Bug-Wise

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Hornworms on Tomatoes: There are two species of hornworms that occur on tomatoes in the home garden, the tomato hornworm and the tobacco hornworm. Although these are invariably referred to as tomato hornworms, the tobacco hornworm is actually the primary species that occurs in the state. Although these pests are rarely found in commercial tomatoes (they are controlled by sprays applied for other pests), most home gardeners encounter them all too often.

Both of these are large green caterpillars with horns on their rear ends. The horns, by the way, are harmless. The difference is that the tobacco hornworm has seven diagonal white stripes on its side, and usually has a reddish horn, while the tomato hornworm has eight white V-shaped markings on its side (shown above), and usually has a "tobacco-colored" horn. Note that the colors of the horn are just the opposite of the colors one might associate with the name. Actually, most folks won't really care exactly which species they have, because both species cause similar damage.

The adults are large, heavy-bodied, jet-shaped moths known as sphinx moths, or hawk moths. The wings are a dull, mottled gray but there are striking orange to yellow spots along either side of the abdomen. Tobacco hornworm moths have six spots on each side, while tomato hornworms have five. These are night-flying moths, but they can occasionally be seen hovering around tomato plants at dusk or dawn. Eggs are laid individually, usually on the undersides of the leaves. When the caterpillars first hatch they have a somewhat comical appearance, because the horn is practically as large as the caterpillar itself. Larval development is completed in about three weeks, at which time the large caterpillars dig into the soil near the base of the plant and pupate. There are several generations per year.

Like most caterpillars, hornworms do about 90% of their eating during the last 10% or so of their larval life. This is why a tomato plant that looked perfectly fine on Monday afternoon can be stripped by Thursday night. One of these large caterpillars can eat a lot of tomato leaves during its final two or three days. If there happen to be several such caterpillars on a plant, the damage is magnified. These caterpillars are primarily foliage feeders, but larger caterpillars do not hesitate to feed on green tomatoes, as well. Tomatoes are by far the most common host, but occasionally a hornworm will be found on a pepper plant.

Control can be as simple as "hand-picking and foot-stomping" and this method is popular with gardeners who have only a few plants. The insecticides listed below are effective against hornworms and will also control tomato fruitworms, as well as many other insect pests of tomatoes. As with most caterpillar pests, smaller larvae are easier to control than larger larvae. Gardeners who wish to use an organic approach can have success with a 'B.t' insecticide, or spinosad. Spinosad is a very effective caterpillar product that is produced through the culture of a specific soil microbe. Thus the active ingredient in all spinosad products is organic. However, spinosad is available in several different formulations. Some formulations use carriers or inert ingredients that are not organic, but there are formulations of spinosad that are approved for organic gardening.

Insecticides for control of hornworms in home grown tomatoes

Insecticide (Pre-harvest interval)
B.t. kurstaki (0), carbaryl (3), cyfluthrin (1), cyhalothrin (5), endosulfan (1), esfenvalerate (1), malathion (1), permethrin (1), pyrethrins (0), spinosad (1)

White Grubs: White grubs are the larvae of May beetles, June beetles, southern masked chafers and several other species of scarab beetles. They feed about an inch below the soil surface on grass roots. When fully grown, grubs are whitish or grayish in color, about 1 to 1½ inchs long, have a brownish head, three pairs of legs, and characteristically rest in a C-shaped position. Depending on species, some grubs spend about 10 months in the soil; others remain in the soil 2 to 3 years. Grub damage is often most noticeable in the spring, when severely grub damaged areas fail to 'green up'. However, **grubs are easiest to control in mid-summer, when larvae are small**. They are called May and June beetles because that's when the adults fly, mate, and lay eggs. So, for most species, small larvae are present in mid-June to July, making this the best time to treat in order to avoid damage by larger larvae the following spring.

Check for grubs by cutting several 1- to 2-foot square samples 2 to 3 inches deep and lifting out, or rolling back, the turf square to look for grubs. If you find an average of three to five grubs per square foot, treatment is probably necessary. Keep in mind that if you are checking during the spring, grubs will be large, however, the grubs that will be present in mid-summer will be much smaller.

If the soil is dry, be sure to water grass a few days before treatment (this causes grubs to move nearer to the surface of the soil), and thoroughly water again after treatment (this leaches the insecticide into the soil where the grubs are feeding). Excessive amounts of thatch can interfere with effective treatment of white grubs because the organic matter in the thatch tends to bind insecticides, preventing them from reaching the grubs. Therefore, practices that limit thatch accumulation can aid in control of white grubs.

Of the treatments listed below, carbaryl and trichlorfon are more effective against large grubs. Therefore these are the best treatments to use for spring treatments. However, imidacloprid and halofenozide are better options for controlling small grubs during mid summer.

Controlling grubs and other soil-dwelling insects can aid in preventing moles. Because moles are predators that feed on insects and earthworms, they are less likely to occur in lawns where soil-inhabiting insects are controlled. Controlling soil-dwelling insects will also aid in preventing digging by armadillos, skunks, and other predators.

Insecticides for Control of White Grubs in Home Lawns

Insecticide	Brand Name *	Rate/ 1000 sq ft	Comments
Treatments Applied as Sprays			
Carbaryl (22.5% concentrate)	Sevin Concentrate Bug Killer	12 fl oz	Irrigate after treatment
Imidacloprid (1.47% ready to spray)	Bayer Season-long Grub Control	6.4 fl oz	Ready to spray product in a 'hose-end' applicator. 32 fl oz covers 5000 square feet. Apply according to label directions.
Treatments Applied as Granules			
Carbaryl (6.3% granules)	Ortho Bug-b-Gone Multi-Purpose Insect Killer	3 lbs	Water thoroughly following application
Halofenozide (1.33% granules)	Hi-Yield Kill-A-Grub	¾ lb	Irrigate after application
Imidacloprid (0.2% granule)	Bayer Season-long Grub Control	2.87 lbs	Irrigate within 24 hours after treatment
Trichlorfon (6.2% granules)	Bayer 24 Hour Grub Control	3 lbs	Irrigate within 24 hours after treatment

This information is for initial planning purposes only. Always read and follow product label.
Brand names listed here are examples only. Many insecticides are marketed under a number of different band names. Other products containing the same active ingredient should provide equal performance, provided they are labeled for use in the site in question and are applied at equivalent rates.

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