

Agronomic Spotlight

Pepper



PSEUDOMONAS LEAF SPOT OF PEPPER

- » Pseudomonas leaf spot of pepper can result in substantial economic losses.
- » Pseudomonas leaf spot is most prevalent during periods of cool, wet weather.
- » Recommended management strategies focus on sanitation and avoiding conditions favorable for disease development.

Pseudomonas leaf spot of pepper (also known as Syringae seedling blight and leaf spot) is caused by the bacterial pathogen *Pseudomonas syringae* pathovar *syringae* (*Pss*). The disease was first characterized in 1962 on peppers growing in North Carolina. However, since that initial outbreak, the disease has been observed primarily on peppers in southern and southeastern Europe.^{1,2} Pseudomonas leaf spot of pepper occasionally shows up in the US, most frequently in the southern states, typically during periods of cooler weather.^{3,4} The disease can result in substantial yield losses when outbreaks are severe.^{2,5}



Figure 1. Symptoms of Pseudomonas leaf spot on pepper. (A) Pseudomonas leaf spots often lack the yellow halo commonly seen with bacterial spot. **(B)** Yellowing of the leaf can occur as lesions coalesce.

SYMPTOMS OF PSEUDOMONAS LEAF SPOT

Symptoms of Pseudomonas leaf spot develop most commonly on seedling plants grown in tunnels or hot beds. The initial symptoms include water-soaked lesions on cotyledons and the first true leaves that turn into brown to black spots over time. On field-grown plants, the leaf spots can be 1 to 3 mm in diameter (Figure 1A). The leaf spots can enlarge and coalesce to form irregularly shaped lesions, often along the edges of leaves or cotyledons. This can result in a blighting of the entire leaf, and whole leaves can turn yellow and drop prematurely (Figure 1B).^{3,4} Infection of growing points can terminate further growth. Water-soaked and necrotic lesions can spread down

the lower stem (hypocotyl), causing seedling collapse and death that can resemble symptoms of damping-off. Brownish-black lesions can form on the fruit, and fruit infections can result in fruit rot in some situations.

The symptoms of Pseudomonas leaf spot can look similar to those of bacterial leaf spot, caused by *Xanthomonas campestris* pv. *vesicatoria*. The leaf spots caused by *Pss* often lack the yellow halo commonly seen with bacterial leaf spot. However, yellow halos can develop under some field conditions. Apart from submitting symptomatic samples to a plant disease clinic, the main way these two diseases can be distinguished is by the time in the season and average temperatures during which the disease developed. Pseudomonas leaf spot tends to occur early in the season when temperatures are below 75 °F, while bacterial leaf spot tends to occur later in the season when temperatures are above 75 °F.⁴

ENVIRONMENTAL CONDITIONS THAT PROMOTE PSEUDOMONAS LEAF SPOT

Not much is currently known about the disease cycle of Pseudomonas leaf spot, including the source of primary inoculum (how the pathogen is introduced into a planting).⁴ The disease is favored by cooler temperatures (60 to 75 °F) and high humidity conditions, such as tunnels with poor ventilation. The pathogen is spread from plant to plant by splashing water (rain or overhead irrigation) or as aerosol droplets. The bacterium enters leaves through natural openings, such as stomata.^{2,3,4,6}

Strains of *Pseudomonas syringae* pv. *syringae* (*Pss*) can infect and cause damage on plants belonging to the Solanaceae (tomato family) and Leguminosae (bean family), as well as some species of citrus and stone fruits.^{1,5,6} There appears to be some variation in pathogenicity among strains of *Pss* and some host specificity.⁵

MANAGEMENT OF PSEUDOMONAS LEAF SPOT

Developing effective management strategies is difficult when the details of the disease cycle are not well understood. Based on what is known, recommended management practices for Pseudomonas leaf spot include using good sanitation practices and at least two-year crop rotation schedules in transplant

(Continued on page 2)



(Continued from page 1)

houses and tunnel production systems. Growers are advised to inspect seedlings for symptoms before transplanting and only use symptomless, disease-free transplants.

When possible, avoid promoting favorable disease conditions in greenhouses and nursery production systems, such as low temperatures, high humidity levels, and wet plant surfaces. Avoid overhead irrigation both during transplant production and in the field to minimize the spread of the pathogen.^{3,4}

Sources

¹Person, L. H. 1964. A bacterial leafspot of pepper caused by *Pseudomonas syringae*. Plant Dis Reporter 48:750-753.

<https://babel.hathitrust.org/cgi/pt?id=chi.098078550&seq=246>

²Mitrev, S., Gardan, L., and Samson, R. 2000. Characterization of bacterial strains of *Pseudomonas syringae* pv. *syringae* isolated from pepper leaf spot in Macedonia. Journal of Plant Pathology 82:227-231.

<https://www.jstor.org/stable/41998007>

³Jones, C., Conn, K., and Himmel, P. (Eds.) 2006. Pepper and eggplant disease guide. Seminis.

<https://grow.vegetables.bayer.com/download-pepper-disease-guide.html>

⁴Obradovic, A. 2003. *Syringae* seedling blight and leaf spot. In Pernezny, K., Roberts, P., Murphy, J., and Goldberg, N., Eds. Compendium of pepper diseases. American Phytopathological Society.

⁵Ranjit, S., Deblais, L., Poelstra, J., Bhandari, M., Rotondo, F., Scaria, J., Miller, S., and Rajashekara, G. 2024. In vitro, in planta, and comparative genomic analyses of *Pseudomonas syringae* pv. *syringae* strains of pepper (*Capsicum annuum* var. *annuum*). Microbiology Spectrum 12.

<https://doi.org/10.1128/spectrum.00064-24>

⁶*Pseudomonas* bacterial spot. Ontario Crop IPM.

<https://cropipm.omafra.gov.on.ca/en-ca/crops/peppers/diseases/df60a010-cc3f-47bc-9123-349731f6b39e?iid=becddadc-8abe-4d86-b0ad-baabb246114f#identification>

Websites verified 8/7/2026

For additional agronomic information, please contact your local seed representative.

Performance may vary. Performance may vary, from location to location and from year to year, as local growing, soil and environmental conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on their growing environment. The recommendations in this material are based upon trial observations and feedback received from a limited number of growers and growing environments. These recommendations should be considered as one reference point and should not be substituted for the professional opinion of agronomists, entomologists or other relevant experts evaluating specific conditions.

BAYER GROUP DOES NOT WARRANT THE ACCURACY OF ANY INFORMATION OR TECHNICAL ADVICE PROVIDED HEREIN AND DISCLAIMS ALL LIABILITY FOR ANY CLAIM INVOLVING SUCH INFORMATION OR ADVICE.

6411_930350 Published 08/10/2026

