

# Crop Rotation

*Build the perfect rotation schedule to nourish the soil and improve your crops.*

Crop rotation is a systematic approach to deciding which crop to plant where in your vegetable garden from one year to the next. Crop rotation is very important to organic farmers who grow crops on a large scale and of varying importance to home gardeners. There are general principles of crop rotation that can help you make these decisions, but in the end, each farmer and gardener devises a unique crop rotation plan depending on which crops they grow and in what amounts.

The goals of crop rotation are to help manage soil fertility and also to help avoid or reduce problems with soilborne diseases and some soil-dwelling insects, such as corn rootworms.

## Balancing soil fertility

Different crops have different nutrient requirements and affect soil balance differently. Some, like corn and tomatoes, are heavy feeders that quickly deplete soil nitrogen and phosphorus. Thus, if you plant corn in the same spot year after year, that plot of soil will run low on nitrogen and phosphorus more quickly than other parts of your garden will. By changing the location of corn each year, you'll be able to renew the plot where it grew the preceding year, so your soil won't get out of balance.

There are other crops that also use up nitrogen rapidly. They tend to be the leafy and fruiting crops, such as lettuce, cabbage, and tomatoes. In contrast, root vegetables and herbs are light feeders. Peas, beans, and other legumes add nitrogen to the soil but need lots of phosphorus.

The general rule of thumb for balancing out soil nutrients is to avoid planting the same general category of crop (root, legume, and leafy/fruiting) successively in the same place. It's best to follow nitrogen-fixing legumes such as peas or beans with nitrogen-loving leaf or fruiting crops such as lettuce or tomatoes. Then, follow the heavy feeding crops with light-feeding root crops.

## Disease and pest prevention

If you have a large home garden, you may want to plan your crop rotation on the basis of plant families rather than on nutrient needs. This can help in your overall program of avoiding diseases and pests, because crops in the same botanical family tend to suffer from the same pest and disease problems. For example, Colorado potato beetles like to eat potato plants, but they also enjoy feasting on tomato leaves and eggplant foliage. Since these beetles overwinter in the soil, if you plant eggplant in a spot where you grew potatoes the year before, you could be inviting a beetle problem for your eggplants from the day they're planted. Likewise, several serious bacterial and fungal diseases overwinter in plant debris in the soil.

Lengthy rotations are sometimes necessary to control chronic soilborne problems. Bean anthracnose fungus can persist in soil for up to three years, so a four-year rotation is needed to keep the disease at bay. The same holds true for such fungal diseases as Fusarium wilt and Verticillium wilt. A few problems, such as club root, persist in the soil for even longer, so rotation is less useful for controlling them.



## **Choosing your crop rotation plan**

If you have a small garden, you may not be able to set up an effective rotation by crop family. That's also true if you grow only a few kinds of crops. In that case, stick to a basic soil-balancing rotation. But if you have a large plot and grow many different crops, you may enjoy the challenge of setting up a rotation by crop family. Refer to the chart on the previous page to learn which crops belong to the same family.

Keep in mind that cover crops can be included in a rotation plan to discourage specific types of pests and to improve soil. For example, beetle grubs thrive among most vegetables, but not in soil planted in buckwheat or clover. A season of either crop can greatly reduce grub populations and at the same time will increase soil organic matter content.

## **Rotating Vegetable Families**

Susceptibility to pests and diseases runs in plant families. Leave at least two, and preferably three or more, years between the times you plant members of the same crop family in an area of your garden. When planning a rotation scheme, refer to this rundown of the seven family groups most often planted in vegetable gardens along with ideas for rotating them.

### **Onions, garlic:**

Rotate with legumes; avoid planting in soil with un-decomposed organic matter.

### **Carrots, parsnips, parsley, dill, fennel, coriander:**

Moderate feeders. Precede with any other plant family; condition soil with compost before planting. Follow with legumes or heavy mulch.

### **Broccoli, brussels sprouts, cabbage, cauliflower, kale, kohlrabi, radishes, turnips:**

High level of soil maintenance required for good root health. Heavy feeders. Precede with legumes; follow by first cultivating the soil to expose pests for predation, then spread compost.

### **Cucumbers, gourds, melons, squash, pumpkins, watermelons:**

For improved pest control, precede with winter rye or wheat; follow with legumes.

### **Beans, peas, clovers, vetches:**

Beneficial to soil; few pest problems. Rotate alternately with all other garden crops when possible.

### **Wheat, oats, rye, corn:**

Plant before tomato- or squash-family crops to control weeds and improve soil's ability to handle water.

### **Eggplant, peppers, potatoes, tomatoes:**

Heavy feeders with many fungal enemies. Precede with cereal grain or grass; follow with legumes.