Western Cape Government
FOR YOU
Agriculture

Agricultural Producer Support and Development

Growing vegetables in containers

GROWING VEGETABLES IN CONTAINERS

Introduction

Arable land is uncommon in densely populated areas. Here, growing vegetables in containers could help supplement household diets. Container gardening, which is less strenuous than cultivating land, is also a sensible option when those involved lack physical strength and energy.

CHOOSING CONTAINERS

The principles

- Bigger is better! With small containers, minor lapses in daily care may significantly interrupt vegetable plant growth.
- A container should be able to support the significant weight of wet soil, and withstand disintegration (at least until after harvesting).
- Large daily potting soil temperature fluctuations are detrimental to root growth and this accelerates the increase of potting soil density over time. Excess water should be able to drain freely from the container.

Some techniques

When choosing a container, consider the rooting depth of vegetable plants (table 1). Bottomless containers placed on suitable soil, allow roots to grow into and utilise the soil underneath a container. Containers made of heat isolating material are preferred. Otherwise, heat isolating material can be attached to the outside surfaces of a container, especially those facing north and west. These surfaces can also be painted in a light colour to better reflect solar radiation.

TABLE 1: Minimum container depth for growing vegetables.

Minimum container depth (cm)	Vegetable
30	Broccoli, Brussels sprouts, cabbage, cauliflower, celery, garlic, leek, lettuce, onion, parsley, potato, radish
60	Beans (broad; French; runner), beetroot, carrot, courgette, cucumber, eggplant, gem squash, honeydew melon, muskmelon, patty pan, pea, sweet corn, sweet pepper, turnip
>60	Butternut, pumpkin, hubbard squash, sweet potato, tomato, watermelon

POTTING SOIL

The principles

The main properties of an appropriate potting soil are listed below.

- Sufficiently firm to also support taller vegetable plants. Exhibit minimal shrinkage when drying (i.e. wet and dry volume similar).
- Retain and release sufficient amounts of water for root uptake.
- Well aerated (i.e. allow excess water to drain, and oxygen to penetrate).
- Enabling biology (i.e. no harmful insects and microorganisms, or weed seeds).
- Benign chemistry (i.e. no toxic chemicals and heavy metals, or excessive amounts of water soluble salts).
- Favourable texture (i.e. a finer texture is best for direct sowing).
- Uniform consistency (i.e. no abrupt changes in texture or density).

Some techniques

- For a basic, general-purpose potting soil, add one part river sand and one part sieved compost to two parts garden soil.
- Remove as much as possible coarse fragments from garden soil before using it in a potting soil mixture.
- Mix potting soil until an even consistency is obtained before filling containers with it.

WATERING AND FEEDING

The principles

- Water and plant nutrients need to be applied more frequently, the smaller the container is. Rapid drainage of excess water from containers is essential.
- Potting soil in containers made from permeable materials (e.g. clay) dries out relatively fast.
- Cool weather tends to slow down vegetable plant growth and evaporation, whilst the opposite is true for warm weather.
- The rate of plant nutrient supply to roots is insufficient in cold potting soil.
- Applying excess fertilisation and irrigation water containing salts are the main causes of detrimental salt accumulation in potting soil.

Some techniques

- If possible, add some dry manure or other slow release organic fertiliser to the potting soil mixture of smaller containers.
- During hot, dry weather, applying a mulch layer will reduce water loss through evaporation.
- Water less frequently during cool weather. Container-grown vegetables that do not thrive, usually suffer from overwatering. For most vegetables, the upper surface of the soil should be allowed to become dry to the touch before watering. Then, water thoroughly by slowly filling the container.
- Especially during winter, container-grown vegetables are best positioned as to receive full sunlight.
- A white crust on the soil surface or container sides, as well as browning leaf margins that eventually die off, indicate salt accumulation in the potting soil. The potting soil should then be replaced. If this is not possible, water should be run slowly through the potting soil for several minutes.
- To help prevent detrimental salt build-up in potting soil, plant nutrient applications should be followed by two applications of pure irrigation water. Also, consider the crops' relative nutrient requirement (table 2) when planning plant nutrient applications.
- Avoid excessive interplant competition for water and nutrients by keeping the respective sizes of mature vegetable plants in mind during transplanting, sowing and thinning.

TABLE 2: Relative nutrient requirements of common vegetables.

Nutrient requirement	Vegetable
Low	Beans (broad; French; runner), hubbard squash, pea, pumpkin, radish, sweet corn, sweet potato.
Medium	Beetroot, butternut, carrot, celery, courgette, cucumber, eggplant, garlic, gem squash, honeydew melon, leek, lettuce, muskmelon, patty pan, turnip, watermelon.
High	Broccoli, Brussels sprouts, cabbage, cauliflower, onion, potato, sweet pepper.

USING CONTAINERS EFFECTIVELY

Container gardeners often find themselves making a trade-off between what they would like to grow and the amount of space they have. With a bit of planning and timing one can achieve far more.

The principles

- If you see bare ground, transplant or sow something! For this reason, always have extra seasonal seedlings and seed handy (table 3).
- Growing multiple vegetable crops in a single container helps to deter common pests and diseases. Cool season vegetables (table 3) prefer cool growing conditions and loose quality in hot weather.
- Warm season vegetables prefer summer-like weather.
- Hardy vegetables (table 3) can survive frost.
- Tender vegetables are intolerant of frost.

TABLE 3: Seasonal preference and hardiness of common vegetables.

Seasonal preference/ hardiness:	Vegetable
Cool season/hardy	Broccoli, Brussels sprouts, cabbage, garlic, leek, onion, parsley, pea, radish, turnip
Cool season/ semi-hardy	Beetroot, carrot, cauliflower, celery, lettuce, parsley, potatoes, Swiss chard
Warm season/ tender	Bush bean, sweet corn, tomato
Warm season/ very tender	Baby marrow, butternut, cantaloupe, cucumber, eggplant, gem squash, hubbard, pumpkin, runner bean, sweet pepper, sweet potato, watermelon

Some techniques

- Sow or transplant fast growing vegetables (table 4) between slower-growing vegetables (e.g. sow radishes between onions in the same row).
- Grow shade-tolerant vegetables (table 5) beneath taller vegetable plants (e.g. transplant lettuce seedlings under trellised peas).

TABLE 4: Days from transplanting, planting or sowing to harvest maturity for common vegetables.*

Vegetable	Days to maturity
Celery	*90-130
Leek and sweet potato	120-150
Brussels sprouts	*90-100
Cauliflower	*50-130
Garlic and onion	90-150
Broad bean	110-120
Pumpkin	100-120
Potato	90-120
Tomato	*60-90
Yellow or red sweet pepper	*70-80
Honeydew melon	100-110
Hubbard squash	80-110
Broccoli	*50-80
Cabbage	60-120
Eggplant	*50-80
Green sweet pepper	*60-70
Muskmelon	80-100
Butternut and watermelon	70-100
Head lettuce	70-90
Sweet corn	60-100
Carrot	50-100
Parsley	70-80
Leafy lettuce	40-50
Radish	20-60
Beetroot, cucumber	60-70
Pea	50-80
Runner bean	60-70
Turnip	40-80
French bean, Swiss chard	50-60
Courgette, gem squash and patty pan	40-50

TABLE 5: Sunlight/shade requirements of vegetables.

Minimum requirement	Vegetable
Full sunlight for the entire day	Beans (broad; French; runner), broccoli, Brussels sprouts, butternut, cabbage, cauliflower, courgette, cucumber, eggplant, gem squash, hubbard squash, honeydew melon, muskmelon, patty pan, pea, pumpkin, sweet corn, sweet pepper, tomato, watermelon.
Full sunlight for six hours daily	Beetroot, carrot, garlic, leek, onion, parsley, potato, radish, sweet potato, turnip.
Partial shade	Celery, lettuce, Swiss chard.

Most vegetables prefer full sunlight for the entire day to achieve optimal growth, yield and yield quality.

For further information contact your nearest extension officer.

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