

Bacterial Spot of Pepper

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Bacterial spot, caused by the bacterium *Xanthomonas campestris* pv. *vesicatoria*, is one of the most serious diseases of sweet peppers in Virginia. This bacterial pathogen is also capable of causing disease on tomatoes. The pathogen can cause severe leaf loss that results in reduced yield and sunscalding of the fruit.

Symptoms

Infected plants in the seed bed usually have small, irregular, black or watersoaked spots along the edges of the first leaves. Older plants develop small, pale green or watersoaked lesions that are slightly raised on the underside of the leaf (Fig. 1). Spots are often surrounded by a yellow halo. The centers of the spots may dry and tear, giving the leaf a "shothole" appearance. Some leaves may drop while still green. Young, infected seedlings may lose all but their topmost leaves.

The first symptoms on the fruit are dark, raised spots, frequently surrounded by a watersoaked border. As the lesions enlarge, they become brown and rough and have a cracked or warty appearance. During moist weather secondary organisms may enter through these lesions and rot the fruit.



Fig. 1. Symptoms of bacterial spot on pepper leaves.
(Photo by M.A. Hansen)

Disease Cycle

The causal bacterium is seed-borne and is capable of overwintering on old plant debris in the soil. Contaminated seed is a common source of primary infection. Seedlings infected in the plant bed carry the disease to the field and become sources of secondary infection. Frequent warm, driving rains favor development of the disease. Infection usually occurs through natural openings (stomata) on leaves or stems, or through injuries caused by wind-blown sand, insect punctures, or other mechanical wounds.

Control

Cultural Control

- Use transplants that come from fields certified to be free from disease. This disease is difficult to control in the field; therefore, seedling infection should be prevented at all cost.
- If plants are grown in permanent seedbeds, disinfect the soil with steam before planting.
- Rotate peppers and tomatoes with other crops for at least 3 years.
- Cultivate and handle plants only when they are dry. Avoid overhead irrigation.
- Bury infected plant debris after harvest.
- Maintain a high, balanced fertility, based on a soil test.

Chemical Control

- To reduce the risk of disease, seed can be dipped in a solution containing 1 quart of bleach, 4 quarts water, and 1/2 tsp. surfactant for 1 minute. Use 1 gallon of solution per pound of seed and agitate the solution constantly. Wash seed in running water for 5 minutes after treatment and dry thoroughly.
- Copper and maneb sprays can be used to prevent spread of disease in the field; however, some research studies have shown that the act of spraying can do

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more to spread this disease than to control it. If sprays are used, they should be made at 7-10 day intervals or more often during wet weather. Follow harvest restrictions on the label. Refer to the current issue of the *Virginia Pest Management Guide for Home Grounds and Animals* (VCE Publication 456-018) or *Commercial Vegetable Production Recommendations* (VCE Publication 456-420) for details on chemical control.

Resistance

- Refer to Table 1 for a list of cultivars of different types of peppers that have resistance to one or more of the known races of the bacterium.

Table 1.

Pepper cultivars with resistance to bacterial leaf spot

Bell Types

Boynton Bell
Commandant
Enterprise
X3R Camelot
X3R Wizard

Hot Hybrids

Hot Spot-F1
Sayula-F1

Refer to the current *Virginia Pest Management Guide for Home Grounds and Animals* (VCE Publication 456-018), <http://www.ext.vt.edu/pubs/pmg/>, for details on the proper use of pesticides.

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