2.76 corrected copy
sion Service ● University of Minnesota

FACT SHEET

PLANT PATHOLOGY NO. 30—REVISED 1976
SUSAN J. OVEREND, WARD C. STIENSTRA

Bacterial Leaf Diseases of Foliage Plants

Many foliage plants are susceptible to bacterial diseases, especially during gloomy winter months. Common symptoms include leaf spots, blights, and wilting. Bacterial diseases restricted to the leaves can often be controlled.

WHAT ARE BACTERIA?

Bacteria are microscopic single-cell organisms that reproduce by dividing in half. This process may occur as often as once every 20 minutes, or it may take several hours. In some of the faster multiplying species, a single bacterium can produce over 47 million descendants in 12 hours.

Approximately 170 species of bacteria can cause disease on foliage plants. Bacteria cannot penetrate directly into plant tissue, but must enter through wounds or natural openings such as stomata (pores for air exchange) in leaves.

CONDITIONS FAVORABLE FOR THE GROWTH AND MULTIPLICATION OF BACTERIA

Bacteria are normally present on plant surfaces but will only cause problems when conditions are favorable for their growth and multiplication. These conditions include high humidity, crowding, and poor air circulation around plants. Misting plants will provide a film of water on the leaves where bacteria can multiply.

Too much, too little, or irregular watering can put plants under stress and may predispose them to bacterial infection. Other conditions that produce stress include low light intensity, fluctuating temperatures, poor soil drainage, too small or too large a pot, and deficiency or excess of nutrients.

Bacterial diseases tend to be prevalent on foliage plants during the winter months when light intensity and duration are reduced. During this time, plants are not growing actively and are easily stressed.

SPECIFIC DISEASES OF FOLIAGE PLANTS CAUSED BY BACTERIA

Different species of bacteria affect plants in different ways. Plant symptoms include tip burns, leaf spots, blights, rots, wilts, or the total collapse of plant tissues.

The most severe and devastating diseases of foliage plants are caused by bacteria belonging to the genera *Erwinia, Xanthomonas* and *Pseudomonas.* These bacteria infect many plants, some of which are listed below along with common symptoms. However, many plants are affected by bacterial diseases not mentioned here. Control measures for all bacterial leaf diseases of foliage plants are the same and are discussed later in this fact sheet.

Bacterial Leaf Spot and Tipburn *(Xanthomonas dieffenbachiae,* figure 1).

Susceptible plants are *Philodenaron oxycardium* (Heartleaf Philodendron), *Dieffenbachia* spp., *Anthurium* spp., and others.

This disease is most active under hot, humid conditions. The most common symptom is yellowing along the leaf margin beginning at the leaf tip. Under hot, humid conditions, the leaf margin may turn reddish brown rather than yellow. Early symptoms of infection are small, translucent dots which then turn yellow. The centers of older lesions often turn brown. As the disease progresses, affected leaves turn yellow and drop from the stem.

Figure 1. Bacterial Leaf Spot and Tipburn *(Xanthomonas dieffenbachiae)* **on a Dieffenbachia leaf. Notice the yellowing of the leaf margin. The older infected area has turned brown. Bacteria were isolated from the rectangular cut in the leaf.**

Bacterial Leaf Spot *(Pseudomonas cichorii,* figure 2)

Susceptible plants include *Scindapsus* spp. (Pothos), *Philodendron panduraeforme* (Fiddleleaf Philodendron), *Aglaonema* spp. (Chinese Evergreen), and *Monstera* spp. (Split-leaf Philodendron).

Figure 2. Bacterial Leaf Spot *(Pseudomonas cichorii)* **on** *Scindapsus* **(Pothos). Yellow halos can be seen around the spots on the underside of this Pothos leaf.**

Symptoms are varied and may include brownish-black lesions, light and dark zones on *Scindapsus* leaves, and a yellow halo around affected areas on *Monstera deliciosa* leaves.

Bacterial Leaf Blight *(Xanthomonas vitians)*

Susceptible plants include *Syngonium* spp., *Aglaonema roebellinii* (often called Schismatoglottis) and possibly other *Aglaonema* spp. (Chinese Evergreens).

Syngonium spp. are most often attacked by this bacterium. Symptoms include translucent lesions at the leaf tip and along the leaf margin. The lesions may elongate and extend into the middle of the leaf. Lesions are dark green at first, then turn yellow and eventually turn brown when dead. The diseased area is often surrounded by a bright yellow halo that separates it from the healthy portion of the leaf. White flakes of dried bacterial exudate are often visible on older lesions on the undersides of leaves.

Bacterial Blight of Foliage Plants *(Erwinia chrysanthemi)*

This disease affects many plants, including *Aglaonema* spp. (Chinese Evergreen), *Dieffenbachia* spp., *Philodendron* spp., and *Syngonium* spp.

The bacteria attack some plants systemically (internally), especially *Dieffenbachia* spp. Symptoms of systemic infection are the yellowing of new leaves, wilting, and a mushy, foul-smelling stem rot.

Aerial spread of this bacterium can cause foliar infection. Symptoms may appear as rapid, mushy leaf collapse on *Philodendron* spp., definite leaf spots on *Syngonium* spp., or all of these symptoms on *Philodendron selloum.*

Erwinia chrysanthemi grows best in warm-to-hot, wet, and humid environments. Attack by these bacteria often results in the death of foliage plants.

Bacterial Leaf Spot and Stem Canker *(Xanthomonas hederae)*

These bacteria attack the English Ivy, *Hedera helix.*

Leaf spots are light green and translucent with a reddish margin; older spots turn brown or black. Leaf stalks become black and shriveled. This decay may extend down to twigs and woody stems, and definite cankers may be seen.

Table I. Additional susceptible plants and symptoms of bacterial diseases.

Plant	Symptoms
Agave spp.	—Leaf tissue becomes translucent and eventually collapses.
Asplenium spp. (Bird's Nest Fern, figure 3)	—Translucent lesions around leaf margins turn yellow, then brown.
Begonia spp. *Chlorophytum* spp. (Spider Plant) *Cissus* spp.)Grape Ivy, Kangaroo Vines) *Coleus* spp. *Tradescantia* spp. (Wandering Jew)	—Leaf tissue becomes translucent and papery in areas. Leaves become limp and collapse.
Dracaena sanderiana	—A leaf spot caused by *Pseudomonas* sp. produces translucent lesions, sometimes with thin, reddish brown margins. Leaves turn yellow, and affected areas become dry and papery.
Scindapsus spp.	—A rapid decay is caused by *Erwinia carotovora.* Translucent, grayish-green areas rapidly enlarge, become mushy, and turn brown to black. Complete collapse of the affected plant part usually results.

Figure 3. A bacterial leaf disease on *Asplenium* (Bird's Nest Fern). Translucent lesions appear around the leaf margin. Older lesions have turned brown. Bacteria were isolated from the rectangular cut in the leaf margin.

CONTROL OF BACTERIAL LEAF DISEASES OF FOLIAGE PLANTS

Many disease-producing bacteria restricted to plant leaves can be controlled; however, prevention should be the aim. Provide plants with light conditions that are optimum for their growth. Sun-loving plants should get full sun, and all others should be placed near an east window or given supplemental lighting.

Avoid placing plants where there are conditions of high humidity, crowding, or poor air circulation. Do not mist plants and avoid wetting the foliage when watering, as bacteria need water to multiply and spread to healthy leaves. Water plants according to recommendations, being careful not to overwater them. Proper watering, repotting every 6 months to 1 year in fresh sterile soil, fertilizing every 8-12 weeks during the spring and summer, and controlling insect infestations will keep plants growing in healthy condition and lessen the likelihood of infestation by bacteria or other disease organisms.

Should a plant become infected by bacteria, the following suggestions may help to halt the spread of infection. Provide conditions that are optimum for the plant's growth, as described above. Isolate the diseased plant and prune infected leaves, but avoid excessive handling of diseased plants. If more than one-third of the plant is involved, prune infected leaves over a period of time, since removing too many leaves at one time will put the plant under further stress. Disinfect scissors before each cut by dipping them into a freshly made solution of 1 part Chlorox or Hilex bleach and 9 parts water.

If the above cultural methods do not seem to stop the spread of bacteria within a few days, and the plant is large and valuable, spraying with streptomycin sulfate may be beneficial. Spray once a week as necessary, following rate recommendations printed on the label. Streptomycin sulfate is packaged under several brand names and is available at most large garden centers.

If the disease is systemic and has spread throughout the plant, affecting the stems as well as the leaves, the plant cannot recover. We recommend destroying the plant to prevent spread of the bacteria to healthy plants.