

Growing food at home series

Growing in pots and containers

Pack E Notes 1

There are many reasons for choosing to grow in pots or containers, for indoor it's about the only choice, but for growing food plants it may be the best choice for numerous reasons. With the aim to grow food plants that provide good nutrition in pots these notes include information on types of containers, what can be grown and selecting potting mix. Information on potting mixes, including how to make your own and growing fruit trees in pots are covered in other notes. If you are unable to grow in the ground be reassured, with the right knowledge food can be grown successfully though other means. We won't cover hydroponics, just soil in pots. Firstly we list the pros and cons of growing in containers.

Pros and Cons of growing in grow in pots or containers

There are numerous sounds reasons for growing in pots including:

Pros include:

- Save or use space
- Temporary garden. If renting you can take with you
- Economic- on sloping sites where garden beds would require retainer walls
- Portability- can move out of wind or cold/heat
- Raised containers are warmer in winter- speeds seed germination
- Large variety of food plants can be grown in pots and containers
- Restrict growth of invasive trees out into garden
- Neighbouring plant roots prevented from invading
- Fertilisation loss is reduced
- Pests may be easier to control
- Containers can be an attractive feature
- Plastic pots are light, have a good size range and are easily reused
- Easy to buy acid pH potting mix than lowering pH for acid loving plants such as berries, rhubarb



Pros and Cons of growing in pots or containers **continued**

Cons include:

There are drawbacks which can be overcome or avoided including

- Pots can be heavy
- Even if the pot is light, large full pots can be heavy to shift
- Wood needs to be sealed, eventually it rots and replanting is necessary
- Drainage holes can be inadequate. It's difficult to add more in ceramic pots
- Lots are required to grow a large volume of food which increases layout cost and management
- Potting mix is extra cost. Quality is variable; may be costly to find the best one
- Watering in summer can be hard to keep up as pots can over heat
- Slugs may live in base of containers and pots

Site

Container growing allows you to move plants around with the seasons -to a sunnier warmer spot in winter or a shadier spot mid-summer. Depending on your yard the need to move plants around may be significant enough to influence your decisions on what types of pots (light plastic vs heavy clay), and the size of the pots you will use. Plan and be prepared for heat waves as this is often when you lose outdoor plants.

- The best pots are those where there is at least ½ a day's sunlight. Where lawns grow will grow most vegetables, herbs and fruit trees.
- Leafy greens, chives, herbs and broccoli, kale, bok choy, pak choy prefer shadier spots especially in summer.
- Raised sites are warmer at night in winter
- Morning sun warms plants up early in winter
- Climbing plants can be placed against a wall or use a trellis
- Summer is challenging for pot growing as there is no escape for the roots. If there are a lot of hard surfaces surrounding, the radiant heat can mean plants get 'cooked' in their pots. Thus protect them from wind and harsh summer sun, by placing in shadier spots including under other plants or shade-cloth.



Containers

The options for what you can grow in when not planting in the ground is not limited to pots. You can make containers from wood, brick, or use food grade plastic tubs. Raising the height of garden beds can make gardening possible for some people. There are many pots on the market, and whilst some differences are aesthetic; for growing food plants some factors make a difference. There needs to be: enough depth for the roots to grow, the size and dimensions are suitable for the plant growing in it; there needs to be enough drainage holes (check they are fully formed); and they need to be made from UV stable material.

Containers could be:

- Plastic pots or tubs which are light weight come in various sizes, relatively inexpensive, are easy to clean for reuse, and easy to store. They are a good choose for growing food plants.
- Ceramic/terracotta pots can be glazed or unglazed, come in various sizes and shapes, can be cleaned and tend to be expensive. They are heavy, and usually have only one drainage hole at the bottom, which is usually not enough and it's hard to drill more in. They are easy to break when moving. They heat up quickly and in summer this can be an issue with plant roots being 'cooked'. Additionally the unglazed ones lose water

more easily in summer and will need to be watered more often, they may need to be sealed for this reason. Or I line mine with plastic shopping bags to reduce the evaporation. The medium and large sized pots are hard work to empty soil from if you are changing plants over, or pruning the roots and refreshing the soil. Not an ideal choice for annual vegetables. Though if you require regular small amounts of herbs- they look great in ceramic pots and may be worth the extra effort.

- Wood borders or raised garden beds, and the wood will need to be sealed, even then it still rots. DO NOT USE TREATED WOOD
- Styrofoam (boxes vegetables are put in to transport to shops) are cheap, light, good insulation, and last a few years
- Car tyres are not suited to growing food plants due to heavy metals in the rubber



Good drainage is very important. Containers should have 5-10 holes at the bottom for drainage. Potting mix often falls out between the holes so before putting potting mx in cover the holes with double thickness newspaper, or shade cloth. As the plant roots establish they will holes the soil in.

Size- Depth

This is most important. You can provide space in a container but if it is not deep enough the plant may not do well. Medium depth is easiest to start with. This is the depth of a styrofoam broccoli box.

- 15-20 cm- Shallow
- 20-30 cm- Medium
- 30-50+ cm- Deep

What you can grow

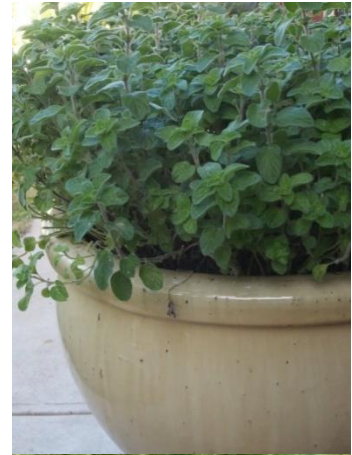
You can grow any type of vegetable, herb or many fruit trees in a container. It is all about size; the larger the container, the larger the plant in it can grow. Even then the pot size will impose limits to the plant growth which can be convenient in the case of fruit trees. There are many examples of citrus trees growing in pots for decades. My bay tree is 1m high and has been growing successfully in a pot for 15 years. Leafy greens and shallow rooted plants suit most pot sizes.



In shallow containers - 15-20 cm deep

Although, not an ideal depth, in shallow containers you can still successfully grow

- Onion Family: spring onion, chives, shallots and garlic chives are easiest, brown or red Spanish onions also do well. They are easy to transplant or grow from seed. Can harvest leafy types continuously.
- Strawberries
- Bush beans in spring, summer and autumn
- Carrots- the shorter varieties such as Paris Market or Pom Pom
- Lettuce-all the open varieties. These are easy to grow for continual harvest
- Leafy greens- salad greens such as perpetual spinach, rocket, bok choy/pak choy, mizuna
- Herbs-perennial herbs such as sage, thyme, oregano, marjoram, mints, and tarragon. Annuals such as basil in warmer months, and coriander and dill.



In medium containers 20-30 cm deep

With this depth container you broaden your growing options and the pots are still an easily manageable moveable size and weight. In pots these sizes you can grow:

- All the above especially lettuce and leafy greens
- Onion family options expand to include garlic and leeks
- Brassicas-broccoli, cauliflower, cabbage, kale, kohlrabi
- Carrots-shallow rooted varieties, baby carrots, medium root depth=Chatenay varieties. These have a stubby tips
- Beets-beetroot, silver beet and chards
- Peas and beans
- Solanums-cherry tomatoes, capsicum, chillies, eggplant
- Berries-strawberry and raspberry
- Nasturtium
- Herbs-parsley, rosemary, chicory



In deep containers 30-50+ cm

Options are further expanded with larger pots- multiple plants together.

- Larger plants such as tomatoes (not rambling tall ones), chilli, capsicum, eggplant and corn
- Trellis plants-climbing peas and beans
- Vines- pumpkins, melons, cucumber
- Deep rooted plants-carrots, parsnip, swedes, turnip
- Potatoes-need to be "mounded up" as they grow



The container size will determine the growth; plants need a reservoir of soil and water in the soil to grow well. Make sure you select a large enough containers for large plants especially for summer to ensure the plant has enough access to water in the soil.

For mature plants in large tubs such as fruit trees, perennial herbs like rosemary or sage you don't need to change the soil over if it is the plant is healthy and the soil not sinking. Use a low application of a complete fertiliser and annually leach out the salt build up by flushing the water through. Pour water from the top of the soil to run through. Use approximately twice the pot's volume in water.

Check the pH every 6 months to ensure it's suitable for the plant as water pH and breakdown of potting mix components can affect potting mix pH.

Potting mix

Numerous potting mixes are available, varying in price and quality. It's recommended to use potting mixes with the Australian Standard Mark on them to get the best results. General potting mix is suitable for annual vegetables and herbs.

There are two grades with the Australian Standard Mark on them: Premium and Standard. One of the differences is in the fertilisers already in the mix.

- Premium mixes (red ticks logo) is made from quality raw materials, will have enough of all nutrients for plants to be planted straight into and grow for at least 1 month before needing to apply more fertiliser
- Regular mixes (black ticks logo) are basically the same as Premium, have adequate trace elements and secondary nutrients, but macro-nutrient fertiliser will need to be applied when you first plant into them. Do this by either mixing in some controlled release fertilisers or organic fertilisers before planting or use liquid fertilisers from the onset, and continue weekly.



It's really a difference of convenience, at a cost. Buy the best quality you can afford. The best value for dollar is to buy the Regular mix and add a small amount of control-release fertiliser 3-6grams per litre of potting mix at planting.

Avoid the ones that are not part of the standards system, as these are unpredictable and not cost effective in the long as the contents vary, they are not necessarily made to reduce low pathogen occurrence, tend to be hard to rewet, may be acidic, and are more likely need more fertiliser than with the other mixes.

If it has been left for months around the soluble nitrogen will need replacing at potting even in the best mixes.

The material the pot is made from will dictate the type of potting mix recommended. This is to ensure good balance between drainage and adequate moisture for plant's needs.

- Shallower pots, to ensure best drainage the potting mix used needs to be coarser than that used in larger pots.
- Unglazed pots will lose more water through evaporation than glazed pots so use a less open potting mix in these.
- Plastic and glazed terracotta pots use a more open mix

Refer to **Pack E Notes 3 Potting Mix** for further information.

Reducing plant stress

Numerous factors will stress plants and negatively affect their health. These include:

- Water logging - plant don't have enough oxygen around their roots and they rot and die
- Drying out - insufficient moisture to allow uptake of nutrients
- Excess heat- when the container is too hot the plants can 'cook'
- Incorrect nutrients
- Incorrect pH - plants can't take up enough of right type of nutrients
- Pest and diseases
- Pathogens - too high of number in soil can weaken plant.

Hygiene

As well as right location, appropriate containers and potting medium you can improve success rate by practicing good hygiene when arounds soils. These actions reduce the number of disease causing organisms around the roots and include cleaning anything that comes into contact with soil:

- Hands - wash before potting, and in between different pots if taking out soil or touching plants
- Tools -clean and sterilise. Wash off all dirt and immerse in methylated spirits for few seconds. If pruning, wipe secateurs with cloth soaked in methylated spirits between plants
- Work areas - keep clean of soil or plant material. Use bleach to clean
- Pots - Scrub and wash off all dirt, then soak in domestic bleach of 4.5% strength 125ml per 1 litre for 10minutes
- Remove soil from pots that plants that have died in. Do not reuse this soil.
- Sit pots on areas where water drains away freely

Fertilising

What you use depends on the potting mix and plants grown; some plants need more fertiliser than others due to their growing size and length of growing season. More about feeding requirements in **Pack C Notes 3**. Even with the best potting mix you will eventually need to add fertiliser. Slow release fertilisers (chemical or organic) work well, and there are many multiple nutrients available such as Osmocote. Follow the instructions for amounts. Organic options are



compost, worm casts or Neutrog's Rapid Raiser pellets for vegetables. For tomatoes, capsicum, chilli, eggplant, potatoes and pumpkin, cucumber, squash, melons, and zucchini add Sulphate of Potash (1/2 to 1 teaspoon per plant at planting then as start fruiting) or use Neutrog's Gyganic or another brand's Fruit Fertiliser.

- Use a 1 cm layer of good quality compost on top of the potting mix
- Then sprinkle a desert spoon of worm casts on top of that and water it in
- For leafy vegetables I add ¼ teaspoon of Blood and Bone per plant OR 3-5 pellets of a pelletised composted chicken manure like Rapid Raiser added to the compost before applying
- For larger plants use Rapid Raiser/Gyganic pellets,– when putting the potting mix in, mix 1-2 dessert spoons per plant to depth of 10 cm, 1cm layer of compos on top, then mulch.

When transplanting seedlings water in with half strength Seasol. Then water weekly with worm juice.

Poly-cropping in large containers

In larger containers you can mix up your plants. Plant all at once making sure they are well spaced (same maturity height stops shading out, or harvest smaller ones earlier and allow bigger one to mature. Or add plants as you go, replacing fast growing plants that you have harvested. Mix deep rooted plants with shallow rooting ones.



Watering

Consistency in keeping the right amount of moisture in the soil is crucial to plant health; it allows effective nutrient uptake and reduces pathogen population growth. Good potting mix with air pockets will help effective drainage Your ability to do this over summers is worth considering before you get excited buying lots of seedlings in spring, that will be unmanageable when it heat up

- Water thoroughly each time you water
- Water evenly over the whole surface of the container until you see the water coming out of the bottom of the container
- If the water doesn't penetrate the soil right away and runs off the surface or pools, this indicates the surface is a little dry, so water slowly or come back and water again until it does run through nicely
- Check pots for moisture content by feeling the weight of the pot and feeling the surface moisture (to 1-2 cm)
- If plants are wilting water straight away and shade or cover the plants
- Don't leave plants sitting in water trays/saucers. Only use in summer when watering to hold the water in until the soil is wetted, then remove them
- If the soil has become very dry put the whole pot in a bucket of water and let it sit until there are no more air bubbles rising. Let the water drain properly.

Herbs that are adapted to alternating wet then dry conditions and can be allowed to dry out a bit include coriander, dill, fennel, rosemary, marjoram, oregano, sage and thyme

Pests and diseases tips for managing

- Crowded plants with poor light and air movement are prone to disease and pest attack
- Slugs may move in and live at the base of containers coming out at night from the holes at the bottom. Raising pots above the ground helps reduce this i.e. on the mesh benches you see at garden centres. Traps with beer/pellets may help. Copper tape around the pot will stop slugs and snails. Watering in the evening then coming out a few hours later with a torch to catch them is effective
- Sap suckers such as aphids and white fly are often associated with too much fertiliser. Use only recommended amounts when fertilising
- Thick mulch will harbor slaters, earwigs and millipedes. To avoid this add mulch as plants grow in summer then remove in winter

Adapted from Harry Harrison Grow your Own Food workshop series 2015

Compiled by Shannan Davis, October 2020

Garden Coordinator

8406 8525