

Selected Foliar Diseases

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General Types of Foliar Diseases

Fungi

Leaf spots/Blights

Gray mold

Powdery mildew

Rusts and smuts

Downy mildews

Bacteria

Leaf spots/blights

Phytoplasmas (no cell walls)

Virus diseases

Mosaic symptoms

Foliar nematodes

Leaf symptoms

General Management of Foliar Diseases

Inspection of newly arrived plants

Sanitation

Watering, spacing, air circulation

Resistant cultivars

Fungicides/chemical management

Powdery Mildew Diseases



Powdery mildew appears as white patches on leaves and stems and is caused by several related fungi. The disease typically occurs in mid to late summer and causes leaf yellowing, defoliation, and stunting of the plants. In most cases it is not lethal to the plants it infects, however it reduces plant vigor and size. To reduce this disease, improve air circulation by spacing and thinning and avoid overfertilization.

Gray Mold or Botrytis Diseases



Gray mold appears as a gray fuzzy growth of older leaves, stems, and flowers especially under cool moist cloudy environmental conditions. The fungal spores can lay dormant for quite a while on plants before germination and infection of senescing tissue. To reduce this disease promote faster drying of foliage, reduce overhead irrigation and increase plant spacing, and promptly remove older leaves and flowers.

Bacterial Leaf Spot on Cranesbill Geranium (*Pseudomonas* and *Xanthomonas*)



Pseudomonas causes "reddish" brown spots that may cause the leaf to distort. *Xanthomonas* causes small brown angular to circular spots with yellow halos. In some plants these bacteria can cause dead spots in foliage and sometimes cankers on stems. These bacteria overwinter in dead plant material, but do not survive for long in water or soil. Bacteria need a natural opening such as leaf stomates, or an injury (mechanical, insect or another disease) to infect. Never work with plants while are wet since the "bruising" and other mechanical injury helps to spread the bacteria between plants. Bacteria are not controlled with fungicides.

Hollyhock Rust



Rust on hollyhock, caused by *Puccinia malvacearum*, causes small orange-brown spots on the lower leaf surfaces. This rust doesn't have an alternate host. Common mallow weeds however, help the rust to persist and spread even if all plant debris is cleaned up in the fall. Russian hollyhock, (*A. rugosa*), and fig-leaf hollyhocks, (*A. ficifolia*), have some resistance to this disease.

Smut on Gallardia



White smut is caused by three species of *Entyloma*, i.e. (*E. polysporum*, *E. calendulae*, *E. compositarum*). At first light green spots, some with tan centers, form on the leaves and white spores form on the spots. The leaf spots become dark brown. Additionally, a resting spore is produced later in the season inside the diseased foliar tissue. Plants in nursery production, with close spacing and overhead irrigation, tend to be more severely diseased than plants in the landscape. Where feasible, diseased foliage should be removed and destroyed.

Foliar Nematodes in Hosta



Foliar nematodes in the genus, *Aphelenchoides*, cause interveinal light green stripes on older hosta leaves that later turn brown. The infected tissue may fall out or tear giving the plants a tattered appearance. These microscopic worms swim in water coating up the stems before entering through the leaf stomates. They can then be moved from plant to plant through handling and tools. Removal of infected foliage and reducing overhead watering may help reduce spread.

Hosta Virus X



Symptoms of virus infection on hosta leaves include mosaic, yellowing, and browning. The virus can be spread very easily by handling plants and on tools. Test kits are available to confirm virus infection.

Downy mildew on Rudbeckia



Downy mildew on rudbeckia is caused by the fungal-like organism, *Plasmopara halstedii*. Initial symptoms appear as dark blotchy areas on the upper leaf surfaces followed by grayish-white fuzzy growth on the lower leaf surfaces. Symptoms may occur spring or fall, especially during wet cool periods. Encourage better air movement and reduce overhead watering to help slow disease. Select resistant cultivars.

Septoria Leaf Spot on Rudbeckia



D.L. Clement

Septoria leaf spot is caused by, *Septoria rudbeckiae*. The first symptoms usually appear on the older lower leaves as small dark brown spots on the upper surface that enlarge with time. Under overhead irrigation the spots may enlarge to cover the entire upper leaf surface. Avoid overhead irrigation after mid-day to promote faster drying of the foliage.