

Disease control in cool-season ornamentals

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Apple scab (above) is identifiable by its scab-like, olive-colored lesions. Right: black spot on rose leaves appear as circular, black lesions with fringed or feathery margins.



Ornamentals, because of their versatility, are the basis of any landscape design. Unfortunately a number of plant pathogens attack ornamentals, and when a disease gets out of hand the popularity of an ornamental falls rapidly. Ornamentals require proper care, including disease control, during the growing season. This article focuses on general groups of ornamental diseases and uses specific examples for illustration.

Rust diseases

Yellow to orange to reddish brown pustules form on leaves, twigs and fruits. Rust fungi have interesting life cycles and many, like cedar-apple rust, require two different plant species to complete their life cycles. The bright orange gelatinous swellings with finger-like tendrils on junipers in May signal the presence of cedar-apple rust for another season. Spores produced within these tendrils infect crabapple leaves where orange spots appear on the upper leaf surface with finger-like tubular structures projecting from the lower leaf surface. Other rust diseases occur on roses, hollyhocks, snapdragons, asters and geraniums.

Powdery mildew

Powdery mildew is the name for the grayish white powdery coating consisting of fungus mycelium and masses of spores growing on plant leaves, shoots and flowers. This disease is caused by a distinct group of similar fungi that attack lilac, zinnia, phlox, rose and many other flowers, shrubs and trees. Although powdery mildew-infected plants rarely die, the disease detracts from the natural beauty of ornamentals. Damage ranges from an unsightly white powdery coating on the foliage to malformation of leaves, destruction of flowers and stunted growth.

Bacterial diseases

Fire blight and crown gall are serious diseases of woody ornamentals. With fire blight, infected twigs of crabapple, hawthorn, cotoneaster, pyracantha, mountain ash or other hosts form a cane-like shepherd's crook at the tips. Leaves rapidly wilt and turn brown to black, hence the name 'fire blight'. Crown gall causes rounded galls with irregular rough surfaces on stems and roots of a great number of plant species. Euonymus, honeysuckle, rose and wisteria are common shrub hosts. Infected plants lack vigor and fail to produce quality flowers. Another important bacterial disease is bacterial blight or wilt of geranium which in the landscape actually starts with infected cuttings in the greenhouse. Symptoms include wilting at the leaf margins which produces a

pronounced V-shaped, yellow lesion bounded by veins. Infected stems blacken and shrivel.

Scab, spot & blight diseases

Scab diseases of pyracantha and crabapple, although caused by different fungi, have similar symptoms. These are scab-like, olive-colored lesions on leaves and fruits. Black spot of rose is a prime example of a destructive leaf spot disease. The spots are roughly circular, black lesions with fringed or feathery margins. Infected leaves yellow and drop off throughout the growing season leaving the rose unsightly and prone to winter kill. Phomopsis twig blight causes a progressive die-back of landscape junipers and arborvitae which severely detracts from the landscape when junipers are used as focus plants.

Mosaics & aster yellows

Symptoms of rose mosaic are a light green to bright yellow mosaic patterns on the leaves. The viruses that cause rose mosaic diseases are carried in buds, scions and root stocks. There is no known cure for rose mosaic. However, symptoms are usually not severe enough to require removal of the plant from the landscape. One of the most striking symptoms of aster yellows is the abnormal production of secondary shoots. These shoots are deformed, yellowed and often brittle. The internodes of the main stem are shortened and the flower heads dwarfed and deformed. Aster yellows is common on many annual flowers such as asters and strawflower.

Approach disease management in the landscape from a holistic plant health view point which includes the categories of:

► **exclusion** which concentrates on preventing pathogens from entering the landscape and involves sanitary and regulatory practices.

► **eradication** removes the pathogen from the landscape by removing and destroying infected plants and plant debris and by treating annual beds with a soil-applied fungicide.

► **immunization**. Although you cannot immunize plants in the same manner that animals are immunized against disease, you can immunize them by using disease resistant cultivars, by treating roots with biological control agents or by applying a systemic fungicide.

► **protection** involves treating disease-susceptible plants with a fungicide before infection occurs. Although these practices sound somewhat theoretical, they do work when used in an integrated disease management program. **LM**



Rust diseases are characterized by yellow to orange to reddish brown pustules on leaves, twigs and fruit. There are many rust diseases.

Fungicides for disease management in landscape ornamentals

Bordeaux mixture

Dormant application for anthracnose and other diseases.

Triforine (Funginex)

Rusts, powdery mildews and certain leaf spot diseases.

Mancozeb and Maneb

Protectant fungicides for various foliar diseases.

Triadimefon (Bayleton)

Powdery mildews.

Sulfur

Organic fungicide for powdery mildew and other diseases.

Chlorothalonil (Daconil 2787)

General purpose protectant fungicide.

Metalaxyl (Subdue)

Phytophthora and Pythium root rots.

Fosetyl-AI (Aliette)

Phytophthora root rot diseases.

Myclobutanil (Eagle)

Systemic fungicide for rusts and powdery mildews.

Iprodione (Chipco 26019)

Botrytis blight and Rhizoctonia root and stem diseases.

Thiophanate-methyl (Cleary's 3336)

Rhizoctonia root and stem diseases and certain foliar blights.

Propiconazole (Banner)

Powdery mildew and leaf spots on certain ornamentals.

Fenarimol (Rubigan)

Powdery mildew on certain ornamentals.

Agrobacterium radiobacter (Galtrol)

Biological control of crown gall.

Streptomycin (Agri-Strep)

Antibiotic for control of fire blight.

Captan

General purpose foliar fungicide.

Lime Sulfur

Dormant application for certain diseases.

Phaltan

General purpose foliar fungicide.

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