

# How to Create a Diverse Garden Using Crop Rotation, Intercropping and Successional Planting



## WHAT IS IT?

**Crop rotation** is the practice of moving different varieties of crops from one bed to another, or from one place in a bed to another place in the same bed, from season to season. Permagarden growing beds make crop rotation simple. Rather than change the location of the beds, change what is planted in the bed each season. A good rotation plan that optimizes nutrient use is leaf then fruit then root then legume. Before planting any new crop, it is recommended to amend the topsoil with additional compost to replace the nutrients that were removed from the previous crop.

**Intercropping** is the practice of growing two or more crops in the same space at the same time.

**Successional Planting** can mean either planting crops at staggered dates to harvest at different times, or planting a new crop in the bed as soon as the last one is harvested. With proper management, successional planting allows for continuous harvest of vegetables.

## WHY DO WE DO IT?

**Crop rotation** helps balance plants' use of soil nutrients. As different crops have different nutrient needs, rotation allows successive crops in the growing beds to use the nutrients available to them most efficiently. Following a good crop rotation plan will also help to break pest and disease cycles, which will yield healthier, stronger plants and reduce or eliminate the need for pesticides to treat problems.

**Intercropping** pairs plants with differing characteristics together so that the space both within the soil and above the bed is used fully. Intercropping can pair plants with short versus long maturation times, erect versus spreading growth patterns, or taproots versus branching roots.

**Successional planting** allows for an extended harvest season. Planting crops on staggered dates can extend the season of a certain vegetable, reduce food loss from crops that mature all at once, and maximize income potential if crops can be slowly sold.



## METHOD

# Crop Rotation

### STEP 1

In the first season, plant **LEAF** crops such as amaranth, broccoli, cabbage, cauliflower, chard, kale, or spinach. These crops use lots of nitrogen so will do well in a newly prepared and amended growing bed.

### STEP 2

In the second season, plant a **FRUIT** crop such as cucumber, eggplant, gourd, Irish potato, melon, pepper, pumpkin, squash, or tomato that require less nitrogen than many leaf crops and more phosphorus for flower development.

### STEP 3

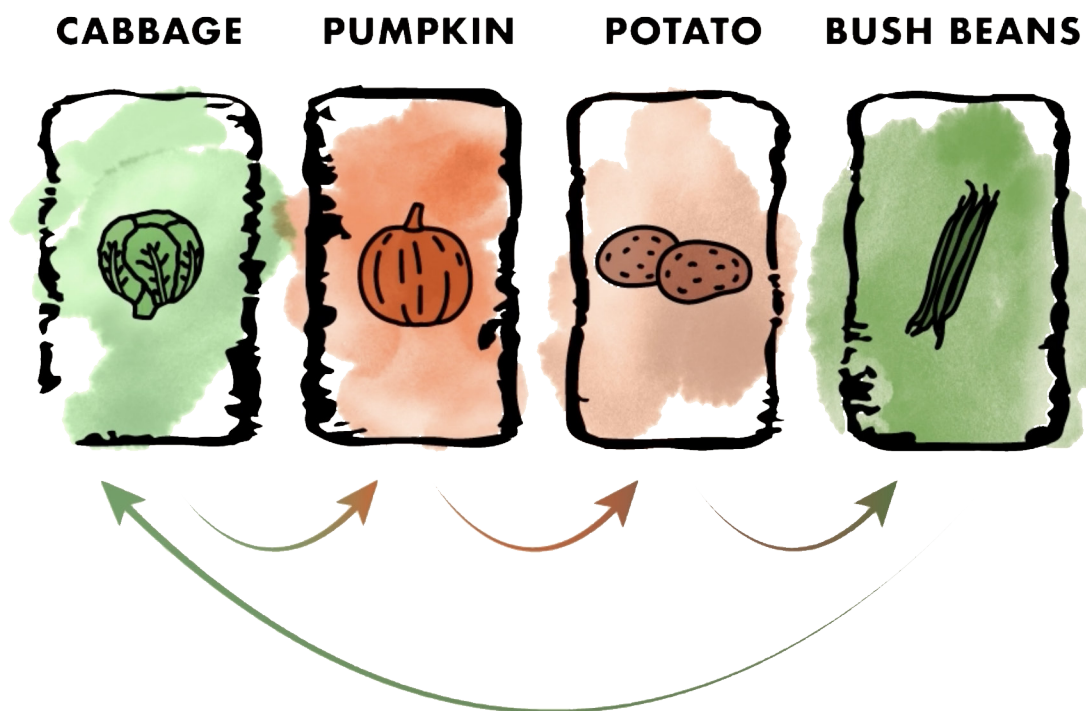
In the third season, plant a **ROOT** crop such as beets, carrots, garlic, leeks, onions, radishes, shallots, sweet potatoes or turnips. Root crops require less nitrogen than leaf and fruit crops and more potassium for root development.

### STEP 4

In the fourth season, plant a **LEGUME** such as beans, groundnuts or peas. Legumes will add nitrogen back into the soil through the process of atmospheric nitrogen fixation.

### STEP 5

In the fifth season, start the process over again by planting a **LEAF** crop.

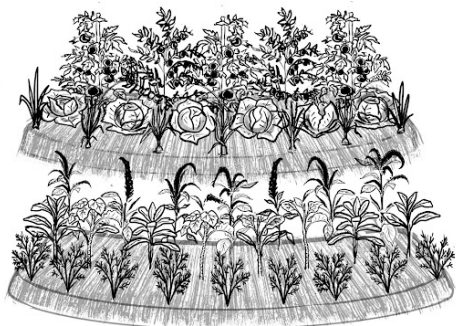




## METHOD

# Intercropping & Successional Planting

## Intercropping



Some of the important practices of intercropping include:

- Planting shallow- and deep-rooted plants together to optimize root space within the soil profile.
- Mixing slow- and fast-growing crops in the same space to limit root and sunlight competition.
- Growing heavy feeders and light feeders together to use different nutrients from the soil.
- Incorporating aromatic plants that might repel certain pests from the growing area.
- Planting flowering plants that attract beneficial insects ('good' bugs that eat 'bad' bugs).
- Planting crops with different growing habits and size to fully utilize the growing space, e.g. climbers or vines, low growing plants, tall plants, and spreading groundcover plants.



## Successional planting

Example of staggered planting with amaranth:



**STEP 1** Gather local amaranth seed.



**STEP 2**

Smooth and prepare the first  $\frac{1}{3}$  of a garden bed.



**STEP 3** Scatter seeds, cover, and water.

**STEP 4** Wait two weeks.

**STEP 5** Repeat seeding, covering and watering on the next  $\frac{1}{3}$  of the garden bed.

**STEP 6** Wait two weeks.

**STEP 7** Repeat for the final  $\frac{1}{3}$  planting.

**STEP 8** Harvest from the first  $\frac{1}{3}$  of the bed.

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