

canker *Corynebacterium michiganense* pv. *michiganense*, fruit rot *Geotrichum candidum*, and septoria leafspot *Septoria lycopersici*.

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## Insect control

**Aphids** These small, sucking insects feed on plant sap which reduces plant vigor and producing a sticky exudate called honey-dew. Aphids are also very effective vectors of plant viruses.

Aphids are not difficult to control if the proper insecticides are applied on a timely basis. Often a single, well timed application will destroy an aphid population.

**Armyworms** Several armyworms including the fall, beet, and southern armyworms can damage tomatoes. Armyworms can generally be distinguished by an inverted "Y" on the front of the head. The fall armyworm has three yellowish-white hair lines down the back. To the side of the hair line is a wide dark stripe and next to the dark stripe is a yellow stripe with red blotches. The beet armyworm is green with prominent dark lateral stripes and a small black spot located on its side just above the second pair of true legs. The southern armyworm, also called a climbing cutworm, is dark gray and marked with yellow stripes on its side.

Armyworms are easy to control with insecticides with the exception of the beet armyworm. It should be controlled prior to reaching 1/2 inch in length.

**Tomato fruitworm** This is the same insect as the corn earworm and damages tomatoes by boring into fruits. The worm varies in color from light green to pink or brown with alternating light and dark stripes running lengthwise on the body. The head is yellow and the legs black. The skin is coarse with many, small, thorn-like projections.

The fruitworm is controlled by complete foliar coverage by proper insecticides. Timing is critical since control is impossible once the insect bores into the fruit.

**Tomato pinworm** This insect, the larvae of a moth, is yellowish-green or gray with purple spots. The insect is 1/4 inch long and tunnels in the leaf like a leaf miner. The pinworm rolls and ties the leaf tips together and does not leave a trail of black fecal material behind as leaf miners do. Fecal deposits are made at the entrance of the tunnels.

Control is difficult due to the protected feeding habits. Populations can be kept low if correct selection, application, and timing of insecticides are made.

**Hornworms** These larvae are large, green individuals, 3 to 4 inches in length and have a horn-like projection on the posterior. The insects consume great quantities of foliage from tomato, tobacco, pepper, potato, and eggplants. The worm is easy to control with recommended insecticides. Good plant coverage is required.

**Loopers** The cabbage looper is the most devastating of the looper insects. It is usually green with a white line along each side of the body and two lines near the middle of the back. Loopers can consume large amounts of foliage.

Loopers become difficult to control as they age. Complete coverage with insecticides is mandatory if control is to be achieved.

**Leaf miners** This insect, the larvae of a small, black fly is one of the most damaging insects on tomato. The female leaf miner adult punctures the leaves as she inserts the eggs. The leaves take on a white blotched appearance. Small, yellow maggots hatch and feed just below the leaf epidermis leaving winding trails containing spots of black fecal matter.

Control is difficult due to the protected feeding habits and poor control performance of most chemicals. Insecticides with systemic action are usually the best type to use. Sometimes, a portion of the larval population may be destroyed by parasites.

**Stink bugs** These insects are flat, shield-shaped bugs that produce an offensive odor when disturbed. The green stink bug is the most common in Florida although the brown stink bug can be very numerous as well. On tomato fruits, stink bugs pierce the epidermis numerous times. A white blemish results just below the epidermis. The tissue is spongy in texture and usually results in no further decay development. The name cloudy spot is often given to this condition.

Where stink bug populations are high, insecticide application might be warranted. Careful scouting is needed to observe these easily concealed insects.

**Banded cucumber beetle** The adult beetles feed on foliage while the larvae feed on roots. The insect can be controlled by timely application of insecticides.

**Cutworms** The cutworms are stout, dark colored insects which feed on plant foliage and stems often cutting the seedling at the soil line. Most of the