Bacterial Speck of Tomato
Pseudomonas syringae pv. *tomato*

Hosts: Tomato (*Solanum lycopersicum*), pepper (*Capsicum annuum*), and weeds, including thale cress (*Arabidopsis thaliana*), cudweed (*Gnaphalium* spp.), evening primrose (*Oenothera* spp.), common chickweed (*Stellaria media*), and henbit dead-nettle (*Lamium amplexicaule*).

Disease common name: Bacterial speck.

Pathogen: *Pseudomonas syringae* pv. *tomato*.

Disease Cycle

Inoculum: Seed, plant debris, volunteer tomato plants, and alternate hosts are sources of inoculum.

Transmission: Rain and overhead irrigation spread bacteria from leaf surfaces and infested undecomposed plant debris. Disease spreads when plants are wounded during clipping and harvesting operations.

Infection: Bacteria enter mainly through stomata, other natural openings, and wounds. The pathogen colonizes parenchyma tissues but does not invade vascular tissues. The disease is not systemic. Infection is favored by periods of high rainfall and cool conditions (55–77°F/13–25°C).

Symptoms and signs: Early symptoms on leaves are small water-soaked and brownish lesions (Fig. 1). Symptoms later appear as brownish black leaf spots, sometimes surrounded by chlorotic margins (Fig. 2). Curling of leaves also may occur (Fig. 3). Blossoms can be severely affected (Fig. 4). Stunting and plant death occur when plants are severely infected (Fig. 5). Small (1–2 mm), dark brown to black, slightly raised spots appear on green fruit (Fig. 6). They may be superficial but are disfiguring. Blackish specks on ripe fruit are slightly raised and look like tar spots (Fig. 7). Yield losses are greatest when young plants are infected and fruit spotting is severe, which reduces the market value.

Disease Management

Control methods include using bactericidal sprays on foliage, producing clean seed in certified areas, testing seeds, using seed treatments, and removing infested debris from soils. It is advisable to rotate tomatoes with nonhosts for at least 2–3 years between crops. All production fields should be kept free of weeds and tomato volunteers. Cull piles should not be located in or close to production fields. Resistant cultivars are available.

References

Bradbury, J. F. 1986. Guide to Plant Pathogenic Bacteria. CAB International, Slough, U.K.

Jones, J. B., Jones, J. P., Stall, R. E., and Zitter, T. A., eds. 1991. Compendium of Tomato Diseases. American Phytopathological Society, St. Paul, MN.

Figure 1. Early stage of lesion development without halos. (Courtesy S. Thomson)

Figure 2. Small leaf spots sometimes surrounded by chlorotic zones. (Courtesy R. Gitaitis)

Figure 3. Curling of leaves with lesions and chlorotic zones. (Courtesy M. Schroth)

Figure 4. Diseased tomato blossoms. (Courtesy D. Cupples)

Figure 5. Severe destruction in a tomato field. (Courtesy M. Schroth)

Figure 6. Small, sunken, black lesions with raised centers and dark green halos. (Courtesy S. Thomson)

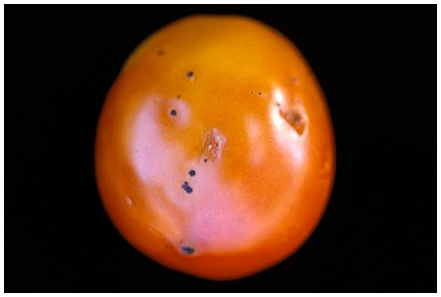

Figure 7. Black, raised lesions on ripe fruit. (Courtesy M. Schroth)