Using Crop Rotation in the Home Vegetable Garden

What is crop rotation? Crop rotation is one of agriculture’s oldest cultural practices. In a home vegetable garden, crop rotation involves changing the planting location of vegetables within the garden each season. Crop rotation is used to reduce damage from insect pests, to limit the development of vegetable diseases, and to manage soil fertility.

Why is crop rotation important? Each vegetable can be classified into a particular plant family. Plants belonging to the same family oftentimes are susceptible to similar insect pests and diseases, and have similar nutrient requirements. When vegetables classified in the same plant family are grown year after year in the same area of a garden, they provide insect pests with a reliable food source and disease-causing organisms (i.e., pathogens) with a continual source of host plants that they can infect. Over time, insect pest and pathogen numbers build in the area and damage to vegetable crops increases. Using crop rotation helps keep insect pest and pathogen numbers at low levels. In addition, the type of vegetable grown in a

Home Garden Planting Guide

**May**
- Tomatillos
- Asparagus
- Pumpkin
- Cherry Tomatoes
- Squash
- Southern Peas
- Sweet Potatoes
- Basil
- Peppers
- Okra
- Eggplant
- Cucumbers
- Watermelon
- Cantaloupe
- Beans (Snap, Pole, Lima)
- Sweet Corn
- Collards
- Radish

**June**
- Basil
- Gourds
- Popcorn
- Southern Peas
- Collards
- Pumpkins
- Squash (Winter and Summer)
- Cucumbers
- Sweet Potatoes
- Sweet Corn
- Pole Beans
particular area in a garden has a direct effect on the fertility of the soil in that area.

Each vegetable is unique in the type and amount of nutrients it extracts from the soil. Crop rotation can even out the loss of different soil nutrients and allow time for nutrients to replenish.

**How do I plan a crop rotation for my home garden?** Plan the crop rotation for your vegetable garden based on the types of vegetables that you grow. Vegetable crops in the same plant family should NOT be planted in the same area of a garden year after year. For example, if tomatoes are planted in a bed or area of a garden one year, vegetable crops such as peppers, eggplant, potatoes and tomatoes should not be planted in the same bed or area the following year because all of these plants belong to the nightshade family (Solanaceae). Table 1 provides a guide to common garden vegetables and their plant families.

Crop rotations vary in complexity. They can be as simple as changing vegetable locations annually, or can be extremely involved, using cover crops/green manures, and/or leaving parts of a garden fallow (i.e., planting nothing in an area) each year. Cover crops/green manures are planted before, after or in place of a vegetable crop to improve soil fertility and drainage, prevent erosion, and hold nutrients. See University of Wisconsin Garden Facts XHT1209, “Using Cover Crops and Green Manures in the Home Vegetable Garden” for details at http://hort.uwex.edu. Leaving an area fallow is often less desirable than planting a cover crop/green manure because an area without a planted crop tends to be more prone to erosion and can end up with a soil that does not drain properly. Alternatively, the area may become filled with weeds that will cause problems for future vegetable production.

For crop rotation to be most effective, DO NOT plant an area with vegetables or cover crops/green manures from the same plant family more than once every three to four years. This length of crop rotation can be difficult to achieve in small gardens, but even changing plant families grown in an area of a garden from year to year is helpful in managing insect pests and diseases. To help in planning crop rotations, keep a garden log or map as a reminder of where vegetables are planted each year.

**Table 1. Common vegetables and their plant family classifications.**

<table>
<thead>
<tr>
<th>PLANT FAMILY</th>
<th>VEGETABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrot Family</td>
<td>Carrot, celery, parsley, parsnip</td>
</tr>
<tr>
<td>Goosefoot Family</td>
<td>Beet, spinach, Swiss chard</td>
</tr>
<tr>
<td>Gourd Family</td>
<td>Cucumber, muskmelon, pumpkin, summer squash, watermelon, winter squash, gourds</td>
</tr>
<tr>
<td>Grass Family</td>
<td>Ornamental corn, popcorn, sweet corn</td>
</tr>
<tr>
<td>Mallow Family</td>
<td>Okra</td>
</tr>
<tr>
<td>Mustard Family</td>
<td>Broccoli, Brussels sprouts, cabbage, cauliflower, Chinese cabbage, collards, kale, kohlrabi, mustard greens, radish, rutabaga, turnip</td>
</tr>
<tr>
<td>Nightshade Family</td>
<td>Eggplant, pepper, potato, tomato</td>
</tr>
<tr>
<td>Onion Family</td>
<td>Chives, garlic, leek, onion</td>
</tr>
<tr>
<td>Pea Family</td>
<td>Bush bean, kidney bean, lima bean, peas, pole bean, soybean</td>
</tr>
<tr>
<td>Sunflower Family</td>
<td>Endive, lettuce, sunflower, salsify, Jerusalem artichoke</td>
</tr>
<tr>
<td>Bindweed Family</td>
<td>Sweet potato</td>
</tr>
</tbody>
</table>

**Home Fruit Orchard Spraying**

Fruit trees around the house are damaged by a large number of different insects and diseases. You can control or prevent this damage by well-timed sprays applied properly to the trees.

General purpose spray mixtures are available at your local supply store. These usually contain insecticides to control both insects and mites and fungicides to control a wide range of diseases. Ordinarily, general purpose sprays contain three to four different materials, and the dosage depends upon the percentage of each material present in the mixture. Follow the directions on the package for dosage. These sprays are designed to take care of only the average condi-
tion. Additional materials may be needed to control special conditions. A good general purpose spray may contain the ingredients listed in the chart to the right.

General purpose fruit sprays are those that have been on the market for a period of time and are considered to be commonly available in both large and small supply stores throughout Arkansas. Measure the materials and thoroughly mix in the sprayer immediately before use. Home-mixed sprays are more economical and allow a choice of pesticides, but they require more time to measure and mix. Sprays are best applied when wind is not blowing and trees not in bloom. Thoroughly cover all foliage and fruit with the spray. The fruit tree spray schedules are based on the following mixtures.

<table>
<thead>
<tr>
<th>INSECTICIDES:</th>
<th>Amount/1 gal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sevin (carbaryl)* PLUS</td>
<td>50% wettable powder 3 tablespoons</td>
</tr>
<tr>
<td>Malathion PLUS</td>
<td>25% wettable powder 3 tablespoons</td>
</tr>
<tr>
<td>Sulfur PLUS</td>
<td>80-90% wettable powder 3 tablespoons</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FUNGICIDES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Captan PLUS</td>
</tr>
<tr>
<td>Benomyl (Benlate)</td>
</tr>
</tbody>
</table>

* Do not use Sevin on apples before the second cover spray. The use of Sevin on apples before the second cover spray may cause serious fruit drop.

<table>
<thead>
<tr>
<th>Time to Spray</th>
<th>Pests</th>
<th>Material / 3 gal</th>
<th>Trees to Receive the Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dormant—when leaves are off and before buds break (in February)</td>
<td>Peach leaf curl and plum pockets</td>
<td>Bordeaux mixture (2 oz bluestone and 3 oz hydrated lime) or 6 Tb 76% Ferbam</td>
<td>Peach and plum</td>
</tr>
<tr>
<td>On a warmish day before new green growth over 1/4” long</td>
<td>Scale</td>
<td>Dormant oil 6 oz Superior summer oil 6 oz</td>
<td>All tree fruits*</td>
</tr>
<tr>
<td>Pink—just before blossoms open; include material in each spray for 6 weeks</td>
<td>Apple scab Cedar apple rust</td>
<td>3 Tb 50% Captan or 1 Tb 50% Benlate</td>
<td>Apples and pears</td>
</tr>
<tr>
<td>Pink or White—just before blossoms open</td>
<td>Fire blight</td>
<td>Streptomycin—at 5-day intervals till flowers are all gone, 1 tsp 21% Agri-Strep/gal</td>
<td>Pears and susceptible apple varieties</td>
</tr>
<tr>
<td>Petal Fall—when most of petals are off and every 7-14 days till harvest: 7 days at beginning and during wet weather and extend to 14 days during dryer, later season</td>
<td>Brown rot, Scab, Codling moth, Plum curculio, Plant bugs/Stink bugs</td>
<td>General purpose mix**</td>
<td>All tree fruits*</td>
</tr>
</tbody>
</table>

** All “general purpose” commercial spray materials contain only Captan as a fungicide. Should fruit rot problems become noticeable, switch to myclobutanil or add Benlate at the recommended rate to the commercial mixture. Benlate or wettable sulfur are effective on powdery mildew (causes crinkly leaves with a dusty surface) and may be added to the mixture.

NOTE: Cherry tree leaves are badly damaged by a leaf spot which may cause early leaf loss and fruit set the next year. Extend the regular fungicide spray schedule, making one application after harvest, to reduce this problem. Benlate is effective and may be used alone in the postharvest application.

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** All “tree fruits” includes apples, pears, plums, cherries, nectarines, peaches. If a severe plum curculio problem occurs, Imidan could be added to the spray on peaches or plums.

Spray Benlate on the fruit just before harvest (but not within 14 days of harvest) to prevent fruit rot after picking.
is used each time. A curdling effect resulting from incompatibility of chemicals may occur in the spray tank if wettable powder (WP) and liquid (EC) are mixed in the same tank. Use only WP formulations alone or only EC formulations alone in the tank at the same time.

Many wettable powder spray materials are lumpy and may plug spray nozzles. Strain the water suspension through a fine brass mesh sieve or nylon hose and/or make sure the intake for the sprayer has a fine brass wire screen. Thorough, constant agitation of wettable powders in the spray is essential.

To conserve honeybees, avoid making spray applications during bloom. Honeybees are extremely important pollinators of fruit trees.

Don't save extra spray solution. It is usually better to apply it on the crop than to try to save it. Never pour leftover spray on the ground or down the drain. Refer to pesticide label for proper disposal.

Always use caution when applying pesticides. **Read the label.** Avoid inhaling the dust when mixing or the mist when spraying. Wear the proper protective clothing (rubber gloves, dust mask) shown on the pesticide label. Wash spilled materials from skin or clothing. Wash clothes soiled with heavy concentrations of spray separately. **Always follow pesticide label restrictions and precautions.**
When azaleas finish blooming and you are still thinking about how beautiful they are, why not root a few cuttings for additional plants? This is one of the easier plants for homeowners to propagate. Propagation requires a minimum of effort and equipment.

Fill a large flower pot with sphagnum peat moss, and firm down slightly in the pot. Use peat moss that is damp but not so wet that water can be easily squeezed out of it (Figure 3).

Cuttings should be taken from new growth that has not yet hardened off. Late May to early June is the period during which cuttings are usually taken (Figure 1). Each cutting should be about 3 to 4 inches long with the leaves on the lower half removed (Figure 2).

A rooting hormone, available from most garden centers, speeds up rooting and increases the number of cuttings to successfully form roots. Apply according to directions on the package before sticking the cuttings in the rooting media. Cuttings will root without the hormone, but rooting will be slower and a lower percentage of cuttings will root.

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Stick the cuttings 1 1/2 to 2 inches deep, and firm the peat moss around the cuttings (Figure 4). Twenty to 30 cuttings can be stuck in a 6-inch flower pot. Leaves should barely touch.

![Figure 4. Stick cuttings in damp peat moss.](image)

Straighten two coat hangers and bend them into “U” shapes. Stick the ends of the wire into the peat moss on each side of the pot so the two “U’s” cross at the top (Figure 5).

![Figure 5. Bend coat hangers to form support for plastic covering.](image)

Place pot, cuttings and wire supports in a large plastic bag. Tie the plastic bag about the wire supports (Figure 6). Place the entire unit in a shaded area, like the north side of the house, and wait two to three weeks to check for rooting. No watering will be necessary during this time.

![Plastic Bag](image)

To check for rooting, untie the plastic bag, grasp a cutting and pull up gently. If the cutting slips out easily, replace it and reseal the plastic bag. Check cuttings weekly for rooting until most are rooted.

If the plastic bag is kept sealed, there is no need to water the cuttings until they are removed from the rooting pot and potted in individual pots or set out in a cool, shady area.

Cuttings started in the spring should make 4- to 6-inch plants the first year. To encourage branching, pinch the tops out as the cuttings begin to grow. This technique works well with other easily rooted plants such as boxwood, hollies and deciduous flowering shrubs.

This material was originally prepared by Kenneth R. Scott, retired Extension horticulturist - ornamentals.

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