## 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

isease 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.

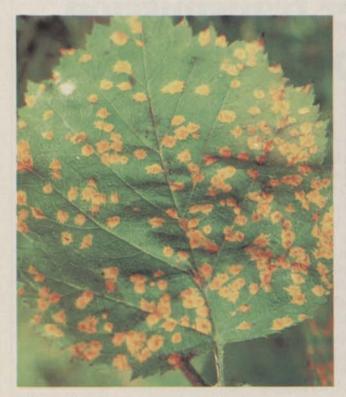
Don't let water linger

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



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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

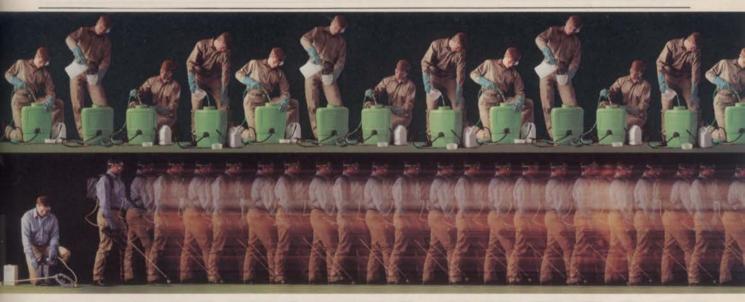
conditions, apply fungicides regularly or grow restricted lists of resistant cultivars such as Juniperus chinensis (Ames), Armstrongil, Fairview, Hetzii, Keteleeri, Mountbatten, Pfitzeriana compacta, sargentii and procumbens, Juniperus horizontalis (Douglasii), Emerald Spreader, Wiltoni, Juniperus sabina (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

Dr. Chapman is horticulturist-administrator of The Dow Gardens in Midland, Mich., and an editorial advisor to Landscape Management.

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.



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#### **FUNGICIDES FOR ORNAMENTALS**

| Chemical                           |               |                      |  |
|------------------------------------|---------------|----------------------|--|
| Common Name                        | Brand Name    | Mode of Action       | Disease Controlled   |
| Propiconazole                      | Banner        | Systemic             | Rusts, foliar diseases (many ascomycetes)  |
| Ethazol +<br>Thiophanate<br>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)  |



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