree. Larvae take 9-12 months to mature.

Affected: Citrus trees

Damage: The tree forms
calluses or galls around
the growing pupae.

Control:

- Avoid high nitrogen fertilisers in late winter and spring.
- Remove newly formed galls before winters end.
- Hang yellow sticky traps on infected trees in late winter.
- Burn infected stems



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 producing excessive leaf growth, taking calcium from young fruit.

Affected: Tomato, capsicum, zucchini, pumpkin, melon, cucumber.

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

Control:

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



Powdery Mildew

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

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

Damage: Powdery white bloom appears on all plant parts.

Control:

- · Avoid high nitrogen fertilisers.
- Spray with one part full cream milk to nine parts water.
- Spray with potassium bicarbonate.
- Water plants early in the morning via drippers/ at their base.
- The Australian ladybird Illeis galbula feeds on powdery mildew without damaging the plant.



Trace Elements Deficiencies

What: Iron deficiency occurs when:

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

Magnesium Deficiency occurs when:

- Soil pH is less than 5.5 (acidic).
- Soil is sandy.

Affected: Citrus (both). blueberry (iron),

raspberry (magnesium)

Damage: Yellowing between leaf veins of young plants. In severe cases older leaves turn completely yellow. Magnesium and iron deficiencies are easily confused. In a magnesium deficiency the older leaves are affected.

Control:

Iron:

• Test the soil pH before planting. Apply sulphur to lower pH if too high (takes a long time).

- Avoid alkaline fertilisers e.g. poultry manures and mushroom composts.
- Apply iron chelates as a liquid fertiliser or foliage spray (temporary only).

Magnesium:

- Spray foliage with Epsom Salts.
- Apply a complete organic fertiliser (contains NPK) in spring and autumn.
- Sprinkle a little dolomite of lime on soil surface to raise the pH.

Citrus Leaf Miner

What: Moth larvae that lives beneath the cuticle of the leaf.

Affected: Citrus trees. Damage: Larvae tunnel in the soft underside of new leaves in late summer/autumn. Leaves appear silvered. Leaf rolling occurs just before pupation of the mature larvae into adult moths. Most damaging to young trees.

Control:

- Avoid high nitrogen fertilisers.
- Remove and bag infected leaves.
- Spray leaves with a botanical oil spray on mild/cool days.

Sometimes your garden plants seem 'sick' but you don't know what to do about it. Well don't let them die while you wonder! Using a little bit of knowledge mixed with a strong dose of common sense, you can remedy most of your plants' problems... naturally.



Companion Planting

Companion planting recognises that, even in a highly managed environment such as a vegetable garden, it is essential that we have a large range of different plants and animals. Planting flowers and aromatic plants in a garden attracts beneficial insects, birds and fauna encouraging fertilisation and allowing you to control pests and diseases naturally. Some plants also seem to perform better, or worse, depending on what plants they are growing near.

Many of the claims made about companion plants are anecdotal, but others have a strong scientific basis.



Beneficial Plants:

Mustard seed sown between plantings
inhibits root knot (nematodes).

Repellent Plants:

• Aromatic plants (e.g. basil and coriander) repels pest insects when planted in large swathes.

Attractant Plants:

• Lavender, alyssum and other flowering plants attract bees and other pollinators.

• Umbelliferous flowering plants (e.g.carrots and parsley) attract butterflies. For an extensive list of companion plants visit:

www.sgaonline.org.au and search "companion planting".

Chickens

Chickens can be an excellent addition to the backyard garden. Not only are they popular with children but they provide an excellent source of eggs and fertiliser. There are a few things to consider before setting up your hen house.





Test Run

Why not try before you buy? Conduct a web search of 'rent a chook, Melbourne' and you can find out more details.

Council regulations

You need to research your local council regulations regarding the keeping of chickens. Council regulations differ on issues such as whether or not roosters are allowed and how far from the property boundary the chook house needs to be. It's 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, chooks 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 coop, remember to incorporate some nest boxes at a rate of one box for every three hens.

Your chook house will need to be attached to a "run", an area where your new arrivals can scratch, feed and roam. A decent rule of thumb is to give the chooks about 1m² space each, but this can be smaller if you plan to let them wander about in the garden from time to time. The run should have dirt for a dirt bath, and a permanently shaded area.

A fox and cat proof run is essential for the security of your chickens. Make sure your wire is buried at least 10 -15cm under the ground and flared outwards.

Chickens in the garden

Left to "free-range" (i.e. chooks left to their own devices through 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 a growing season in the veggie patch, because they will turn the whole lot over, while pulling out the remains and adding fertiliser as they go.

More established veggie patches can benefit from poultry patrol, particularly if you are having insect issues and weed worries, and unless the plants are sensitive (e.g. lettuce and spinach) the chooks will give them a miss.

Sensitive plants can be fenced off with some temporary fencing, to prevent attack from roaming hens.



Get Connected!

Gardening is one of the most popular hobbies in Australia, and many people are wanting to adopt more sustainable gardening practices. A great way to do this is to connect with your local gardening community. You can do this by joining a group or supporting local food swaps and farmer's markets. You can also consider coordinating with your neighbours. E.g. if you want to grow apples you need two apple trees to cross-pollinate. Bees have no problem crossing the back fence if you don't have enough space to grow two trees.



Community Networks

Local Food Connect is passionate about all things food (from seed to feed) with a focus on the North Eastern communities of Melbourne. Their aim is to bring food back to its rightful place at the centre of family and community life. Through supporting the development of community-centred local food activities and enterprises such as food swaps, community gardens, Community Supported Agriculture (CSA), food co-ops, home gardening, composting and school gardens. For further information find Local Food Connect on Facebook or visit

www.localfoodconnect.org.au

Permaculture is a practical design concept applicable from the balcony to the farm, from the city to the wilderness. It enables people to establish productive environments providing for food, energy, shelter, material and non material needs, as well as the social and economic infrastructure that supports them. For further information visit: www.

permaculturemelbourne.org.au

platform to connect people to land, resources and each other so that more people can grow more food in more places.

They could help you find vacant land to use for growing in your local area. For further information visit

www.3000acres.org

Community Gardens

If you do not have space to grow your own produce or you would like to be part of a collective, a community garden may be for you. Community gardens vary in structure but typically the land is leased from local government and managed by a committee of management. For further information about existing community gardens or setting up a community garden contact your local council.

For further information about community gardening visit the Australian City Farms and Community Gardens Network website

www.communitygarden.org.au

You can also check out Cultivating Community

www.cultivatingcommunity.org.au



together and SWAP excess home grown produce, ideas, knowledge and Skills...



Local Food



There are a lot of exciting initiatives happening in your local area. For example:

Produce and seed swaps

Gardeners often end up with a surplus of produce and veggie seeds. Swaps provide an opportunity to come together and swap excess home grown produce, saved and heritage seeds, ideas, knowledge and skills. No money changes hands at local produce swaps; the only currency is what you have produced at home.

For a list of produce swaps in your area visit: www.localfoodconnect.org.au

Farmer's Markets

This is a place where farmers sell their produce directly to consumers. They serve not just as a place for farmers 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 information. To find a farmer's market in your local area visit:

www.inseasonmarkets.com.au www.rfm.net.au or www.vicfarmersmarkets.org.au

Ripe Near Me and Open Food Network

Connecting foodies with growers, these websites allows you to sell, buy and share excess produce in your local area. For further information visit

www.ripenear.me or www.openfoodnetwork.org

Wildlife Friendly Netting



Native animals, increasingly displaced from their natural habitat by tree clearing and extreme weather, are resorting to flowering and fruit trees in our gardens. Tree netting is a popular way to protect fruit from wildlife, but the wrong type of netting can be deadly to bats, birds, reptiles and small mammals.

Ways to protect your backyard fruit and wildlife

- If you use netting choose a densely woven net with a mesh size less than 1 cm².
- Cover the whole tree and tightly secure your densely woven netting to the trunk of the tree or fixed to the ground.
- Cover individual fruit with Fruit Protection Bags.
- Leave a couple of trees without netting to draw animals away from the netted trees.

- Protect your groundcover fruits i.e. strawberries, with some hoops and firmly secured, densely woven netting.
- 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. Visit their website for an excellent range of instructional videos showing how to net your trees in a wildlife friendly way $\underline{ www.wildlife friendly fencing.com }.$



INGREDIENTS:

4 garlic cloves, chopped

1 onion, chopped

 $\frac{1}{4}$ cup olive oil

3-4 cups eggplants, 2cm cubes

2 cups zucchini, quartered and cut into 2cm pieces 1 or 2 capsicums
(1 green, 1 red if possible)

2 cups tomatoes, coarsely chopped

2 cups vegetable broth or tomato juice

½ - 1 cup shredded fresh basil

½ teaspoon dried oregano or 1 teaspoon fresh finely chopped (optional)

% teaspoon dried thyme or 1 tsp fresh, finely chopped (optional)

salt and pepper to taste

METHOD:

Using a large saucepan, cook onion in half olive oil until soft, add garlic until fragrant. Add the rest of olive oil and then eggplant. Cook until soft. Add zucchini, capsicum and stir to prevent scorching and until soft. Add tomatoes and broth or tomato juice and cook until vegetables are well blended and tender.

Add oregano and thyme, salt and pepper. Stir until well mixed in. Turn off stove and stir in shredded basil.

Serve as is, or add grated parmesan. If you like it hot, add a sprinkle of dried chili flakes.

Enjoy!



Ingredients for harvesting joy:

• seeds • good healthy soil • warm loving sun

• a sprinkling of rain =

delicious home grown food in all colours of the rainbow