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Diseases of Landscape Plants

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Leaf Diseases

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Leaf diseases — or "foliar" diseases — occur on most species of landscape trees and shrubs. The main foliar disease problems of landscape trees and shrubs are commonly known as:

- Powdery mildews
- Rusts
- Scabs and spots
- Blotches, blights, or anthracnose
- Blisters or curls
- Needle casts
- Sooty molds
- Galls

This publication explains the typical symptoms, causes, management, and life cycles of common foliar diseases.

Disease Types and Symptoms

Powdery Mildews

Powdery mildew describes a type of fungal disease that coats leaf surfaces in a characteristic white, powdery substance (Figure 1). There are hundreds of different powdery mildew species; however, most species are fairly host specific — the powdery mildew on lilacs only infects lilacs, the powdery mildew on roses only infects roses, and so on — of course, like most things, there are exceptions.

Rusts

These diseases form yellow, orange, or brown pustules on the stems and leaves of infected plants (Figure 2). Some rusts only attack leaves, but others can attack stems, resulting in galls or cankers.

Scabs and Spots

These diseases are characterized by discrete lesions that discolor and die — that is, they become necrotic (Figure 3). With some of these diseases, the dead tissue falls out of the leaf, resulting in a "shot hole" appearance. Common

Photo by Janna Beckerman

Figure 1. *Powdery mildew on lilac leaves.*

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Figure 2. *A rust disease on a hollyhock leaf.*

Photo by Janna Beckerman

Figure 3. *A leaf spot disease.*

"shot hole" diseases are often observed on cherry and ornamental cherry trees.

Blotches, Blights, or Anthracnose

These diseases begin as spots, but spread down the leaf veins, into the leaf's stalk (or, petiole), and into the plant's woody tissue (Figure 4). Sycamore anthracnose and blotch of horse-chestnut are common diseases regularly observed in the Midwest.

Blisters or Curls

Symptoms of leaf blister or curl are regularly found on ornamental peaches, plums, alders, and oaks. As the name suggests, symptoms include blistering and curling of the leaves (Figure 5). However, many insects or herbicides can cause similar problems, so inspect leaves carefully and be sure to rule out insects or herbicides (including "weed-and-feed" products) before diagnosing these diseases.

Needle Casts

These are simply foliar diseases in conifers (Figure 6). The needles may develop spots, blotches, or turn brown and die. Upon death, conifers shed or cast off the needles.

Sooty Molds

Sooty mold, as the name suggests, appears as a fine coating of a soot-like substance on the leaf surface, and is a commonly observed problem on the foliage of landscape plants (Figure 7). However, sooty mold is not a disease, but a group of fungi that live off the exudates (honeydew) produced by feeding aphids.

Galls

Many tree leaves commonly develop galls or growths on their upper or lower surfaces (Figure 8). Insects, not plant pathogens, cause most of these problems. Some leaf gall-causing diseases include azalea leaf gall, camellia leaf gall, and even some rust pathogens. Leaf galls on most other plants in Indiana are due to insects. To diagnose what type of gall you have, carefully cross-section the gall and examine it for the presence of any insect parts or frass (that is, excrement).

Photo by Janna Beckerman

Figure 4. *Guignardia blotch symptoms on horse-chestnut leaves.*

Photo by Janna Beckerman

Figure 5. *Leaf blister on oak leaves.*

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Figure 6. *Needle cast on a Colorado blue spruce.*

Causes

Fungi cause most leaf diseases, although there are notable exceptions, including bacterial leaf spots and blights (Figure 9), viral disease problems, and foliar nematodes. Most foliar diseases have little effect on a plant's well-being, so for most people the problem is an issue of aesthetics, not plant health.

Management

The best way to manage foliar diseases is to plant disease-resistant tree and shrub varieties when they are available. Despite everyone's best efforts, resistance breaks down over time, not all shade trees can be bred for resistance, and even resistant plants can succumb to foliar problems when there there is unusually wet weather or if the plants are planted in a poor site.

Defoliation is a dramatic event that is typically more traumatic for the urban dweller than the urban tree. Most broadleaf trees and shrubs that lose their leaves to disease or insects will produce a second flush of leaves later in the season, or even the following year. The important thing to remember is that defoliation is usually only a problem if a tree has lost more than a third of its canopy more than three times in five years. If this is the case, then a preventative application of fungicides should be made prior to infection the following year — this will protect new growth as it emerges and minimize long-term impact.

Disease Cycles

In general, most foliar pathogens infect trees and shrubs in the spring under cool, moist conditions. The inoculation, germination, penetration, infection, and invasion of these

Photo by Janna Beckerman

Figure 7. *Sooty mold symptoms.*

Photo by Cliff Sadof

Figure 8. *Hedgehog gall symptoms on a leaf.*

Photo by Janna Beckerman

Figure 9. *Bacterial leaf spot on a magnolia leaf.*

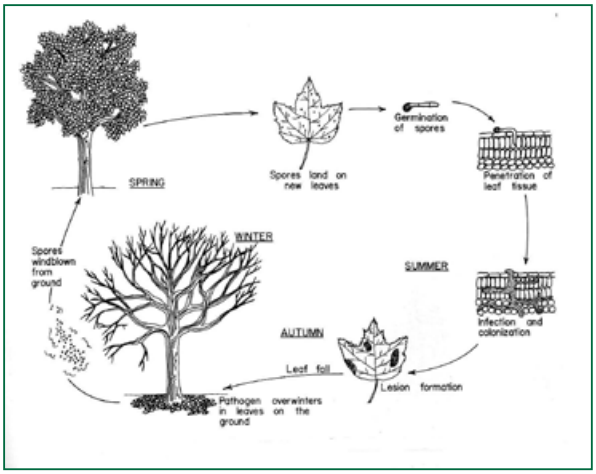

Illustration from Diseases of Shade Trees, Terry A. Tattar.

disease-causing organisms are similar for both broadleaved plants and conifers (Figure 10). One key difference is that deciduous plant pathogens begin their infection cycle from nearby fallen leaves, while in conifers, needlecasts develop fruiting bodies on dead needles that usually remain attached to the host for one or two years.

Find Out More

Find more publications in the *Diseases of Landscape Tree and Shrubs* series by visiting the Purdue Extension Education Store at www.extension.purdue.edu/new.

To see publications that cover specific diseases of landscape plants, visit www.extension.purdue.edu/extmedia/botany.htm#3.

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