

Tomato and pepper disorders: Bacterial spot and speck

KAREN DELAHAUT and WALT STEVENSON

Bacterial spot and speck are found wherever tomatoes or peppers are grown. On occasion these diseases can cause serious problems, mainly in the form of fruit blemishes. The two diseases are often found together on the same plant, but they may occur separately.

Symptoms and effects

Bacterial speck produces small (less than 1/8-inch diameter), dark, round lesions on leaves. Initially, the lesions are surrounded by a yellow halo. As the disease progresses, the lesions may spread to stems, petioles, and flowers. On fruit, tiny dark spots develop that rarely exceed 1 mm in size. Fruit lesions are often sunken with a darker green halo surrounding the center of the lesion.

Bacterial spot produces water-soaked, brown lesions on all above-ground plant parts. The lesions on tomato leaves will become parchment-like and may feel greasy on the upper leaf surface. A yellow halo surrounds the lesions. Although they never become very large, several spots on a single leaflet may cause the entire leaflet to turn yellow and drop. On the fruit, lesions are slightly raised, scabby black specks. Often, a dark green ring surrounds the lesions. On peppers, small, circular, pale green, pimple-like spots appear on the undersurface of the leaf with a corresponding depression on

the upper leaf surface. As the spot enlarges, the center dies, leaving a straw-colored area surrounded by water-soaked tissue. On pepper fruit, bacterial spot lesions are very prominent. They appear as brown, raised spots with cracked, roughened surfaces. Soft rot organisms may enter the pepper through these cracks and destroy the fruit.

Disease cycle

Bacterial speck is caused by *Pseudomonas syringae* pv. *tomato* while bacterial spot is caused by *Xanthomonas campestris* pv. *vesicatoria*. Both pathogens can overwinter on infected plant debris or can be seed-borne; however, the bacterial speck is primarily a seed-borne disease. Infected seedlings are the major



Bacterial speck on tomato.



On pepper, bacterial spot is marked by prominent lesions on fruit and sunken, straw-colored spots on leaves.

source of infection. The bacteria enter the leaves through the stomata or through punctures made by insect feeding.

Both diseases are spread by splashing water. Working in the field while plants are still wet hastens spread of the diseases. Warm weather favors the development of bacterial spot while cooler weather tends to favor bacterial speck infections.

Control

Bacterial spot and speck are managed by rotating fields out of susceptible peppers and tomatoes for at least 2 years. Remove infected plant debris from the field or incorporate it into the soil as soon after harvest as possible.

Purchase seed from a reliable, certified seed source. Don't save seed from one year to the next if either disease was present. Using seed dipped in hot water will help prevent seed-borne infection. The standard hot water treatment involves placing the seeds in a mesh bag and dipping the bags into water heated to 122°F for precisely 25 minutes. Immediately transfer the bags to cold water to cool the seed. There will be some reduction in the germination rate of treated

seed. You may wish to sow additional seed to compensate.

Diseased transplants are a common source of new infections. If using transplants you have not grown yourself, examine each plant carefully for signs of disease before transplanting to the field.

Reduce activity in the field when plants are wet since the bacteria are easily spread from plant to plant by human activity.

Copper-containing bactericides are available for use in controlling bacterial spot, although results vary depending on environmental conditions and bacterial populations when treatments are initiated. If sprays are used, treat every 7 days in the plant bed and continue in the field.

There are a few pepper cultivars with useful levels of resistance. Growers are encouraged to evaluate small plantings of these newer varieties to determine their value to local production needs. We would like to hear back from growers who evaluate these new varieties in Wisconsin. Please send details to Karen Delahaut at 608-262-6429 or kadelaha@wisc.edu.



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