SMALL GARDENS eBook
How to grow productive healthy gardens indoors and out

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MICRO GARDENING FOR URBAN ABUNDANCE

A patio, deck, balcony or doorstep can provide enough space for a productive, attractive garden. If you have a little more space such as a courtyard or small garden, you have plenty of options to grow plants for food, medicinal use, colour, fragrance, privacy, cut flowers or ornamentals just for enjoyment. If you live in an apartment or unit with limited outdoor space, you might consider doing a little indoor gardening. By using sunny windowsills, you can grow a wide variety of culinary herbs in containers, micro greens in a tray and even grow sprouts on the kitchen bench without leaving your home. Indoor gardens also bring many health and well-being benefits. If you are renting, portable container gardens offer the benefit of having ‘meals on wheels’ so when it’s time to move, you can take your yummy yard with you!

DESIGNING FOR MAXIMUM BENEFIT IN SMALL SPACES

Most of us live busy lives in urban locations with limited time and energy to spend on the dream of a healthy beautiful, productive garden. One that seems to grow effortlessly almost on its own, that costs us virtually nothing, produces incredible volumes of food, flowers, fragrance and enviable looks from visitors and takes little time to manage or maintain! Is urban abundance an impossible dream? We all have different visions of what our perfect garden looks like. What do you want from your garden?

You may want to save money on the cost of buying fresh fruit, veggies and herbs by growing your own; reduce the exposure to harmful chemicals both in/on your food; reduce your food miles and economise on the cost of fuel by reducing the frequency to travel to buy fresh produce. You may have a goal to become more sustainable, want to grow a privacy screen or just add more colour, fragrance and wildlife to your outdoor space. There are many more reasons too – no two gardens or gardeners are alike!

Checklist for deciding what your needs/wants are:

Think about your priorities. Your likes and dislikes. Here are some suggestions to get you started:

- An abundant supply of nutrient dense organically grown food
- Perfumed flowers and foliage
- Colour all year round
- A private retreat from indoors or the neighbours
- Indoor pots for healthier air quality and serenity
- A formal, neat and structural space
- Organised chaos of diversity/green jungle
- Garden art or quirky collections
- A child safe, edible and indestructible garden for kids
- A medicinal herb garden
- A privacy screen from the neighbours or unpleasant view
- Fruit or culinary herbs for the kitchen
- A jar of sprouts
- Cut flowers for vases
- Natives for habitat
- A bird attracting garden
- Other? ____________________
Whatever your dreams are – whether you are at the start of your journey, had some successes and failures or have been gardening all your life – a small garden can be incredibly rewarding. One thing is for sure: **downsizing has some distinct advantages**! Small spaces can save you heaps of time and money, be highly productive and beautiful.

**Key Questions**

- What do you like to eat?
- How much food would you like to grow?
- How much time do you have to spend each week?
- What is your budget?
- What resources do you have access to?

**Designing your Garden**

- **Design out Problems** – Do you need to exclude an unpleasant view or nosey neighbour? Create a wind break on an exposed balcony? Increase shade? Restricted access to water? Design in the solutions.

- **Consider your site** – Aspect? Sun/shade? Be observant so you can decide where your plants should be located to get the sun they need and protection from the elements such as wind and storms.

- **Access** - Grow plants that need the most attention at your door or closest to your kitchen. Consider water and pathway access, location of tools and fertilisers and storage of these items. Plants that need least attention or will only be harvested or pruned infrequently can be positioned further away.

- **Multi-functional plants** – Find ways to make each element in your garden multi-functional i.e. each plant should provide at least 2 functions e.g. a tree provides fruit and shade but could also add leaf mulch and be a privacy screen.

- **Grow as many of your own needs as possible**. A sustainable garden means less energy is wasted bringing supplies in so grow your own mulch, make compost and fertilisers and conserve water.

- **Don’t rule out growing incredible edibles in your front yard**! With clever design and plant selection, food can be just as attractive as ornamentals and produce a much more valuable result.

- **Raised no-dig beds** save labour, your back and require minimal maintenance.

- **Vertical Gardening** – make the most of growing in vertical space, not just in traditional ground level garden beds. Some options include:

  - **Hanging baskets** – tiered baskets maximise space; use a pulley system to raise/lower as needed.

  - **Espalier fruit trees** in narrow spaces against a wall or trellis to increase yield by training branches out horizontally. Saves space, fruits earlier than a natural tree, bears more fruit and for longer. A tree is pruned so all of its energy is put into fruit bearing wood which runs horizontally. Sap flow is slowed so each bud is able to utilise all nutrients available to produce flowers and fruit rather than more foliage. **Vertical branches grow leaves; horizontal branches grow fruit.**

  - **Use trellises and vertical structures** such as bamboo tepees, arches, A-frames and stakes.
Overhead structures such as pergolas allow both vertical & horizontal space to be maximised.

Stackable planters, ladders, wall planters and shelves all take advantage of vertical space.

Tips:

✓ **Start small with a basic garden** with just a few of your favourite foods. If you haven’t grown any food at home before, **take little steps** and once you gain confidence, you can expand your garden.

✓ **Start indoors first** – the kitchen bench (sprouts), sunny windowsill (micro greens and herbs for salads or raise seedlings) or humid laundry (mushroom kit) then move to a pot outdoors to grow more variety.

✓ **Indoor plants** – research has proven that as little as just one plant in a room can make a difference to our health and well-being and can significantly lower stress levels, anger, depression, anxiety, fatigue and negativity and lift the spirits, promote well-being and performance. Indoor plants have been found to consistently reduce carbon dioxide (provide cleaner air) and significantly reduce VOCs (volatile organic compounds) from the environment (reduce allergies and sickness levels).* [See back page] Plants will acclimatise to the unique toxic substances being emitted in a room from appliances and buildings. The plant, in conjunction with the microbes in the potting mix, will remove these VOCs on average within a 24 hour period … and all for free! What great reasons to get some greenery indoors! To get the best benefits, maximise the amount of foliage and position them in a room that suits the amount of light/shade the chosen species needs. e.g. ferns love the humidity of a bathroom.

✓ If you are past the beginner gardener stage, look at the space you have and see how it can be **redesigned to increase production** or provide you with the kind of outdoor experience you’d like.

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**Health & Safety on Balconies & Decks**

A word of warning – before you start loading up your deck or balcony with pots or containers, it is important to realise they have been designed to a specific load bearing capacity. This is usually equivalent to a balcony full of people without the addition of any garden weight you might have planned. It may be wise to check with a civil engineer before you add too much weight to your balcony.

Soil, water and pots are heavy so if you have an unsupported balcony, position large pots or containers close to the strength of the structural wall rather than near the front edge or centre. You may be able to screw these into the wall bracing for heavier structures. However, if your balcony is supported on two or more sides such as with posts, you can position containers or pots around the perimeter.

**Caution!**

If you are thinking about turning your lawn into lunch or replacing an ornamental garden with edibles, then be aware if chemicals have previously been used in these spaces, they may not be immediately suitable for food crops. Some vegetables are particularly sensitive to pesticides and herbicides such as those used on lawns, roses or other ornamentals. These include **root vegetables** such as **carrots, beetroot, spinach and chard**.
Whatever is in the soil will end up in the plants and then onto your plate. You may need to look at a few different options to remove chemical residues or simply build or install raised gardens to safeguard your food crops. Building up the soil health with a significant amount of compost (humus) and using EM (effective or efficient micro-organisms) will assist in cleaning your soil.

CONTAINER GARDENING

Consider some of the key benefits to growing in containers:

- **Save space:** Many people live in units, apartments, villas, townhouses or homes with very little or unsuitable garden space; others have unsuitable soil.
- **Versatile:** Container gardens allow you to grow on a balcony, patio, courtyard, indoors on windowsills or rooms with adequate light, the deck of a boat, rooftop or even a caravan annexe.
- **More variety:** You can grow plants that may not be suitable to grow in your garden soil and grow plants next to each other even though they may have different soil needs.
- **Accessibility:** Growing plants in containers makes gardening accessible to almost anyone including children, people with limited mobility such as those in wheelchairs and the elderly.
- **No weeding:** Due to the small surface area, it’s unlikely weed seeds will find their way into pots.
- **No heavy garden tools and equipment:** Saves your back and money with less maintenance.
- **Mobility:** Plants in pots can easily be moved to suit your needs.
- **Change your outdoor look:** Easily vary your colour scheme or theme. As each plant finishes flowering or fruiting, it can be replaced with another.
- **Flexibility:** Rearrange plants to suit the season or your personal taste.
- **Control space invaders:** Vigorous growers like mints and bamboo that are too invasive if let loose in the garden do well in containers, but will take over an in-ground garden.
- **Portable ‘Meals on Wheels’:** Suitable for renters, edible gardens in pots can move house with you.
- **Less disease problems:** Most of the time plants that are grown in containers have fewer problems with diseases than plants grown in the soil.
- **Fewer pesky pests:** Insects that move from plant to plant in the garden are less likely to discover plants on a balcony, verandah or deck. Even if a problem is detected, you can isolate affected plants by relocating the pot until the problem is under control.
- **Fertilising is easier:** Keeping your plants well-fed is much easier when they are confined to a small area and not as much nutrient tends to be lost or absorbed by neighbouring plants like when they are grown directly in garden beds.
- **Time and labour saving:** Less time is spent weeding, walking and watering when plants are grouped all in one place.
- **High rise green space:** Enables gardens to be grown on all floors of apartment blocks and high-rise buildings – even green roofs.
- **Less pesky neighbours:** Less competition with wildlife and thieving from hungry animals and birds.
- **Close to the kitchen:** Convenience of only reaching out or taking a few steps to fresh home-grown herbs and veggies.
- **Street Appeal:** Well-designed container plants placed strategically at a home's entrance can add value and make the home more welcoming.
Indoor gardens: Improve indoor air quality, health and well-being with colour, fragrance, food and ornamental plants.

Design Accents: Decorative pots and urns can act as focal points or statements in the home or garden.

Highly productive incredible edibles: A wide variety of seasonal food crops can be grown successfully in containers including long lasting dwarf fruit trees.

Extended harvest time: Soil in pots often warms up quicker than soil in the ground so an earlier harvest of some vegetable crops is possible.

Reduce food miles: Growing even a few fresh herbs or salad vegetables in pots means less trips in the car or public transport to the shops or markets and saves money too.

What Kind of Container Should you Choose?

There are three key factors to consider when choosing pots and containers: drainage, porosity and weight.

Drainage – whichever container you select, it must have adequate drainage holes. Healthy plants not only need room to grow but adequate oxygen for the roots. Excess water must be able to escape or plants will drown.

Porosity – porous containers such as those made from unglazed terracotta or clay, timber, paper pulp and other natural materials allow moisture and air to move through them. The key benefits with materials that ‘breathe’ is this allows air to circulate around plant roots and as the moisture evaporates out the side of the pot it cools the soil and helps draw excess water and prevents rotting. The down side is these containers dry out more quickly and so does the potting mix so they need watering more frequently.

Weight – moist soil gets very heavy and if you choose a heavy container, this will make it harder to move it around. It’s important to consider the total weight (soil + pot + plants + water) of each container. If mobility and changing the look of your garden on a regular basis is an important consideration, select containers made from lightweight materials or put them on castors before you plant them out. However, if you want stability in a windy or exposed position, then a heavy container may be a more suitable choice for top-heavy or tall plants.

For other factors to consider as well as the advantages and disadvantages of choosing containers made out of different materials, visit www.themicrogardener.com and check out the articles on Container Gardening.

SOILS & FERTILISERS

Make Your Own Potting Mix – Recipe

Safety First: Wear a mask when using all organic materials. In a clean bucket, mix equal parts:

- Pre-soaked Coir Peat (coconut husk fibre) – Tip: soak in warm water to speed up hydration. For every 9 litres of moistened coir peat, add 1 tablespoon of Epsom Salts and Seaweed/Kelp liquid fertiliser (according to directions depending on brand) to the water. This will double up as a slow release fertiliser.

- Vermiculite (Grade 3 is a good size) – I prefer this medium to coarse washed river sand not only because it provides excellent drainage, but also because it has brilliant moisture retaining properties and prevents nutrients from leaching during watering – a major benefit in pots. It also helps aerate plant roots and is a good thermal insulator.
After mixing these two ingredients together well, add one part sieved compost or a combination of compost and worm castings depending on what you have available. If you don’t have much compost, use 1½ parts coir peat to ½ part worm castings.

Tips:

- **Container hygiene** – clean your containers when re-potting or before using with soap (biodegradable) and water. Always have clean pots and tools to avoid spreading disease.

- You need to build soil life into your potting mix (feed the microorganisms to keep your plants happy and healthy). To do this, feed microbes some diluted kelp/seaweed one week and then molasses the alternate week. Microbes are your silent workers – put ‘dinner’ on their table and they’ll have energy to work for you. Starve them and watch the health of your plants decline! Think ‘win-win’!

- Unlike garden beds where earthworms are encouraged for the rich humus they provide, you don’t want them in your pots! Like ants, they take their job of aerating the soil very seriously and too many tunnels in a pot means water and nutrients will leach out too quickly. Instead, add worm castings and worm ‘juice’ to get the benefits of valuable humus and microbes into your potting mix/soil.

- A key ingredient for any garden is compost. If you live on a small house block you can have a compost system whether it’s ‘off the shelf’ or you can build one very cheaply out of a black 60L garbage bin with holes for drainage and a lid. To ensure adequate drainage, put up on two bricks. Turn on its side to tumble and aerate. Many Councils subsidise these too. However, if you don’t have the luxury of space and perhaps body corporate rules and regulations restrict what you are allowed to have on your balcony or in your courtyard area, there are still mini compost system options:
  - Invest in a small commercial compost that you can keep indoors such as a BOKASHI BIN or make your own (MYO) using the same principles from two buckets inside one another with a tap. Bokashi is Japanese for “fermented organic matter” and is a powdered grain with living beneficial microbes that help break down all food waste, reduces landfill and provides you with a nutrient rich fertiliser.
  - Start a WORM FARM – indoors or outdoors. Mini systems such as The Little Rotter don’t take up much space as they can be located directly in the garden bed. If you’re going to use a plastic container or pipe to make your own worm farm, avoid PVC and any plastics with the numbers 3, 6 and 7. These all leach toxic chemicals into the soil and thus your food!
  - Buy Certified Organic BAGGED COMPOST from a hardware, produce or nursery supplies store.
  - Think Win-Win! Contribute your food and green waste as free ingredients to a neighbour, family or friends who make their own compost and get some of the finished product for your own garden.

- **MULCH! MULCH! MULCH!** Double mulch if you can! Add a ‘feeding’ mulch to the top of all your pots and containers (e.g. compost, lucerne, sugar cane, dried grass clippings, leaf mould etc) and top with a decorative mulch to really hold the moisture in while the feeding mulch is breaking down. Decorative mulches include lemon grass, washed seashells or coral, pebbles, bark chip and pine cones.

**PLANT SELECTION**

- **Start small** – grow sprouts, micro greens, herbs or a salad box.
  - **Sprouts & Micro Greens** – small, cheap, delicious, easy to grow, use minimal space and water. High in vitamins, dietary fibre, protein, enzymes and help aid digestion.
  - **Sprouting:** Use seeds from organic/health food stores that are for human consumption not from nurseries where seeds are meant to be planted in the garden and have usually been treated with a fungicide. Add a tablespoon of seeds to a mesh-covered jar and cover with water. Leave several hours/overnight and rinse well, draining all water out carefully. Drain in a dish rack. Seeds should
be damp but not wet or they will rot. Sprouted seeds are ready to eat in just a few days after a final rinse and drain. Store in the fridge in an airtight container for about a week.

- **Herbs – culinary and medicinal uses.** Start with those you use in your cooking and love to eat.
- **Salad or stir fry greens** – a ‘pick and pluck’ box with leaves suitable for salads/cooking.

- **Mushroom kits** – an easy ‘off the shelf’ economical fun way to grow organic mushrooms at home.
- **Indoor plants** – there are a wide variety of plants that suit indoor conditions and bring colour inside.
- **Planting for privacy/shade** – living hedges, fragrant climbers, vines on trellises and hanging baskets are all ways you can hide an unpleasant view, add shade in summer or screen nosy neighbours!
- **Sufficient sun, water and food are essential.** Many plants are suited to growing in confined spaces like containers including trees in larger tubs or pots if their other needs are being met. Others can be rotated in/outdoors or be moved around in portable containers to capture sun during the day.
- **Dwarf citrus** – grow your own mini orchard. Most fruit trees are available as micro varieties of their country cousins. Most are grafted onto dwarf rooting stock.
- **Grow your own mulch** – if you are interested in saving money on buying in mulch and are prepared to give your plant a haircut once a month or so, then try growing lemon grass. It is a multi-functional plant that offers you many benefits including culinary uses, herb teas and fragrant attractive mulch.
- **Grow local and in season** – Don’t fight nature! Choose plants that are suited to our sub-tropical climate and plant seasonally (European veggies in winter; sub-tropical veggies in summer).
- **Succession plant** – An efficient strategy for continual harvest is: ‘plant little and often.’
- **Choose cut-and-come-again salads** (e.g. mizuna, non-hearting lettuces and baby spinach) which can be snipped back regularly and grow back a number of times before bolting to seed. This saves space, time, and money = very resource-efficient!

**Container Crops**

If you are starting out with container growing there are some contenders that are worth planting and others that are just in the ‘too hard’ basket!

**Easy to grow:** herbs, potatoes, lettuces, chard, spinach, Asian greens, shallots, rocket, radishes, cherry tomatoes, capsicums, eggplants, zucchini, miniature carrots, beetroot, kale, silverbeet, bush beans, chillis and salad greens. Others include spring bulbs, flowering annuals and watercress in a water garden.

**Container Challenged:** Deep rooting veggies, cabbage, cauliflower, broccoli and pumpkins that like lots of personal space.

**Hungry Little Critters:** Heavy feeders include potatoes, tomatoes, leeks and zucchini.
Sun Lovers: Tomatoes, chillies, okra and eggplant.

Shady Characters: Lettuce, spinach, leeks, garlic, Asian greens, chard, peas and rhubarb will grow in lightly shaded positions.

MINI ANIMAL SYSTEMS

- **Chickens** – Provide eggs, free manure fertiliser, recycle food scraps and weeds, clean up insect pests and can be housed in portable small chicken coops or free range. e.g. Green roof chicken coop system.

- **Guinea pigs** – Low maintenance pets and very efficient composters! Recycle food waste & weeds, tiny manure pellets are free fertiliser, used bedding is recycled back into compost in a black garbage bag with bokashi and a little water. Left in the sun this will break down into superb compost & no handling!

MAINTENANCE – FERTILISING, WATERING & RE-POTTING

- **MYO FERTILISERS** – Here are my favourite free and low cost tips for making your own:
  - **Egg shells** – Never throw these out! Crushed finely (use a mortar & pestle, rolling pin or blender with water) they provide free calcium, the ‘trucker’ of all minerals and vital for plant growth. Tomatoes and other heavy feeders benefit from this being added to the soil.
  - **Water from boiled eggs** – Don’t toss it out either! Pour around your plants for added calcium.
  - **Coffee grounds** – a source of minerals such as nitrogen, phosphorus, potassium and magnesium, that help feed and give your plants a boost. Just like we enjoy a pickup from a cup of coffee, so will your plants! Dry the grounds first on paper towel and only use a small amount – 1 tspn/pot or 1 cup/garden bed. Alternatively, sprinkle used grounds around plants before watering to slowly release nitrogen or dilute with water for a gentle, fast-acting liquid fertiliser. Best of all put them through your compost.
  - **Vegetable water** – full of water soluble nutrients, don’t waste this valuable resource!
  - **Vegetable and food waste** – rather than ending up in the rubbish bin, compost this waste and return it to the soil as a valuable fertiliser – e.g. worm farm, bokashi or compost system.
  - **Plant based teas or compost teas** – steeping leaves of plants that are rich in nutrients for a few days in a bucket of water releases these out of the biomass and makes a liquid fertiliser that’s easy to use. Excellent plants to use are comfrey, dandelion, borage and yarrow.
  - **Banana Peel** – full of potassium, banana skins help plants grow flowers and fruit. Chop the peel up into small pieces for faster breakdown and lightly dig into the top of the pot or soil where it will decompose. First, spray with diluted molasses or kelp/seaweed or sprinkle with a little bokashi powder to help activate the beneficial microorganisms that will assist this process.
  - **Epsom Salts** – Magnesium sulphate is a cheap but effective fertiliser. Magnesium is important when it comes to seed germination and also in the production of chlorophyll. Magnesium strengthens cell walls and helps plants absorb nitrogen, phosphorus, and sulfur. Sulfur helps plants produce required vitamins, amino acids, and enzymes. Epsom salts make a world of difference to houseplants that have been in the same pot for a long time. It will clear out the accumulation of natural salts in the pot that can be interfering with fertiliser uptake into the plant. **Dilute a tablespoon to 9L watering can or foliar spray onto leaves for fast results.**
Caution: Epsom Salts are to plants what Spinach is to Popeye! Just like Popeye had newfound energy when he consumed the mineral-rich spinach, plants will also become more vigorous and healthy when fed the extra magnesium. Don’t use in ceramic or clay pots unless you want them to crack from accelerated root growth!

**COMMERCIAL FERTILISERS** – there are plenty of certified organic fertilisers available on the market but if you are budget conscious, in addition to the freebie fertilisers mentioned above, for healthy plants (particularly for nutrient dense food) **your basic toolkit should include:**

- Seaweed/kelp liquid fertiliser = nature’s ‘Rescue Remedy’ and ‘pick-me-up tonic’ as well as providing up to 300 trace elements needed for healthy plants;
- Slow release fertiliser/soil conditioner – please only use certified organic products;
- Rock minerals (some certified organic fertilisers have all 3 in one product);
- Epsom Salts (magnesium sulphate); and
- Molasses.

**WATERING**

**Self-watering systems:**
- ‘Off the shelf’ self-watering pots and water spikes such as MoistureMatic.
- Automated drip irrigation systems = water efficient.
- Wicking beds - made by creating a reservoir of water below the soil which is held in place in a waterproof container or liner. Plants are watered from the bottom up. Water moves by capillary action slowly upwards to the root zone, just like the wick in an oil lamp draws up the liquid. Whilst they are usually built on the ground, the principles can also be used in a pot. MYO (make your own) to save money.

**Wise watering:**
- Use a moisture meter or stick your finger into the soil to the depth of the second digit to check moisture levels. Water only when necessary and soak the soil well rather than just sprinkling the surface. This prevents plants from developing shallow root systems.
- Avoid:
  - Wetting the leaves – can encourage fungal diseases.
  - Watering in the heat of the day – lose too much water to evaporation.
  - Using grey water on food crops – too many salts.
- Water in the early morning preferably (especially in winter) or early evening in summer.
- Avoid fertilising plants in hot dry weather – it can be damaging if they are water-stressed.
- Water pots until you see water coming out the drainage holes.
- Group pots together to create a micro-climate and help reduce water needs.
- Choose drought-tolerant species e.g. thyme, rosemary, aloe vera & lavender

**Other ways to retain water:**
- Include compost, coir peat (coconut fibre), mulch, humus, EcoHydrate, vermiculite and zeolite.
- Double mulch if possible (feeder mulch + decorative topping).
RE-POTTING

You can practice crop rotation in pots just as you would in a normal garden but all potted plants (with the exception of some fruit trees that can live permanently in large pots for many years), will benefit from being re-potted annually or every couple of years as part of your maintenance routine.

When to repot? If a plant’s root ball has filled the whole pot, then it’s time. Generally done in early spring. If there are no roots protruding from the bottom of the pot, they’re fine to sit tight for a bit longer. Make sure potting mix is moist before moving. Use a pot one size larger than the current one when re-potting.

RECOMMENDED DVDs & BOOKS

Bonus online videos on Basic Garden Design and Fruit Trees.
Includes downloadable notes on all topics.
[Available from The Micro Gardener Store]

‘Fabulous Food From Every Small Garden’ by Mary Horsfall - shows how to grow food at home in even the smallest of spaces.

‘The Creative Container Gardener’ by Elaine Stevens – presents garden themes and ideas.

‘Organic Vegetable Gardening’ by Annette McFarlane – what to plant, when, where, how, harvesting.

‘The Edible Container Garden’ by Michael Guerra – techniques to grow fresh food in tiny spaces.

* ‘Greening the Great Indoors for Human Health & Well Being’ – Margaret Burchett, University of Technology Sydney. Report by University of Technology Sydney on the benefits of indoor plants.