Plant Disease Control

Common Spring-Time Diseases of Woody Ornamentals in the Landscape

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Many disease problems in the landscape and on home grounds occur in the spring. These problems are worse when plants are under stress, have suffered extensive winter damage, or when the weather is cool and rainy. The selections that follow briefly describe some common problems that occur in the spring in the landscape.

It is important to remember that trees and shrubs in poor health are more susceptible to disease. Improving plant vigor is the most important aspect of disease control in the home landscape.

May 1992

Specific Spring-Time Diseases Caused By Fungi

Leaf Spots

Leaf spots are very common and can occur on many species of ornamental plants. Leaf spots are caused by leaf-inhabiting fungi that discolor and kill small, discrete regions of tissue between or on the leaf veins. Frequently, these spots have a light-colored center with a distinct dark-colored border. Individual spots may grow together to form larger leaf blotches. Most leaf spot fungi produce spores in dead leaf litter on the ground. Spores are splashed or carried by wind to developing leaf tissue at budbreak. The development of leaf spots is favored by abundant moisture and cooler temperatures. Severe spotting can occur when moisture remains on leaf surfaces for long periods of time. Fungicides are effective only if they are present on leaf surfaces at the time the fungi are producing spores. Fungicides applied after leaf spots are visible are ineffective. Most damage caused by the fungi that cause leaf spots is merely cosmetic.

Proper Management

Improve plant vigor and reduce inoculum by removing leaf litter. Irrigate in the early morning hours and avoid overhead watering to prevent excessive moisture from remaining on foliage.
Chemical Control
Apply chlorothalonil, mancozeb, thiophanate-methyl, or mancozeb plus thiophanate-methyl according to label recommendations.

Anthracnose

Anthracnose is a common disease of many shade tree species, particularly sycamore, ash, oak, maple, and walnut. Diseased leaves appear “scorched” along veins and leaf margins. Twigs and branches may die back if infection is severe or if the tree is in poor health. Leaves infected with anthracnose are often shed. As with leaf spot diseases, anthracnose is more severe when moisture remains on leaf surfaces for long periods of time. Since anthracnose does not usually cause serious damage to healthy trees, application of fungicides is recommended only when it is necessary to keep trees as blemish-free as possible.

Proper Management
Improve plant vigor, use resistant cultivars, and remove leaf litter to reduce inoculum.

Chemical Control
Apply chlorothalonil, mancozeb, thiophanate-methyl, or mancozeb plus thiophanate-methyl according to label recommendations.

Cedar-Apple and Quince Rusts

Rust diseases are unique because the fungi that cause them often require more than one host plant to survive. Cedar-apple rust and quince rust affect two groups of highly utilized landscape plants.

The cedar-apple rust fungus overwinters in galls that may grow to several inches in diameter on eastern red cedar and several other junipers. In the spring, brightly-colored, gelatinous horns emerge from the galls during wet weather. These horns consist of masses of spores that are spread by wind to newly-emerging apple, crabapple, and hawthorn leaves and fruit. By mid-summer, rusty or orange-colored spots appear on infected leaves. In mid-to late-summer, spores produced in these spots are carried by the wind to cedar and juniper. On susceptible crabapple cultivars, rust causes premature defoliation, stunted growth, and poor-quality fruit.

The disease cycle of quince rust is similar to cedar-apple rust. The galls of quince rust on eastern red cedar and other junipers are small and spindle-shaped. Quince rust affects fruit, young stems, and petioles on rosaceous...
hosts such as apple, crabapple, hawthorn, quince, mountain ash, and cotoneaster. Fruits are stunted and killed, and twigs and petioles become swollen and distorted, often resulting in death.

**Proper Management**
On coniferous hosts, prune affected branches 6 to 8 inches below galls during dry weather with sterilized pruning tools. Use cultivars of crabapple and other rosaceous plants that are resistant to *rusts*. If practical, remove the alternate host within a 1/4-mile radius.

**Chemical Control**
On juniper, apply mancozeb, or mancozeb plus thiophanate-methyl according to label recommendations. On rosaceous hosts, apply chlorothalonil, mancozeb, triadimefon, or mancozeb plus thiophanate-methyl according to label recommendations.

**Juniper Tip Blights**

**Juniper tip blights** are caused by the fungi *Phomopsis* and *Kabatina*. Tips of newly developing branches become infected with *Phomopsis* in the spring and turn brown by summer. Infected growth is killed back to the previous season’s wood. Mature tissue is resistant to *Phomopsis* tip blight. *Kabatina* blight symptoms can occur throughout the year and only on wounded twigs older than one year. Plants stressed by moisture extremes, insect infestations, and winter injury are susceptible to *Kabatina*. Environmental stress and high humidity in the canopy due to close spacing increase the severity of tip blight.

**Proper Management**
Improve plant vigor, avoid wounding, prune affected tissue, and space plants adequately to ensure good air circulation. Control insect pests when present.

**Chemical Control**
To control *Phomopsis*, apply thiophanate-methyl or thiophanate-methyl plus mancozeb at budbreak according to label recommendations. There are no fungicides recommended for the control of *Kabatina*.

**Dogwood Anthracnose or Decline**

*Dogwood anthracnose or decline* caused by the fungus *Discula*, is primarily a disease of flowering dogwood (*Cornus florida*). Tan-colored leaf spots with purple margins form on developing leaves and flower bracts. These spots grow together, forming large blotches on leaf blades and along leaf margins. Infected leaves eventually die. The fungus may continue to grow down into the petioles and branches, resulting in the death of twigs and branches. Brown, elliptical cankers may form at the base of dead branches. Drought, winter injury, and environmental stress predispose dogwood to anthracnose. Kousa dogwood (*Cornus kousa*) is resistant to this disease.

**Proper Management**
Improve plant vigor, avoid moisture stress, avoid wounding, and prune affected branches 6 to 8 inches below diseased tissue during dry weather with sterilized pruning tools. Avoid planting dogwoods in shady or crowded areas.

**Oak Leaf Blister**

Light green pockets or blisters, about 1/4 inch in diameter, occur on the leaves of many different species of oak. These blisters resemble galls caused by insects; however, with *oak leaf blister*, the upper leaf surface is swollen and the underside of the blister is depressed. As the blisters age, they become dry and brown, resembling leaf spots. The development of *oak leaf blister* is favored by wet weather. This disease does not seriously harm healthy trees and control with fungicides is not recommended.

**Proper Management**
Improve plant vigor.

**Chemical Control**
None recommended.
Chemical Control
Chlorothalonil provides fair control of the leaf spot phase of this disease only. Apply the fungicide according to label recommendations.

Nectria Cankers

Nectria cankers are common on a wide variety of shade trees and other woody ornamentals. Nectria is an opportunistic fungus that infects twigs, branches, and trunks through wounds and at the base of dead branches. This fungus can cause both annual and perennial cankers. Annual cankers are common on twigs and branches injured by freezing, drought stress, mechanical injuries, or other diseases. As cankers enlarge, twigs are girdled and killed in a single season. A cut made into the wood with a pocket knife reveals a sharp transition between white, healthy wood and brown, infected wood. Perennial cankers enlarge yearly, encircling the branches and eventually killing tissue beyond the canker. With each successive year of infection, a “bulls-eye” pattern may develop. Nectria canker can be identified by the bright orange fruiting bodies that form in the center of the cankers.

Proper Management
Improve plant vigor and avoid moisture stress.

Chemical Control
None recommended.

Verticillium Wilt

Verticillium wilt is a disease of many species of shade trees in the landscape, particularly maple. The fungus Verticillium lives in the soil and penetrates small roots. Spores of the fungus are carried up to developing tissue in the canopy via water-conducting vessels in the wood. The vessels become clogged and affected branches wilt and die. Verticillium wilt is part of a syndrome known as maple decline, where environmental stress, attack by insects, and poor growth contribute to an over-all decline in older trees.

Proper Management
Improve plant vigor and avoid moisture stress.

Chemical Control
Apply Tersan 1991 WP or Cleary 3336 WP according to label recommendations.
Pachysandra Leaf and Stem Blight

**Pachysandra leaf and stem blight** is caused by the fungus *Volutella*. Pachysandra is most susceptible to this disease when it has suffered from winter injury, moisture or heat stress, mechanical injury, or has a problem with scale insects. Large leaf spots, which have a “bulls-eye” pattern, appear on leaves. Cankers form on petioles and stems that produce characteristic pink-colored fruiting bodies within several weeks in wet weather. Occasional thinning and removal of leaf litter reduces humidity and helps to keep disease severity to a minimum.

**Proper Management**

Improve plant vigor and avoid moisture stress, winter injury, and mechanical injury. Remove leaf litter to reduce humidity and control scale insects, if present.

**Chemical Control**

To control leaf and stem blight, apply chlorothalonil or mancozeb plus thiophanate-methyl according to label recommendations. If scale insects are present, apply 2% dormant oil, acephate, malathion, diazinon, or dimethoate according to label recommendations.

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Ovulinia Petal Blight

**Ovulinia petal blight**, one of the most common diseases of rhododendrons and azaleas, affects only the flowers. Small, watersoaked spots appear on infected petals. These spots rapidly enlarge until the flower becomes slimy, limp, and turns prematurely brown. Entire trusses may become diseased almost simultaneously.

Most infected petals adhere to the plant but some may fall to the ground. Six to eight weeks following infection, small, black sclerotia (resting structures) develop on infected petals. These sclerotia germinate in the spring and produce fruiting structures called apothecia. Spores are forcibly ejected from the apothecia, striking blossoms close to the ground. Wet weather at flowering time enhances disease development.

**Proper Management**

Remove dead trusses and fallen petals as soon after bloom as possible to reduce disease spread. Maintain plant vigor.

**Chemical Control**

Mist chlorothalonil, triadimefon, thiophanate-methyl, or mancozeb plus thiophanate-methyl onto plants from the time flowers begin to show color until flowering has ceased at intervals stated in label recommendations.

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Black Knot of Plum and Cherry

**Black knot of plum and cherry**. This disease is widespread on garden plums, sweet and sour cherries, and chokecherry. Knot-like swellings, which are black, roughened, and spindle-shaped, form on twigs and branches. These knots, which live for many years, continually increase in size. Spores of the causal fungus *Apiosporium* are released from the knots during rainy weather in the spring and infect green, susceptible tissue. These new swellings will grow for two seasons before producing spores of their own.

**Proper Management**

Improve plant vigor and prune infected limbs 6 to 8 inches below all visible knots before new shoots develop. Remove and destroy the clippings.

**Chemical Control**

None recommended.
Specific Spring-Time Diseases Caused By Bacteria

Crown Gall

Crown gall is caused by the soil-borne bacterium *Agrobacterium tumefaciens*. More than 600 species of plants are susceptible to crown gall. This bacterium enters plant roots and stems through wounds near the soil line. Infection by the bacterium causes tissue at the crown gall area to grow rapidly, resulting in the formation of galls. These galls consist chiefly of host tissue. Following the initial infection, galls soon form on other parts of the plant. To prevent crown gall, avoid wounding during transplanting and cultivation. Once the disease is present in a plant, pruning individual galls will not prevent galls from forming on other parts of the plant.

Proper Management

Improve plant vigor, avoid wounding, and remove entire plants when galls are observed. Utilize resistant plants in spots where diseased plants have been observed previously.

Chemical Control

None recommended.

Fire Blight

Fire blight, caused by the bacterium *Erwinia amylovora*, can occur on many rosaceous plants, including crabapple, cotoneaster, hawthorn, mountain ash, pyracantha, and pear. In the spring, bacteria ooze from existing cankers on infected plants. The bacteria are carried to healthy blossoms and branches by insects that are attracted to the ooze. The bacteria are also spread by splashing rain. Twigs and branches infected with the fire blight bacterium die rapidly and appear scorched. Cankers form at the base of infected branches.

Proper Management

Improve plant vigor, avoid heavy spring fertilization, and use resistant cultivars. Prune affected branches during dry weather. Remove branches 6 to 8 inches below diseased tissue using sterilized pruning tools.

Chemical Control

Copper or streptomycin according to label recommendations.