Insect and Disease Control

FOR YOUR GARDEN

Extension Service
Institute of Agricultural Sciences
THE STATE COLLEGE OF WASHINGTON
Pullman

Washington
# Insect Pest Control Chart

All garden crops are subject to damage by insect pests. Timely and thorough applications of proper insecticides are very important in controlling insects. Watch your garden throughout the season for indications of insect damage.

## INSECT PESTS OF THE BIG TEN AND HOW TO CONTROL THEM

<table>
<thead>
<tr>
<th>CROP</th>
<th>INSECTS</th>
<th>CONTROL</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beans</td>
<td>Aphids</td>
<td>Dust or spray with nicotine sulfate at 70°F or above.</td>
<td>Apply to undersides of leaves as soon as insects appear. Repeat applications at weekly intervals.</td>
</tr>
<tr>
<td>Beets</td>
<td>Aphids</td>
<td>Same as above.</td>
<td>Apply dust or spray directly on insects.</td>
</tr>
<tr>
<td></td>
<td>Flea beetles</td>
<td>Dust with 0.75% rotenone.</td>
<td>Apply rotenone dust at weekly intervals or as long as flea beetles are present.</td>
</tr>
<tr>
<td>Cabbage</td>
<td>Root maggots</td>
<td>Tar-paper disks or calomel dust.</td>
<td>Place disks snugly around transplants and press firmly to ground.</td>
</tr>
<tr>
<td></td>
<td>Aphids</td>
<td>Dust or spray with nicotine sulfate at 70°F or above.</td>
<td>Spread a handful of calomel dust around stem immediately following transplanting.</td>
</tr>
<tr>
<td></td>
<td>Flea beetles</td>
<td>Dust with 0.75% rotenone.</td>
<td>Apply dust or spray directly on insects at weekly intervals.</td>
</tr>
<tr>
<td></td>
<td>Cabbage worms</td>
<td>5% DDT dust up to 30 days of harvest or 0.75% rotenone dust</td>
<td>Apply DDT dust at 10-day intervals or rotenone dust at weekly intervals.</td>
</tr>
<tr>
<td>Carrots</td>
<td>Carrot rust fly* (maggots in carrots)</td>
<td>Plant early carrots so that they can be harvested before June 1. Do not plant late carrots before June 1. Crude napthalene affords fair control.</td>
<td>Sprinkle crude naphthalene along rows at rate of 1 1/2 lbs. per 100 lineal feet of row. On early carrots, 5 applications at weekly intervals beginning about May 10. On late carrots, make applications at weekly intervals beginning about July 20. Continue applications until 1 month before harvest.</td>
</tr>
<tr>
<td>Chard</td>
<td>Flea beetles</td>
<td>Dust with 0.75% rotenone.</td>
<td>Apply rotenone to foliage at weekly intervals.</td>
</tr>
<tr>
<td>Onions</td>
<td>Thrips</td>
<td>Nicotine dust or spray at 70°F or above.</td>
<td>Apply nicotine dust or spray when insects first appear. Repeat applications three to five times at weekly intervals.</td>
</tr>
<tr>
<td></td>
<td>Maggots</td>
<td>Calomel dust</td>
<td>Before planting, mix 1 part seed with 2 parts calomel or apply calomel dust along rows when onions come through ground. Repeat applications twice a week.</td>
</tr>
<tr>
<td>Peas</td>
<td>Pea weevil Pea aphid</td>
<td>Dust with 5% DDT or 0.75% rotenone.</td>
<td>Apply when first pods are beginning to form. Repeat applications weekly while peas are in bloom.</td>
</tr>
<tr>
<td></td>
<td>Pea moth*</td>
<td>5% DDT dust may afford some control on late peas.</td>
<td>Plant peas early so that they can be harvested by last of June. On late peas apply DDT dust when pods begin to form and repeat applications at weekly intervals.</td>
</tr>
<tr>
<td>Potatoes</td>
<td>Colorado potato beetle Flea beetles Aphids Leaf hoppers Lygus bugs</td>
<td>Dust with 5% DDT.</td>
<td>Apply DDT dust when plants first come through the ground. Make four or five additional applications at 10-day intervals.</td>
</tr>
<tr>
<td>Sweet Corn</td>
<td>Corn earworm</td>
<td>Mineral oil or pyrethrum injections or dust with dilute calcium arsenate.</td>
<td>Apply mineral oil or pyrethrum to green silks or dust green silks with calcium arsenate.</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>Cutworms</td>
<td>Dust with 5% DDT dust.</td>
<td>Apply DDT on ground around transplants.</td>
</tr>
<tr>
<td></td>
<td>Flea beetles</td>
<td>Dust with 0.75% rotenone.</td>
<td>Dust with rotenone when flea beetles first appear. Repeat at weekly intervals or long as necessary.</td>
</tr>
<tr>
<td></td>
<td>Tomato hornworm</td>
<td>Dust with calcium arsenate or hand pick.</td>
<td>Dust with calcium arsenate or hand pick and destroy.</td>
</tr>
</tbody>
</table>

* Occurs only in western Washington
EQUIPMENT NEEDED:

Small-garden duster:
Dusters are of plunger, rotary, or bellows type. All are satisfactory provided they are equipped with long delivery tube with adjustable snout.

Small-garden sprayer:
There are several garden-type sprayers. A compressed air sprayer having an adjustable angle nozzle is very satisfactory.

INSECTICIDES AND OTHER CONTROL MATERIALS NEEDED:

Nicotine sulfate:
Dust—Place 1 qt. hydrated lime in large cans with tight-fitting lid; then sprinkle 1/4 oz. of nicotine sulfate over lime. Add several stones the size of walnuts and shake thoroughly for 5 minutes; then screen through window screen and crush any lumps. Spray—mix according to directions on label.

Calomel dust:
Mix 1 oz. calomel with 1 lb. hydrated lime, using the method of mixing described for nicotine sulfate dust.

Tar paper disks:
Cut tarred building paper into pieces 5 inches square. Make cut from one side to center. Cut several small slits radiating from the center to allow room for disk to fit snugly around stem.

Mineral oil or mineral oil-pyrethrum

0.75% rotenone dust

5% DDT dust

Calcium arsenate dust (dilute)

Note: Calomel, DDT, and calcium arsenate are poisons. Handle them with caution.

Benzene hexachloride—preliminary experimental results with this material indicate that it is effective in controlling root maggots and the carrot rust fly. Benzene hexachloride, however, may cause "off flavor" in some vegetables and for that reason the use of this material is not recommended.

For control of insects not listed in this circular, see Extension Bulletin 280—Victory Gardens
Beans
Bacterial blight
Plants show large, dry, brown spots with yellow borders.

Vegetable Disease Cause and Appearance

Beets
Damping off

Onions
Smut
Blisters full of a black, powdery mass of spores on leaves and stems.

Chard
Leaf spot
Many small, round, dead spots with white centers on leaves.

Tomatoes
Wilting and Mosaic
Curly top
Plants stunted and dark-green in color. Later turn yellow or brown.

Curly-top virus
Infected plants turn yellow and may die. Carried by leaf hoppers.

Late blight
Causes dark-brownish, irregular areas on leaves.

Curly-top virus
Infected plants turn yellow and may die. Carried by leaf hoppers.

Damping off
Plants fall to the ground before flowering.

Damping off and root rot
Caused by fungi that live in soil. Plants grow slowly.

Damping off
Plants fall to the ground before flowering.

Leaf spot
Many small spots with light centers and dark margins as slime mold.

Leaf roll
Virus disease causes a yellowing and dwarfing of plants.

Leaf spot
Many small spots with light centers and dark margins as slime mold.

Leaf spot
Many small spots with light centers and dark margins as slime mold.

Late blight
Causes dark-brownish, irregular areas on leaves.

Leaf roll
Virus disease causes a yellowing and dwarfing of plants.

Leaf spot
Many small spots with light centers and dark margins as slime mold.

Leaf roll
Virus disease causes a yellowing and dwarfing of plants.

Leaf spot
Many small spots with light centers and dark margins as slime mold.

Late blight
Causes dark-brownish, irregular areas on leaves.

Leaf roll
Virus disease causes a yellowing and dwarfing of plants.

Leaf spot
Many small spots with light centers and dark margins as slime mold.

Late blight
Causes dark-brownish, irregular areas on leaves.

Leaf roll
Virus disease causes a yellowing and dwarfing of plants.

Leaf spot
Many small spots with light centers and dark margins as slime mold.

Late blight
Causes dark-brownish, irregular areas on leaves.

Leaf roll
Virus disease causes a yellowing and dwarfing of plants.

Leaf spot
Many small spots with light centers and dark margins as slime mold.

Late blight
Causes dark-brownish, irregular areas on leaves.

Leaf roll
Virus disease causes a yellowing and dwarfing of plants.

Leaf spot
Many small spots with light centers and dark margins as slime mold.

Late blight
Causes dark-brownish, irregular areas on leaves.

Leaf roll
Virus disease causes a yellowing and dwarfing of plants.

Leaf spot
Many small spots with light centers and dark margins as slime mold.

Late blight
Causes dark-brownish, irregular areas on leaves.

Leaf roll
Virus disease causes a yellowing and dwarfing of plants.

Leaf spot
Many small spots with light centers and dark margins as slime mold.

Late blight
Causes dark-brownish, irregular areas on leaves.

Leaf roll
Virus disease causes a yellowing and dwarfing of plants.

Leaf spot
Many small spots with light centers and dark margins as slime mold.

Late blight
Causes dark-brownish, irregular areas on leaves.

Leaf roll
Virus disease causes a yellowing and dwarfing of plants.

Leaf spot
Many small spots with light centers and dark margins as slime mold.

Late blight
Causes dark-brownish, irregular areas on leaves.

Leaf roll
Virus disease causes a yellowing and dwarfing of plants.

Leaf spot
Many small spots with light centers and dark margins as slime mold.

Late blight
Causes dark-brownish, irregular areas on leaves.

Leaf roll
Virus disease causes a yellowing and dwarfing of plants.

Leaf spot
Many small spots with light centers and dark margins as slime mold.

Late blight
Causes dark-brownish, irregular areas on leaves.

Leaf roll
Virus disease causes a yellowing and dwarfing of plants.
Your Garden's Enemies

By David Brannon, Extension Entomologist
and M. R. Harris, Extension Plant Pathologist

All is not milk and honey in growing a garden; it, too, has its little setbacks and difficulties. One of these difficulties, and one which causes the greatest loss to conscientious gardeners, is the control of pests.

The ounce-of-prevention rule often holds true here, as many pest controls are preventives rather than cures. And, to do the most good, gardeners should become well acquainted with control measures for the major pests of each vegetable before any planting is done.

Control measures must be timely to be effective. Do not delay treatment.

Because many insects and diseases spend the winter in crop refuse and other debris about the garden, one of the most important controls is to see that all such debris is collected and burned in the fall.

Many insects and diseases can be destroyed by burning infected and damaged vegetables.

The control of weeds in your garden will help to control insects and diseases.

Classes of Insects and Diseases

Two classes of insects (according to their feeding habits) are:

Chewing insects—eat part of plant. Usually controlled by stomach poisons applied as sprays, dusts, or bait.

Sucking insects—insert slender beaks into plant tissue and suck plant juices. Contact poisons applied as sprays or dusts control this type.

Three groups of diseases are:

Parasitic—usually caused by minute forms of plant life living upon crop plants.

Non-parasitic—caused by unfavorable growing conditions, such as poor soil, too much or too little water, or an excess or shortage of plant food.

Virus—produced by a chemical substance which is spread from plant to plant by insects or in many cases by mechanical contact of diseased plants with healthy ones.