DISEASE CONTROL FOR ORNAMENTALS

When conditions are right, ornamentals are easily susceptible to disease. Effective disease control begins with prevention.

by Douglas Chapman, Dow Gardens

Disease control strategies for use on ornamentals are varied. They include the use of resistant cultivars, planting in the correct ecological niche, proper sanitation, plant diversity and health, and the use of fungicides.

To understand disease control, the conditions favorable for infection must first be understood. If one of these four conditions is not met, then infection of the plant does not occur.

The main conditions needed for infection are: (1) the presence of a pathogen, (2) free water, (3) temperature favorable to infection, and (4) a suitable host.

Don't let water linger

Any conditions or practices that either reduce the amount of time moisture is on the foliage or impacts the roots lessens the opportunity for disease infection. This can mean watering plants in the morning so they have time to dry before evening, removing dew by "poling greens," or setting up conditions for good soil drainage.

Conditions for good drainage can mean a well-drained medium for a pot crop, or surface sloping and drainage tiles for landscape plants in areas where the soil is slow to drain.

Temperature adjustment in the landscape is all but impossible. But if correct temperatures exist for disease infection to occur, one can either delay watering (if possible), or be aware of when conditions are right for fungicide application. For example: anthracnose becomes a problem

Cedar apple rust covers leaves of a Hawthorn tree.

DISEASE-RESISTANT CRAB APPLE VARIETIES

The following crab apple tree varieties are resistant to applescab, fireblight, and several minor foliar diseases. It should be stressed that these trees are for the upper Great Lakes region of the U.S. Resistance will vary in other parts of the country.

Adams
Beverly
Bob White
Candied Apple
Centurian
Christmas Holly
David
Donald Wyman
floribunda
Halliana parkmanii
Harvest Gold
hupehensis
Indian Magic
Indian Summer
Jewelberry
Liset
Mary Potter
Molten Lava
Ormiston Roy
Prairiefire
Professor Sprenger
Profusion
Red Baron
Red Jewel
Red Splendor
Royalty
Ruby Luster
Sentinel
Silver Moon
Snowdrift
Strawberry Parfait
Sugar Tyme
tschonoskii
White Angel
White Cascade
Winter Gold

—*Dr. Chapman*□

The Hopa crab apple tree on the right is in full bloom after treatment the previous year for applescab disease. The control tree is on the left. (All photos by Dr. D.L. Caldwell, The Davey Tree Company. Used by permission.)

when temperatures reach the high 40s during late spring.

Crab apple trees resistant

A suitable host is one area that can frequently be adjusted as a disease control strategy. This can mean planting disease-resistant varieties.

One of the classic strategies used in the contemporary landscape is using disease-resistant crab apple trees. By selecting a resistant cultivar, one can all but eliminate the need for multiple pest control applications, while keeping healthy, well-foliated crab apples (see chart).

Diversity is another strategy that can be used to reduce the impact of any one disease. In designing a landscape, use many different plant types. All landscape managers know that

Apple scab lesions infect this crab apple leaf.

monoculture, be it turfgrasss (Merion bluegrass), shrubs (Andorra juniper) or trees (elm) can lead to problems. As we increase the variety of plants in a landscape, the opportunities for infection decrease and catastrophic plant death is reduced.

Isolate infected plants

Sanitation is one way to reduce the source of pathogens. If a plant becomes infected by a disease, the infected parts or the entire plant should be removed and destroyed.

During the early stages of fireblight infection, many canker diseases can be slowed or eliminated by removing the branch below visible signs of infection.

Plants in the correct ecological niche help many from becoming infected. Junipers grow best in full sun and infertile, well-drained soils. Generally speaking, junipers grown in the shade thin and die out. Further, junipers growing in landscapes composed of fertile soil that are frequently irrigated get a disease called *Phomopsis juniperovora*.

If growing is necessary under these conditions, apply fungicides regularly or grow restricted lists of resistant cultivars such as *Juniperus chinensis* (Ames), Armstrongil, Fairview, Hetzii, Keteleeri, Mountbatten, *Pfitzeriana compacta, sargentii and procumbens, Juniperus horizontalis (Douglasii)*, Emerald Spreader, *Wiltoni, Juniperus sabina* (Acadia), Broadmoor, and Von Ehron.

When the above strategies aren't economically feasible, fungicide application should be considered. Identify the cause of the disease prior to chemical application.

Preventing plant diseases remains the cornerstone of a good ornamental disease control program. **LM**

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The chart on page 66 of fungicides for use on ornamentals shows examples of fungicides that can be used to control diseases. Since approved chemicals may vary from state to state, check the label and local cooperative extension service for specific recommendations in your area.

FUNGICIDES FOR ORNAMENTALS

Chemical Common Name	Brand Name	Mode of Action	Disease Controlled
Propiconazole	Banner	Systemic	Rusts, foliar diseases (many ascomycetes)
Ethazol + Thiophanate Methyl	Banrot	Soil fungicide	Phytophythora, pythium, rhizoctonia
Triadimefon	Bayleton	Systemic	Powdery mildew, rusts
Benomyl	Benlate	Systemic	Apple scab, powdery mildew, botrytis, rhizoctonia (damping off)
Bordeaux	Bordeaux	Protectant fungicide	Powdery mildew, diplodia tip blight of pines, fire blight
Iprodione	Chipco 26019	Contact	Botrytis, sclerotinia, rhizoctonia
Chlorothalonil	Daconil 2787		Apple scab, botrytis, rusts, powdery mildew
Maneb	Maneb	Foliar treatment	Rusts, leaf spots
Mancozeb	Manzate, Fore		Rusts (cedar apple rust), phytophthora, anthracnose, needle case (Lophodermium pinastri)
Vinclozolin	Ornalin		Botrytis, sclerotinia, turf (dollar spot, helminthosporium)
Metalaxyl	Subdue	Systemic	Pythium, phytophthora (rhododendrons)
Sulfur	Sulfur		Powdery mildew, black spot
Quintozene	Terraclor	Soil fungicide	Root rots, botrytis
Triforine	Triforine	Eradicant	Powdery mildew, rusts, apple scab
Zineb	Zineb	Foliar treatment	Leaf spots, rusts (cedar apple)