

# FACT SHEET

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## VEGETABLE GARDEN INSECTS AND THEIR CONTROL

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Proper and safe control of garden insect pests is a demanding chore. Since healthy, vigorous growing plants are less susceptible to insect attack, proper fertilization, weed control and plant disease control are essential for adequate production and minimal injury from insects.

Insects may attack developing plants and fruit, and plants can be completely destroyed when heavy numbers of insects develop. To insure proper insect control, gardens should be checked frequently for insect damage. When damage is detected, the proper insecticide must be applied in the correct amount and with adequate plant coverage to obtain control.

Most insecticides used in the home garden have a short residual effect, so additional treatments may be required. Pest recurrence is often a problem for the home gardener. Insecticides should not be used excessively because they may become toxic to plants when used in large quantities. Read all insecticide labels carefully before applying a treatment. Proper storage of unused material is also very important. Small children are extremely susceptible to accidental poisoning if open insecticide containers are left within reach.

Insects attacking garden plants can be placed into three distinct groups: soil insects, sucking insects and chewing insects.

### SOIL INSECTS

Most soil insects attack either the seed, at planting time, or small tender plants. Insects in this group include wireworms, cutworms, white grubs, mole crickets and various maggots or fly larvae.

**Wireworms**—Wireworms are click beetle larvae. They are cylindrical, brownish to yellowish, and are rather hard-bodied. These insects eat seed, cut into small shoots, and often bore into stems, roots and tubers. They attack many plants including potatoes, onions, corn, carrots, peas, beans and melons.

**Cutworms**—Cutworms are the larval or immature forms of certain moths, and can often do extensive damage to a stand of plants in a garden. Cutworms are night feeders and are seldom seen during the day. These insects cut off small plants at or near the ground level and feed on the tender

stem. Many plants are attacked by cutworms, but they are especially damaging to tomatoes, pepper and corn.

**White Grubs**—White grubs or grubworms are white, curve-bodied larvae with brown heads. They are immature May beetles or Junebugs. They stay in the soil and feed on the roots of corn, beans, peas, and other vegetables. These larvae are often collected and used as fish bait.

**Mole Crickets**—Mole crickets are brown, velvety crickets with strong front legs developed for digging. They feed on tubers, roots, and underground stems. Occasionally they will feed on fruit in contact with the ground. They damage peanuts, strawberries, potatoes and other vegetable crops.

**Seed Corn Maggots**—This pest is the white larvae of a small fly. It develops in the soil and feeds on seed and seedlings of corn, beans, peas, potatoes, cabbage, turnips and other crops.

**Cabbage Maggots**—The larvae of a small fly, the cabbage maggot feeds on the surface of roots and tunnels through them. It attacks cabbage, broccoli, turnips, beets and other similar crops.

Other maggots which attack vegetable crops are the sugar-beet root maggot, carrot rust fly and the onion maggot.

**Control of Soil Insects**—Most soil insects can be controlled by treating the soil about 4 weeks before planting. The following may be used to treat 1,000 square feet of surface area:

#### Chlordane

2 pounds of 10% dust.

$\frac{3}{4}$  cup of 40% wettable powder in 2½ to 3 gallons of water.

$\frac{1}{4}$  cup of 74% emulsion concentrate in 2½ to 3 gallons of water.

#### Diazinon

$\frac{3}{4}$  cup of 25% emulsion concentrate in 2½ to 3 gallons of water.

$\frac{1}{2}$  cup of 50% wettable powder in 2½ to 3 gallons of water.

(Root crops such as beets, carrots, onions, potatoes, radishes and turnips should not be planted in chlordane-treated soil.)

The insecticide should be applied to the surface and mixed thoroughly into the soil to a depth of 4 to 6 inches.

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## SUCKING INSECTS

Sucking insects have mouthparts developed for piercing and sucking. They damage plants by inserting their mouthparts into plant tissue and removing plant juices. Heavily infested plants become yellowed, wilted, deformed or stunted, and may eventually die. Some sucking insects inject toxic materials into the plant while feeding, and some transmit disease organisms to plants.

Some examples of sucking insects are aphids, leafhoppers, stinkbugs, squash bugs, thrips and spider mites.

**Aphids**—Aphids are often called plant lice. They are small, soft-bodied insects ranging in color from black to green to yellow. Aphids often occur in extremely large numbers and may cover the entire surface of a leaf or stem.

**Leafhoppers**—Several species of leafhoppers attack garden crops. They are small, green, wedge-shaped insects which suck out plant juices, causing yellowing, leaf-curling and stunting. They also transmit several disease organisms.

**Stinkbugs**—Stinkbugs are very common insects. The most common species attacking home gardens are the green stinkbug, spined stinkbug and harlequin bug. These insects feed on the fruit of a wide range of plants including beets, beans, peas, squash, tomatoes and corn. They cause the fruit of these plants to be shriveled and deformed.

**Squash Bug**—Mature squash bugs are about an inch long and are gray-black in color. Immature bugs are brightly colored with red, green and black. Squash bugs suck juice from the leaves and stems of squash, pumpkins, melons and related plants. Their feeding causes wilting, and in severe infestations leaves will turn brown and fall off. They can often be controlled in the home garden by hand gathering.

**Thrips**—Thrips are minute insects which feed on pollen and tender plant tissue. They rasp the tissue and suck up the exuding sap. Their feeding causes stunted and deformed plants. Thrips are usually a pest of seedling plants, but may attack plants in any stage.

**Spider Mites**—Spider mites are not insects, but are minute red mites related to ticks and chiggers. They suck sap from the underside of leaves, causing small discolored areas. A heavy infestation can cause leaf and flower bud shed.

## CHEWING INSECTS

Chewing insects cause more damage to the home garden than either soil or sucking insects. They feed on all parts of the plants and destroy both foliage and fruit. A wide range of chewing insects attacks plants in the home garden; among these are grasshoppers, leaf miners, beetles, weevils and numerous caterpillars.

**Grasshoppers**—Grasshoppers feed on many plants, including almost all vegetables. When they occur in large numbers, they can completely strip a plant of foliage.

**Leaf Miners**—Leaf miners are the immature form of a small fly. They feed between the upper and lower surface of leaves, tunneling out the tissue.

They attack several plants including spinach, pepper and tomatoes.

**Potato Beetles**—This pest was once very devastating to commercial potatoes and still causes considerable damage in home gardens. They are stout-bodied beetles about 1/2 inch long with yellow and brick stripes. Potato beetles feed on leaves and can completely strip a plant in a short time.

**Flea Beetle**—Some of the most annoying pests of the home garden are flea beetles, small beetles with hind legs enlarged for jumping. Some are striped, but most are blackish, brownish or greenish in color. They attack numerous plants and feed on the leaves. Some of the crops flea beetles attack are beans, peas, cabbage, carrots, eggplant, turnips, mustard, potatoes and tomatoes.

**Cucumber Beetles**—Both striped and spotted cucumber beetles attack garden plants. As soon as the host plant emerges from the soil, these beetles begin to feed on the stems and young leaves. Their larvae often mine in the plant roots. The adults will also feed on the blooms and fruit. Plants most commonly attacked by these insects are cucumbers, squash, pumpkins and melons.

**Blister Beetles**—A number of species of blister beetles attack garden crops. They vary greatly in size and in color. Some are black, some gray, some spotted and some striped with black and yellow. These insects can strip plants of foliage almost before they are noticed. They attack a large number of plants and also excrete a vesicating fluid that will cause blisters when it comes in contact with the skin of man and animals.

**Pepper Weevil**—These insects are about 1/8 inch in length, black in color, with gray or tan hairs covering the body. The adult lays eggs in pepper pods and the larvae feed inside the pods making them unfit for food.

**Vegetable Weevil**—This insect attacks potatoes, tomatoes, turnips, carrots, and many other vegetables. Both adults and larvae feed at night on the buds, foliage and roots of the plants.

**Corn Earworm**—This insect is also known as the cotton bollworm, the sorghum headworm and the tomato fruit worm. It is very devastating to corn and tomatoes, and often to cabbage, beans and peppers. The larvae may reach the length of 1 1/2 inches and will vary in color from green to pink to almost black. They tunnel into the ears or fruit and eat the contents.

**Cabbage Looper**—The cabbage looper is a light green larvae that moves with a looping action. It feeds on cabbage and related plants. Their damage can be detected as holes eaten in the leaves.

**Armyworms**—Several armyworms attack the home garden. Among them are the beet armyworm, the fall armyworm and the yellow-striped armyworm. They are foliage feeders and can be very destructive. They attack almost any vegetable crop.

**Tomato Hornworm**—This is the most destructive and widespread pest of tomatoes. It is a large green larvae with a hard, curved horn on the back end. A few of these large larvae can strip a plant rapidly.

**Webworms**—The beet webworm and garden webworm attack numerous vegetable crops. They spin a web on the plant and devour the foliage. The beet webworm is a rather slender yellowish-green larvae with a black stripe on the back. The garden webworm is light green to yellow in color and has black dots over the body.

**Melonworm and Pickleworm**—These insects have somewhat the same habits. The young larvae feed on the foliage; later they mine into the stems and fruit. They can severely damage melons and cucumbers late in the season.

#### CONTROL OF SUCKING AND CHEWING INSECTS

**Dusts**—Dusts are usually preferable for use in the home garden. Several brands of dusts are available which will control both chewing and sucking insects.

Apply dusts when the wind is calm and force the dust through the foliage so it will reach both sides of the leaves. Dusts should be applied at the rate of 1½ ounces per 50 feet of row.

**Sprays**—Sprays are prepared by mixing emulsifiable concentrates or wettable powders with water. Compressed air sprayers, trombone or slide sprayers, and garden hose attachment sprayers can all be used successfully. If wettable powders are used,

TABLE 1. Insecticide Recommendations for the Home Garden

	Sevin	Diazinon	Kelthane	Malathion	Sulfur	Methoxychlor	Ethion
Sucking insects	W	R	N	R	N	N	N
Chewing insects	R	R	N	R	N	R	N
Spider mites	N	R	R	W	R	N	R

R = Recommended  
N = Not recommended  
W = Will not control all species

TABLE 3. Required interval between last application and harvest\*  
x = Do not use; not an Environmental Protection Agency registered use.

Crop	Carbaryl	Diazinon	Kelthane	Ethion	Malathion	Methoxychlor	Sulfur <sup>9</sup>
Beans	No pre-harvest interval	7 days (pole and snap)	7 days	2 days 4 days 10 days <sup>4</sup>	1 day	3 days	0
Beets	3 days (roots) 14 days (tops)	14 days	x	x	7 days	14 days 7 days <sup>6</sup>	0
Blackeyed peas	x	x	x	x	3 days	3 days	0
Broccoli	3 days	5 days	x	x	3 days	14 days	0
Brussel sprouts	3 days	7 days	x	x	7 days	14 days	0
Cabbage	3 days	7 days	x	x	7 days	3 days	0
Carrots	No pre-harvest interval	10 days	x	x	7 days	14 days 7 days <sup>8</sup>	0
Cauliflower	3 days	5 days	x	x	7 days	7 days	0
Collards	14 days	10 days	x	x	7 days	14 days	0

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agitate the solution while spraying to mix the insecticide. About 1 quart of spray should be applied per 50 feet of row.

For additional information on the description, life history and nature of damage of major pests, see *Insects Attacking Vegetable Crops* (B-1019, Texas Agricultural Extension Service).

#### CULTURAL CONTROL OF GARDEN PESTS

Cultural practices play a significant role in reducing or eliminating many insect problems in home gardens. The following cultural practices will aid in the control of insect pests.

1. Maintain a clean, closely mowed area adjacent to the garden.
2. Dispose of any trash, boards or old plant debris in the area.
3. Keep soil at maximum fertility level and well watered.
4. If only a few plants are involved, hand pick larger insects, crush insect egg masses or wash smaller insects off plants with a water hose.
5. Use cardboard protectors around transplants.
6. At the conclusion of the season remove all plants and plant debris.

TABLE 2. Dilution Chart for Hand Sprayers

Insecticide	Percent emulsion concentrate	Teaspoon per gallon of water	Percent wettable powder	Teaspoon per gallon of water
Carbaryl (Sevin) (purchased as wettable powder)	—	—	80	4
Diazinon	25	2	—	—
Dicofol (Kelthane)	18.5	2	18.5	2
Malathion	50	2	25	6
Sulfur (purchased as wettable powder)	—	—	100	9
Methoxychlor	25	9	50	6
Ethion	—	—	25	6

Use about 1 quart of spray or 1.5 oz. of dust per 50 feet of row.

TABLE 3. (continued)

Crop	Carbaryl	Diazinon	Kelthane	Ethion	Malathion	Methoxychlor	Sulfur <sup>9</sup>
Corn	No pre-harvest interval	No pre-harvest interval (spray) 2 days (dust)	x	50 days (field corn)	5 days	7 days 14 days	0
Cucumbers	No pre-harvest interval	7 days	2 days	No pre-harvest interval	1 day	1 day 7 days	0
Eggplant	No pre-harvest interval	x	2 days <sup>3</sup>	No pre-harvest interval	3 days	7 days 1 day	0
Lettuce, head	3 days	10 days <sup>2</sup>	x	x	7 days	14 days <sup>2</sup>	0 <sup>2</sup>
Lettuce, leaf	14 days	10 days <sup>2</sup>	x	x	14 days	14 days <sup>2</sup>	0 <sup>2</sup>
Lima beans	x	7 days	x	x	x	3 days	x
Melon (watermelon)	No pre-harvest interval	3 days	2 days	No pre-harvest interval	1 day <sup>7</sup>	7 days <sup>7</sup> 1 day <sup>7</sup>	0
Mustard greens	14 days <sup>1</sup>	None (pre-plant or transplant only)	x	x	7 days	x	0
Okra	No pre-harvest interval	x	x	x	1 day	x	0
Onion	x	10 days	x	x	3 days	x	0
Peas	No pre-harvest interval	No pre-harvest interval	x	x	3 days	7 days	0
Peppers	No pre-harvest interval	5 days	2 days <sup>3</sup>	21 days	3 days	7 days 1 day	0
Potatoes, Irish	No pre-harvest interval	35 days	x	x	No pre-harvest interval	No pre-harvest interval	0
Pumpkin	No pre-harvest interval	x	2 days	x	3 days	7 days 1 day	0
Radishes	3 days	10 days	x	x	7 days	7 days	0
Spinach	14 days	10 days	x	x	7 days	14 days	0
Squash	No pre-harvest interval	7 days (summer) 3 days (winter)	2 days	No pre-harvest interval (summer)	1 day	7 days 1 day	0
Tomatoes	No pre-harvest interval	1 day	2 days <sup>3</sup>	2 days 28 days <sup>5</sup>	5 days 1 day	7 days 1 day	0
Turnip	3 days (root) 14 days (top)	10 days	x	x	3 days	14 days 7 days <sup>6</sup> 1 day <sup>8</sup>	0

\*Current with available Environmental Protection Agency's "Compendium of Registered Pesticides" as of February 19, 1974. Rates listed are maximum rates and should not be interpreted as a suggestion for use. Consult label for all recommendations, cautions, warnings, and other information essential for the safe and efficient use of the product. Registered uses are subject to change, thus the reader is cautioned to use the information only as a guide, relying on the product label for use information.

<sup>1</sup>Foliage application only for mustard greens.

<sup>2</sup>No distinction is made between head or leaf varieties; consult product label.

<sup>3</sup>Some products are phytotoxic to eggplants.

<sup>4</sup>Do not make more than one application after the edible parts have formed.

<sup>5</sup>Do not apply more than once after fruit begins to form.

<sup>6</sup>Fourteen days if tops are to be used as food or feed.

<sup>7</sup>Restrictions specify melons, but do not indicate whether or not the term includes watermelons; consult product label.

<sup>8</sup>Application to turnips without tops.

<sup>9</sup>Safe chemical; no time limitation.

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