

Bacterial Leaf Spot on Greenhouse Ornamentals

NC STATE EXTENSION

Ornamental Disease Information

Symptoms and Identification

Typical leaf spots caused by bacteria appear as water-soaked, brown to black lesions often outlined with a yellow halo. Water-soaked (or sometimes called greasy) spots often appear on the underside of the leaf first. Lesions caused by *Xanthomonas* on *Begonia* and *Pelargonium* are v-shaped, extending inwards from the leaf margin. Necrotic spots may be angular or somewhat round. Spots may coalesce to cause a blighted appearance in some hosts. Bacterial leaf spots can easily be confused with fungal leaf spots, so be sure to get plants diagnosed by a plant disease clinic ([NCSU Plant Disease Clinic](https://content.ces.ncsu.edu/leaf-spotting-bacteria-on-ornamentals)).



V-shaped lesion on begonia.

*Attribution: NCSU Plant Disease and
Insect Clinic*



*Bacterial leaf spot on Celosia
seedling.*

*Attribution: NCSU Plant Disease and
Insect Clinic*



Bacteria leaf spot on zinnia.

*Attribution: NCSU Plant Disease and
Insect Clinic*



*Leaf spot caused by Xanthomonas
sp. on poinsettia.*

*Attribution: NCSU Plant Disease and
Insect Clinic*

Pathogen

Bacterial leaf spots on ornamental crops are typically caused by bacteria in the genera *Pseudomonas*, *Xanthomonas*, and *Acidovorax*. Some of these bacteria cause disease on a wide host range while others cause disease on specific plant genera.



Bacterial leaf spot on geranium.

*Attribution: NCSU Plant Disease and
Insect Clinic*



Bacterial leaf spot on begonia.

*Attribution: NCSU Plant Disease and
Insect Clinic*



*Water-soaked lesions on
pelargonium.*

*Attribution: NCSU Plant Disease and
Insect Clinic*

Hosts

A wide range of ornamental hosts are affected by bacterial leaf spot. Susceptible hosts include canna, begonia, marigold, tickseed, poinsettia, English ivy, geranium, chrysanthemum, petunia, vinca, salvia, zinnia, mandevilla, lavender, and gerber daisy.

Host Parts Affected

Symptoms occur on the leaves. In some hosts, *Xanthomonas* can be systemic.

Disease Transmission

The organism enters the plant through natural openings such as stomata or through wounds and can be transmitted by water splashing during overhead irrigation or rainfall. Seed transmission is a means of primary spread for some bacterial species. Survival in crop debris depends on the species, but can allow the bacterium to carryover to the next crop.

Favorable Environmental Conditions

Warm, humid conditions are favorable for disease development. These conditions make disease management on propagated plants under mist particularly difficult.

General Disease Management

- If starting crop from seed, purchase certified disease-free seed only. Most reputable seed companies provide certified disease-free seed.
- If starting crop from cuttings or plugs, use healthy plant material only and avoid diseased material.
- Discard any diseased material and cleanse hands before proceeding with healthy material.
- Remove and destroy symptomatic plants and adjacent plants (to remove any asymptomatic, but infected plants) to avoid spreading the bacteria.
- Drip or ground irrigation can help prevent spread of the pathogen. Minimize the use of overhead irrigation to prevent disease.
- Leaves should be kept as dry as possible. Watering early or at a time of day that foliage can dry quickly will help prevent disease spread.
- Use preventative bactericides (see below) if there has been a history of disease. Apply prior to disease development.
- Sanitize greenhouse benches, tools, pots, flats and any other equipment by removing crop and soil debris entirely, followed by treatment with a sanitizer.

Disease Management for Conventional Growers

- Sanitation is the most important management tool for control of bacterial pathogens. Bactericides (listed below) will only provide preventative control.

Product	Active ingredient	Efficacy
(various) e.g., Champ, Nu-COP,	copper hydroxide	Fair

Product	Active ingredient	Efficacy
Junction	copper hydroxide + mancozeb	Fair
Camelot O	copper octanoate	Fair
Cuprofix	copper sulfate	Fair
Phyton 27 or 35	copper sulfate pentahydrate	Fair
Agri-Mycin	streptomycin sulfate	Fair
Alliette WDG, Areca	fosetyl-Al	Poor to fair
(various) e.g., K-Phite, Fosphite	mono- and di- potassium salts of phosphorous acid	Poor to fair
Cease	<i>Bacillus subtilis</i> QST 713 strain	Poor to fair

Additional Resources

[North Carolina Agricultural Chemicals Manual](#)

[NC State Plant Disease and Insect Clinic](#)

[Southeastern US Pest Control Guide for Nursery Crops and Landscape Plantings](#)

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