

Tomato Pests and Diseases

Watch for these buggers and you can have fabulous tomatoes this year **Story and Photography By Douglas A. Spilker, Ph.D.**

Whether you have a home garden or pots on your patio, you undoubtedly grow tomatoes. Every gardener has high hopes of a plentiful yield, but pests and diseases can strike quickly. Learning to recognize signs of common tomato diseases and pests will help you take proactive steps to ensure an abundant harvest.

BLIGHTS

Plant diseases are difficult to identify, and often occur together. Many have similar symptoms, but most are caused by fungi or bacteria. Although correct diagnosis is helpful, management practices to prevent disease development needs to start at planting.

Contrary to its name, early blight (*Alternaria solani*) is commonly first noticed in early summer, when tomato plants begin to set fruit. Early blight appears as large irregular patches of black, necrotic (dead) tissue surrounded by yellow areas, first appearing on the lower, older leaves. Later, it can damage the fruit.

Septoria leaf spot (*Septoria lycopersici*) is probably the most devastating foliar disease of tomatoes, eggplant, and peppers. Small, circular spots with yellow halos are spread over lower leaves, and are smaller and more numerous than those of early blight. This disease is very aggressive, and can move up the entire plant, resulting in complete withering. Absence of leaves exposes the fruit to sunscald.

Both septoria leaf spot and early blight overwinter in infested plant debris. Spores spread the diseases with splash-

Days to harvest

Plant tags commonly provide guidance regarding days to harvest, but what does it really mean, and who determines it for each variety? Does it start from germination to harvest if started from seed? What about transplants?

Approximate harvest dates are established by the plant breeder based on their research. The dates are determined in a greenhouse under controlled conditions starting on the day of seeding. However, when planted outdoors, the listed days to maturity will be affected by the ever-changing weather patterns and temperatures, and are just a comparative guide among tomato varieties.

ing rain from infected debris to lower leaves. Extended periods of leaf wetness, high humidity, and warm temperatures intensify disease development. In gardens with a history of leaf blights, protectant fungicides (such as chlorothalonil) should be applied at the first sign of disease. Spray intervals may need to be adjusted, depending on the rainfall patterns.

WILT OR WILT NOT

Wilting foliage might be a sign of insufficient water, but soil-borne pathogens (*Fusarium* and *verticillium*) can cause similar symptoms. If wilted plants do not recover after watering, a soil-borne fungus may be involved. The infection starts in the roots, affecting the vascular system of the plant, blocking nutrient flow. As the disease progresses, more stems and leaves will yellow and wilt, until the plant eventually collapses and dies. Infected plants should be removed and discarded (not composted). Fortunately, many varieties are resistant (look for "F" and "V" codes on plant tags.)

A combination of preventive practices can help avert disease problems with tomatoes – inspect seedlings for disease before purchase, rotate crops,

avoid overcrowding, water from below, and encourage vigorous growth with adequate nutrition and sunlight. Once started, diseases are very difficult to control. Fungicide applications may be your only option. If disease symptoms do not fit to these fungal diseases, then a bacterial disease may be occurring. It is best to have these plant problems diagnosed by submitting a sample to a university Plant Diagnostic Clinic. Fungicides do not control bacterial diseases, and only a few products to control bacterial diseases

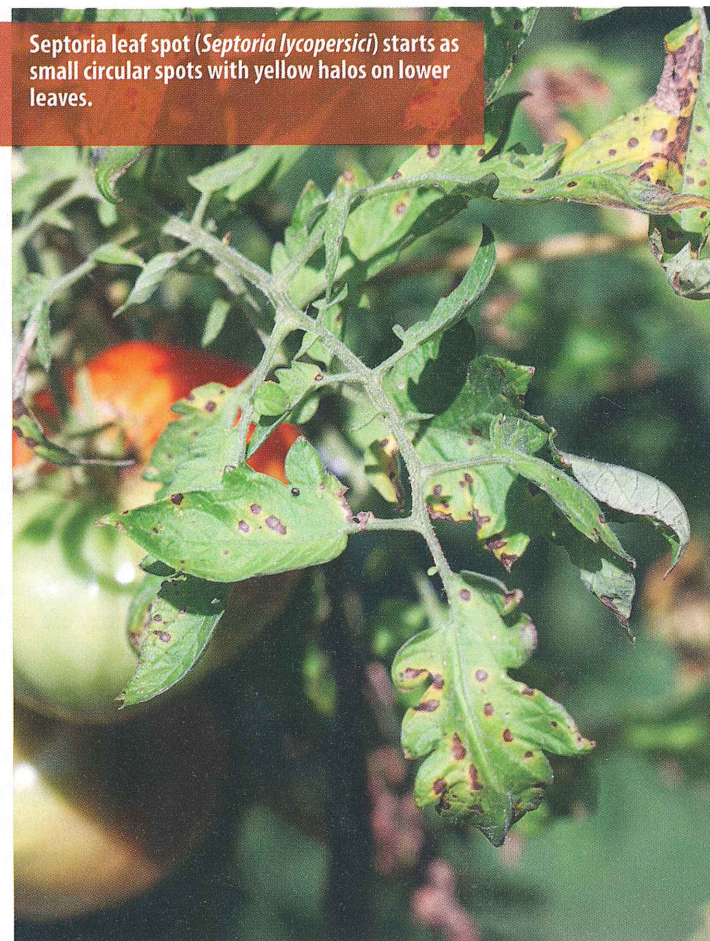
are available to home garden use (such as copper-containing products).

AS THE WORM TURNS

Numerous worms (caterpillars), the larval stages of moths, attack tomatoes. Cutworms, as their name implies, cut off tomato seedlings at the soil surface and feed on them at night. These black to green caterpillars can do tremendous damage in a short period of time. During the day they hide in debris around damaged plants. To deter cutworms, place



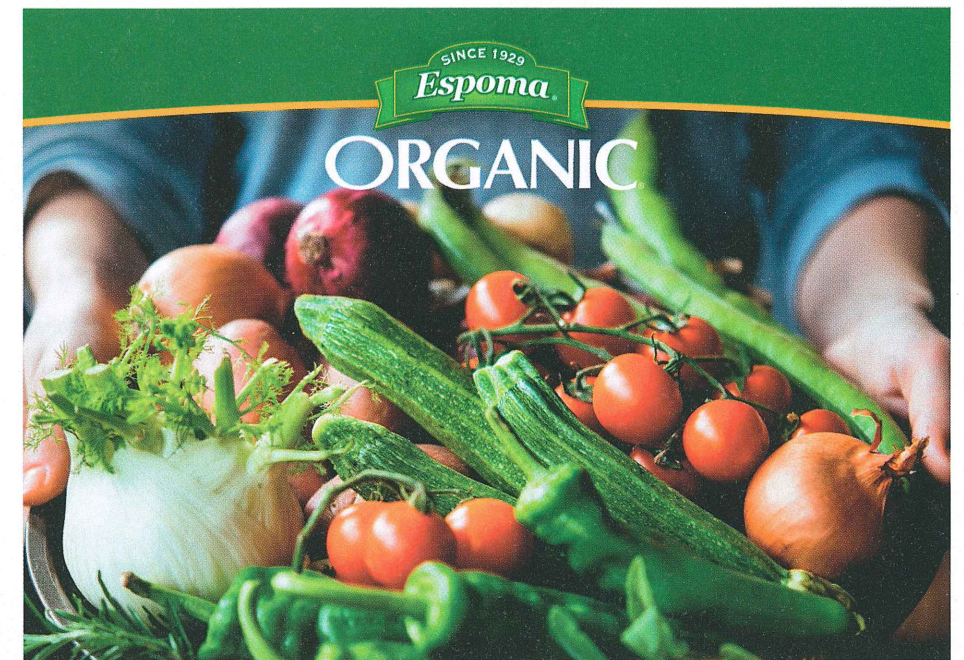
Large irregularly shaped lesions are symptoms of early blight (*Alternaria solani*).



Septoria leaf spot (*Septoria lycopersici*) starts as small circular spots with yellow halos on lower leaves.



Although the tomato hornworm is quite interesting, it has a voracious appetite for tomato foliage.



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collars on seedlings at planting. Wrap newspaper, toilet tissue rolls or aluminum foil around the base, extending above the soil line about 2 to 3 inches. If prevention is taken at planting, chemical treatments are usually not necessary.

Tomato fruitworms are small cream, yellow, or green worms (less than 2 inches long) that may feed on leaves, but mostly damage the fruit. On large fruits, the entry hole can be up to the size of a pea. This worm consumes the tomato's interior, and produces a cavity filled with fluid and droppings, which ultimately rots. Since there can be up to four generations per year, fruitworms can be a season-long problem. Once larvae enter fruit, insecticide treatments are ineffective.



➤ For easy prevention of cutworm damage, place collars on tomato seedlings at planting. Newspaper, toilet tissue rolls, aluminum foil and even opened tin cans will do the trick.

◀ Once tomatoes have been attacked by fruitworms, the fruit is no longer usable. Pick and discard infested fruit.

▼ Study plant tags when selecting seedlings. Hybrids with disease resistance are worth considering.

In gardens with a history of fruitworm problems, preventive insecticide sprays may be needed. Other measures that may help include avoiding planting corn near tomatoes (corn is another significant host) and deep tillage of the garden at the end of the season.

The largest of the tomato pests is the hornworm (up to 5 inches long). The adult is the well-known sphinx moth. This green caterpillar has white diagonal stripes and a horn projecting from its rear. These voracious pests feed on leaves and fruit, and if left unchecked, can strip an entire plant in a matter of days. Besides tomatoes, they feed on eggplant, peppers, and potatoes. If only a few are found, they can be hand-picked and destroyed.

Effective insecticides against all tomato worms include *Bacillus thuringiensis* (*Bt*), neem oil, insecticidal soap, Spinosad or conventional insecticides (such as carbaryl) applied just after fruit set. Always read and follow label instructions.

There are numerous additional pests, diseases, and physiological disorders, like blossom-end rot, that may occur on tomatoes. For more information, including other control options, consult university Extension websites or your local Extension office. ☞

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Decoding Plant Tags

As you decide what tomatoes to grow, you may see some abbreviations on the tags. Most hybrids will have resistance to some diseases. Heirloom tomatoes rarely have much resistance, so be sure to plant them in areas where there is no history of especially soil-borne diseases. A plant with these designations has been shown to be resistant to some common tomato problems. The most common abbreviations on tomato tags are:

V = Verticillium wilt

F = Fusarium wilt

N = Root-knot nematode (a microscopic roundworm)

A = Alternaria (early blight)