UNIVERSITY OF ILLINOIS EXTENSION
College of Agricultural, Consumer and Environmental Sciences

report on
PLANT DISEASE

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DEPARTMENT OF CROP SCIENCES
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

BACTERIAL SPOT OF PEPPER

Bacterial spot, caused by the bacterium *Xanthomonas campestris* pv. *vesicatoria*, is present in most pepper-growing regions in the world, but it is most severe in tropical and subtropical regions with substantial rainfall. Bacterial spot is an important disease of peppers in Illinois, especially in southern half of the state. *X. campestris* pv. *vesicatoria* is also a serious pathogen on tomato (see RPD #970). Besides pepper and tomato, the causal bacterium infects black nightshade (*Solanum nigrum*) and groundcherry (*Physalis minima*).

Figure 1. Bacterial spots on pepper plants, caused by Xanthomonas campestris pv. vesicatoria. Photo courtesy Extension Service, North Carolina State University.

SYMPTOMS

The pathogen can infect all aboveground parts of the plant. Spots may appear on leaves, stems, and fruit, beginning as small, yellow to brown, water-soaked lesion, which turn brown and become necrotic in the center (Figures 1 & 2). The spots are water-soaked during rainy periods or when dew is present. They rarely enlarge to more than 3 mm in diameter. The lesions are generally sunken on the upper surface, and the lesions are slightly raised on the lower surface (Figures 1 & 2). When conditions are optimal for disease development, leaf spots coalesce and form large blighted areas. A general yellowing of leaflets may occur following infection and often leads to premature leaf drop (Figure 3). Spots on fruit are circular green. As the spots enlarge, they turn brown, scablike areas (Figure 4).

Figure 2. Bacterial spots on upper and lower surfaces of pepper leaves, caused by Xanthomonas campestris pv. vesicatoria. Photo courtesy University of Arkansas.

For further information contact ***Mohammad Babadoost****, Extension Specialist in Fruit and Vegetable Pathology, Department of Crop Sciences, University of Illinois at Urbana-Champaign. (Phone:* ***217-333-1523****; email:* ***babadoos@illinois.edu****).*

DISEASE CYCLE

X. campestris pv. *vesicatoria* is a seed-borne pathogen. Dissemination of bacteria by seed and transplants is an important means of dispersal. The disease is favored by long periods of high relative humidity (RH) with free moisture on the leaves. Temperatures between 75 and 86°F (24-30°C) favor disease development. The pathogen is disseminated within a field by wind-driven rain droplets, clipping of transplants, and aerosols. The bacteria can enter the leaf through stomata and wounds

Figure 3. Defoliation of a pepper plant with bacterial spot (left), caused by Xanthomonas campestris pv. vesicatoria, and uninfected plant (right). Photo courtesy APS.

DISEASE MANAGEMENT

Bacterial spot of pepper can be managed by planting pathogen-free seed and disease-free transplants, crop rotation for 2 years with non-host plants, reducing moisture, and application of fixed coppers (e.g., copper sulfate or copper hydroxide) or copper plus maneb. Actigard, Agri-mycin 17, copper products, Serenade Max, and Tanos are labeled for control of bacterial spot of peppers. Seed-borne bacteria can be controlled by seed treatment using sodium hypochlorite solution (0.525% sodium hypochlorite) or hot-water [124°F (51°C) for 30 minutes].

Figure 4. Bacterial spots on pepper fruit, caused by Xanthomonas campestris pv. vesicatoria. Photo courtesy Cornell University.