

Crop rotation

managing pests and maintain plant health



Crop rotation moves different types of vegetable through the same garden bed over time.

These are annual or biennial vegetables that go through their lifecycle, seed to seed, within one or two years.

WHY ROTATE VEGETABLES?

Avoid plant disease

Vegetables are rotated through a garden bed to reduce infection by plant diseases carried in the soil. Plants affected are usually those in the same botanical family, such as tomato and potato, both members of the Solanaceae family.

Maintain plant health by reducing nutrient loss

Different plant types, such as leafy green vegetables or root crops, make use of different nutrients in the soil.

Continual cultivation of the same crop in the same place in the garden may, over time, result in nutrient deficiencies in the plants unless soil fertility is maintained in other ways.

It may help to grow tomatoes every 4-5 years, brassicas every 3-4 years and bean every 3 years, only once in the same garden bed.

Planting a different type of crop in the following growing season – such as a root crop (eg. potato) after a leafy green (eg. silverbeet) – reduces the likelihood of nutrient depletion.

A gardener thins leafy green annual vegetables that have been planted into a composted and mulched garden bed.

A PROCESS OVER TIME...

In crop rotation, different types of plants are alternated through the same garden bed over time:

There are different types of crop rotation, such as:

- rotation by plant type:
 - legume (peas and beans) then
 - fruiting vegetable (eg, capsicum) then
 - leafy green vegetable (eg. lettuce, cabbage) and,
 - finally, root crop (eg. potato)
- rotation by plant family – set up eight beds with these plant families:
 - Brassicaceae (cabbage, cauliflower, broccoli, brussels sprouts, kohlrabi, radish, swede, turnip, rocket, mustard greens, mizuna, bok choy)

- Solanaceae (tomato, capsicum, potato, eggplant)
- Fabaceae (broad bean, bean, peas)
- Cucurbitaceae (cucumber, squash, pumpkin, zucchini, watermelon, rockmelon)
- Apiaceae (carrot, celery, coriander, dill, fennel, parsnip, parsley, mitsuba)
- Chenopodiaceae (silver beet, beetroot, spinach)
- Asteraceae (endive, lettuce, salisfy, globe artichoke, jerusalem artichoke, sunflower)
- Amaryllidaceae (onion, shallot, leek).



Garden beds planted to leafy green, fruiting and legume vegetables, Fruit trees behind.



THE EASY FOUR BED CROP ROTATION SYSTEM

The best way to learn about crop rotation is to start simply, with the four bed rotation by plant type.

First

Prepare the soil for planting either by the no-dig sheet mulch, double-dig or Biointensive garden bed preparation method. Ensure the soil is loosened to allow air and water to move through it

and that it has plenty of compost added to provide nutrients for the vegetables.

Next

Plant legumes, leafy green, fruiting vegetable and root crops in four separate beds. Next season these crops will be moved into the following bed.

GARDEN BED 1

Plant legumes, the pod of which we eat.

These will grow in soil of average fertility. They will leave traces of nitrogen in the soil which will be used by the crops that succeed them.

GARDEN BED 2

Plant leafy green vegetables, those of which we eat the leaf.

These need high levels of nitrogen to grow fast and sweet.

GARDEN BED 3

Plant vegetables that produce edible fruits

These require a humus-rich soil with a balanced fertility.

GARDEN BED 4

Plant root vegetables

those that produce an edible root, tuber or rhizome (the underground parts of the plant).

These require less of the nutrient nitrogen, but more potassium for good root growth.

PERENNIAL CROP BED

those that take more than one or two years to complete their life cycle are planted into a separate garden bed

Next planting season, rotate crops by planting them into the following garden beds as shown by the direction of the arrows.



Move the last crop type to the bed at the other end of the garden

Using fallow and green manure (chop and drop)

Some organic gardeners improve the soil by:

- 'resting' the soil in a garden bed for a growing season, producing no crops from it for that time although they may add compost, so giving the soil time to build up nutrients; you will need to make an additional 'fallow' bed
- planting a 'green manure' crop such as a legume or a legume-fibrous grass combination, like vetch and oats. These are grown then slashed just on flowering and left as mulch or turned into the soil to add organic matter to increase nutrients and help retain moisture in the soil.

Stay well, stay healthy

Compost contains living organisms that, on rare occasions, may cause illness.

Precautions include:

- moistening compost to avoid micro-organisms becoming airborne
- wearing gloves to protect broken skin
- washing hands after handling compost
- wear a dusk mask if you have asthma or respiratory disorders
- if you handle animal manure, such as found in stable sweepings, consider vaccination against tetanus
- protect yourself from sunburn with sunscreen and hat
- drink plenty of water while gardening.

References

- Green Harvest, organic garden supplies: www.greenharvest.com.au
- Handreck K, 1993, Gardening Down-Under; CSIRO, Australia
- The Home Vegetable Garden; 1991, NSW Agriculture and Fisheries; NSW Australia