

# Growing Your Own Food at Home in Salisbury Series

## Pack D Notes 5 CROP ROTATION



Crop rotation is the practice of rotating the growing beds of specific plants or groups of plants. This has been practiced for thousands of years by traditional farmers and is still used today with cereals (wheat, barley, oats), Brassicas (canola, rape, mustard) and legumes (peas, faber beans, lupins, vetches) rotated by many Australian farmers. The main advantages are a more efficient use of soil nutrients and disease reduction.

Plants vary in growing season length (seed to harvest), the depth of their root systems, and feeding requirements. Some plants are classed heavy feeders as they extract more nutrients from the soil in their growing season than others, which are described as medium or light feeders. Some plants need more or are better at using different minerals. Some plants have deeper roots that open up soil and bring minerals to the surface. Plants take nutrients from the soil to grow, and when growing vegetables continuously in the same garden beds/pots the soil will become depleted unless nutrients are replaced.

Plants can be divided into groups according to their families, and their feeding requirements. Both of these factors are taken into consideration with crop rotation practice. Examples being:

- Swedes and turnips are in the same family as broccoli, cabbage and cauliflower, and they require less nutrients through their growing season than the other three so are classes as medium feeders. Broccoli, cabbage and cauliflower are heavy feeders.
- Silverbeet is in the same family as beetroot, is a heaver feeder, whereas beetroot is a medium feeder.

Taking into consideration plant's feeding needs plants with high nutrient needs can be followed by those with lower nutrient requirement without much soil preparation between crops. The lower nutrient requiring plants can grow in the remaining nutrients. Individual soils and circumstances will need to be factored into any crop rotation system as soil differs throughout regions; sandy soils have low mineral components compared to clay soils. Therefore, always watch the plants health as it grows and feed if necessary. Refer to [Pack C Notes 4 Fertilising Soil](#)

Fertiliser use should be reduced by rotating crops. Compost applied for one crop may be enough for the next one or two crops if a gross (heavy) feeder is followed by a moderate feeder or nitrogen fixing crop. Thus, a crop of corn can be followed by onions (or another root crop) or beans with no fertiliser added or potatoes with a little compost added.

The reduced need to dig in compost each you time plant new crops can help maintain a more stable soil structure, allowing plant roots to more freely through the soil. Also, not digging in compost for medium and lower feeders will reduce time you wait for the soil to be ready for planting- microorganisms population bought in with the compost need to settle before planting especially if the decomposition process is not complete.

Legumes build soil fertility with the help of bacteria (called Rhizobia) that "fix" nitrogen from the atmosphere. They use this nitrogen in their seeds. Peas and beans are high in protein food sources, hence well worth growing for human consumption too.

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Growing the same vegetables continually in the same garden bed can lead to the build-up of pests and disease. This is particularly so for the Solanums or the tomato family which includes capsicum, chili, potatoes and egg plants. This family is attacked by many soil born fungal infections that accumulate over a season of growth. Similarly, the Brassicas family (broccoli, cabbage, cauliflower, kale, swedes, turnips) are attacked by a nematode that causes the disease club root. This is seen as misshapen roots or nodules on the roots. If different plant families are grown in the following years the soil is “cleaned” of its nasties. Generally, a three-year break is needed for tomatoes. And club root disease is removed by growing other families in the bed for one to two seasons.

To practice crop rotation planning your crops seasons/years ahead and documenting are required. Other requirements are:

- 3-6 beds for effective rotation.
- Seasonal use of beds for plants (timing).
- Knowledge of plant families their requirements and properties.
- Space for multi-year crops such as asparagus or strawberries.

Once adapted caring for plants is easy– as plants with similar needs are in the same bed

## Families grouped according to feeding requirements

**Gross feeders** This group need a rich soil that has been fertilised recently.



**Brassicas**- cauliflower, broccoli, cabbage, kale, Brussels sprouts grow in cooler months. Asian and sprouting broccoli grow in summer. Asian greens- bok choy, mizuma etc. grow all year. All are gross feeders-apply high Nitrogen compost.

- **Corn** requires high nitrogen compost and plenty of water.  
**Solanums**- tomato, eggplant, capsicum, chilli are all summer time fruit, approximately 4 months. May be perennial in warm conditions, 25° C plus temperatures. Fertilise with high Potassium=K to Nitrogen=N ratio fertiliser. Protect from western sun. Potatoes can grow all year where no frost.
- **Curcubits**- cucumber, melon, squash, pumpkin are all summer time fruit. They require 20° C plus temperatures. Deep water and train up a support. May mound. Fertilise with high Potassium=K to Nitrogen=N ratio fertiliser

**Example:** If tomatoes are grown over summer then garlic in autumn, no extra fertiliser may be need. If you were growing broccoli after tomatoes then fertilizer would be needed, as both tomatoes and broccoli are heavy feeders.

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**Moderate feeders** This group can follow the first group with little need to add fertiliser.



- **Alliums**- onion, garlic, shallots, and chives generally grow in cooler months. Plant in autumn for summer harvest. They may follow gross feeders.
- **Apiacea**- carrot, parsley, all year parsnip harvest winter. Deep rooted.
- **Asteracea**- lettuce, endive, chicory all year-direct seed to reduce water use, intercrop. Sunflower or Jerusalem artichoke over summer.
- **Chenopods**- beetroot, silver beet, chards all year, large seeds-direct, deep rooted low maintenance. Amaranth summer grain, leafy vegetable. Saltbush. High quality protein.

**Light Feeders/ and Nitrogen builders** This group

- Leafy greens
- **Fabiacea** – Legumes - beans in summer, peas and broad beans in winter. These have a low fertilizer requirement, and are Nitrogen fixing by using bacteria nodules in their roots, thus adding to the soil. Bush beans crop quickly.



## Planning rotation of crops

- You will need to think ahead for the next two or three years!
- Divide your garden into as many beds as possible. One bed may have two or three divisions. At least three beds are necessary, more is better.
- Draw up your wish list of crops and put them in one of the three groups.
- Decide how much time each crop will occupy the bed for (3-5 months).
- Allocate your crop to each bed for the current season. Each crop will occupy a bed for approximately four months so three rotations per year per bed.
- Plan your rotations for each bed for the next year.

The basics are to follow a heavy feeder with a moderate feeder, then a legume or root crop. If starting with a legume very little compost is needed. To start with a moderate feeder, add a little more compost and if a heavy feeder then compost plus some fertiliser pellets.

**Heavy feeder** → **moderate feeder** → **legume or root**

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Starting crop rotation system example

### Bed 1 Spring/summer

- Starting with legumes, bush or climbing beans. Need little or no fertiliser.
- Follow with light compost before late summer/autumn crop of Brassicas.
- Then no compost if following with onions/garlic in winter.

### Bed 2 Spring/summer

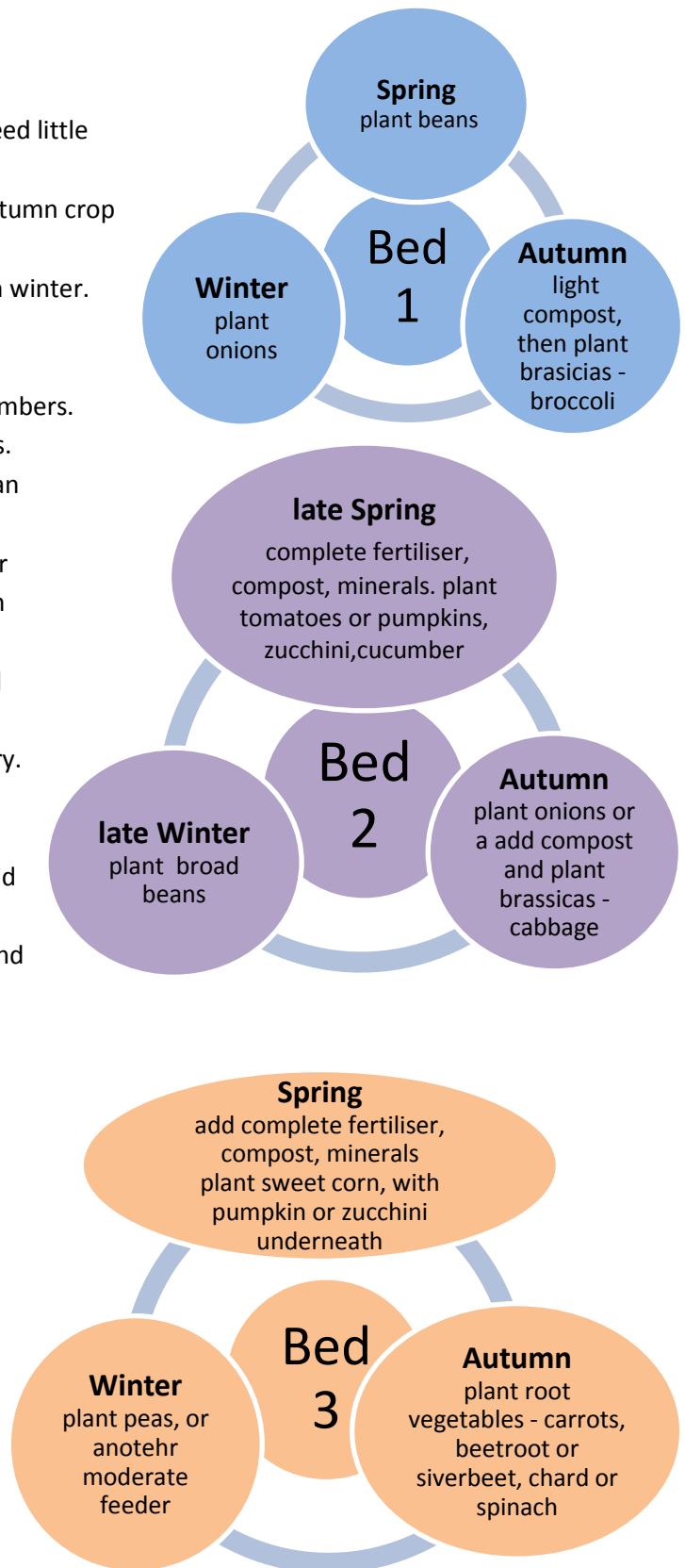
- Starting with tomatoes or zucchini/squash/cucumbers. Needs complete fertiliser, compost and minerals. May occupy bed for longer than four months. Can interplant with herbs (basil) or leafy greens.
- In autumn/winter follow with a moderate feeder such as onions or apply compost and follow with Brassicas.
- Late winter follow with broad beans to build soil for summer crop. If leafy greens or root crops follow the beans no fertiliser should be necessary.

### Bed 3 Spring/summer

- Starting with sweet corn. Needs compost or rapid raiser/dynamic lifter. Can grow squash/pumpkin/zucchini underneath as a ground cover. May occupy bed for longer than four months. Bush beans, zucchini, pumpkin and squash can grow between corn
- Follow with a moderate feeder such as a root vegetable or leafy green in autumn.
- This can be followed by another moderate feeder, or a legume with little or no compost added.

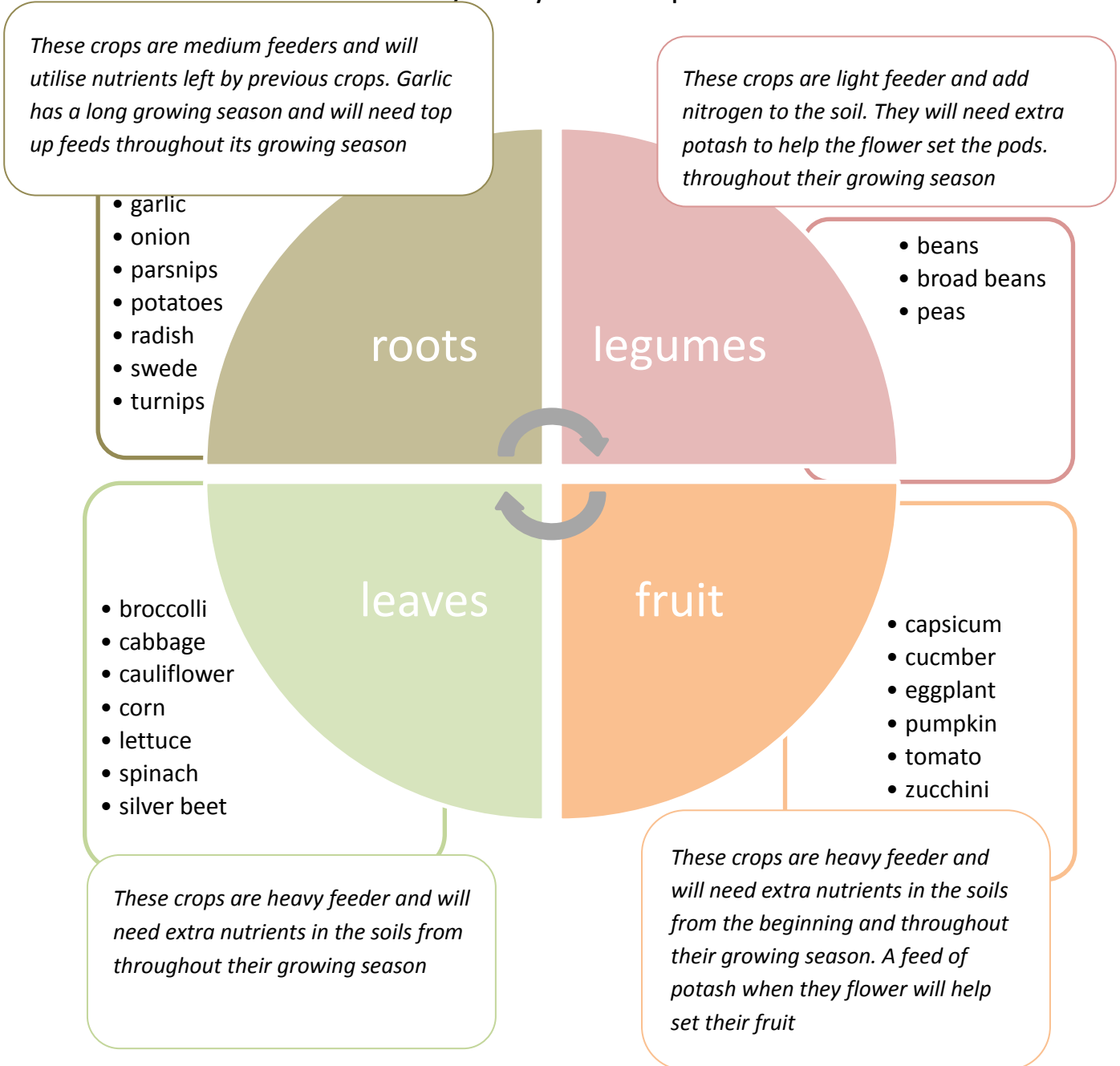
Beetroot can grow between heavy feeders if put in after heavy feeders have grown half way and used nutrients.

Tip: Use a colour card system referring to feeding requirements to map and plan where to allocate different crops and when to add fertiliser.





### 4 year cycle example



As mainly brassica, potatoes, and root vegetables need to be rotated you can have a three year system. Though tomatoes are recommended to rotate on a three year cycle.

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Notes by Harry Harrison for Grow Your Own Food Gardening Workshops 2015

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