

Looking a Little Rusty?

How to identify and manage rust diseases **Story and Photography By Douglas A. Spilker, Ph.D.**

What image comes to mind when you think of rust? Is it that old pickup truck slowly succumbing to the elements, its shiny metal eroding to rusty red? Some plant rust diseases have symptoms of that deep rusty color, but most include bright yellow, orange or orange-red leaf spots.

Plant rust is a general term that refers to a rather large family of fungi that attack many different kinds of plants, including lawns.

The first signs of rust are tiny yellowish spots on leaves. If left untreated, these tiny spots expand and turn into eruptive pustules. Eventually, these pustules break open and release millions of spores that spread by wind or splashing rain to infect other similar plants. Rust usually isn't fatal, but can cause stunted plant growth and premature defoliation.

Some rust fungi only need to infect one host to complete their life cycle, but others have a more complex life cycle and require alternation between two different host plants. Control strategies differ depending on the life cycle of the pathogen.

RUST ON FLOWERS AND LAWNS

During the summer, rust is common on hollyhocks (*Alcea rosea*), *Iris* spp., daylilies (*Hemerocallis* spp.), snapdragons (*Antirrhinum majus*) and sunflowers (*Helianthus* spp.), causing leaf curling, withering and leaf drop. Remove and destroy any infected plant parts at the first sign of disease to keep it from spreading. Fungicides are available to homeowners if the disease severity warrants it. Rust thrives in a wet environment so avoid overhead watering; use a soaker hose or drip irrigation to keep the water off the foliage.

Rust affects cool-season grasses, such as Kentucky bluegrass, perennial ryegrass and tall fescue. Lawn rust is a late summer disease. Lawns may take on a reddish tinge, and orange dust (spores) may get on shoes during mowing. Although it can weaken turf, lawn rust usually fades away with fertilization and the improving fall growing conditions. Treatment is rarely recommended.

CEDAR RUST DISEASES ON ORNAMENTAL AND FRUIT TREES

Cedar-apple, cedar-hawthorn and cedar-quince rust are common diseases found in the landscape. These rust fungi spend

Spring rains stimulate the emergence of gelatinous spore horns from the cedar-apple rust galls.



a part of their life cycle on rosaceous hosts such as apple, flowering crabapple and hawthorn, and another part on *Juniperus* species (for example red cedar). Cedar-apple rust is the most prevalent of these diseases on apple and flowering crabapple, whereas quince rust is more common on hawthorn. These diseases can cause considerable damage to rosaceous plants by causing premature defoliation and twig dieback. The diseases' effects on junipers are minimal.

In late spring, bright yellow-orange spots form on the upper surfaces of crabapple and apple leaves, turning orange, with a bright red border. During the summer, an orange, cup-like fungal structure (aecium) forms on the leaf underside and releases dusty-orange spores. These spores, which cannot reinfect the rosaceous host, are carried by wind to the alternate host — junipers.

Fungal infection of the junipers results in the formation of reddish-brown woody galls (about 1 to 2 inches in diameter) on the twigs, where it overwinters. Stimulated by spring rains, the

Mayapple Mayhem

Mayapple (*Puccinia podophylli*) rust is a reminder that plant pathogens don't just attack garden and landscape plants, but are a part of all nature. The disease is first seen as yellow spots on the upper leaf surfaces of the parasol-like leaves of mayapples, with bright orange pustules forming later on the undersides of the leaves. If infection is severe, it can cause early leaf drop.

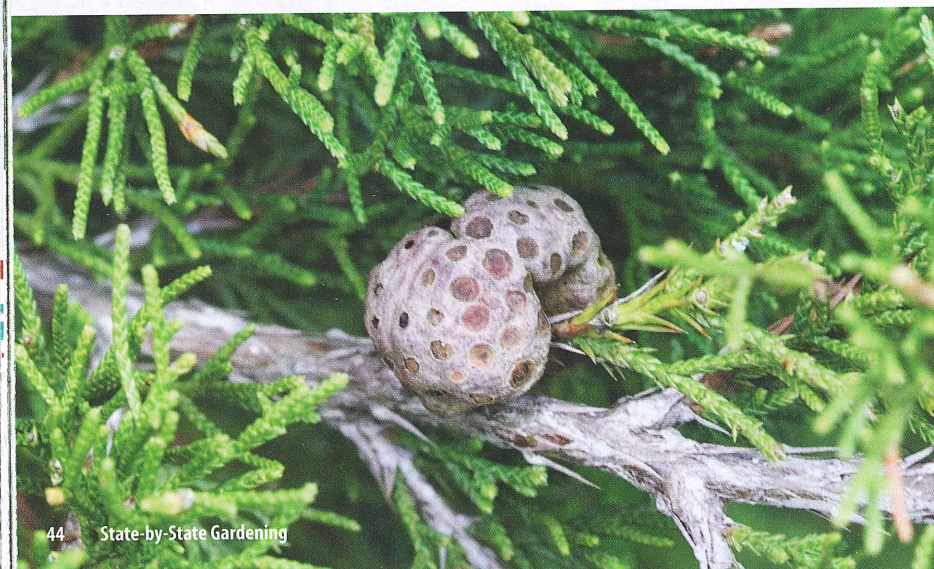
This is an autoecious rust, that is, only occurring on mayapples, not alternating between two different plants such as with cedar rusts (junipers and rosaceous hosts). Populations of woodland mayapples seem to cope with the annual occurrence of this disease without any effect on plant survival.

Right: Mayapples (*Podophyllum peltatum*), often found in woodland areas, seem to survive the annual occurrence of rust disease without any human intervention.



Left Top: Cedar-quince rust causes unsightly fruit infections on hawthorns (*Crataegus* spp.).

Left Bottom: Cedar-apple rust overwinters as a woody gall on juniper (*Juniperus virginiana*).



galls swell and produce orange, gelatinous tentacles that release a different type of fungal spores that can only infect the alternate rosaceous host. The life cycle is now complete.

MANAGING RUST DISEASES

Plant resistant varieties — The best way to avoid rust problems is to select disease-resistant varieties, not only for woody ornamentals, but annuals and perennials too. Several cultivars of flowering crabapple and hawthorns are available with good resistance to rust and other diseases, such as apple scab.

Use fungicides — Fungicides are available to homeowners, but the timing of applications is important, since these are protective sprays. Regarding cedar-apple rust, the most critical spray period is in the spring when spores are spreading to the trees from the galls on the junipers. Once you see the leaf spots, it's too late to spray. One to two additional spring applications may be needed for adequate control of rusts. Spraying junipers is ineffective. Read and follow label instructions for timing information and any precautions.

Practice good sanitation — In the fall, clean up infected plant debris to reduce an overwintering inoculum source, but do not compost it. For cedar-apple rust, remove any galls or infected areas on juniper shrubs be-



◀ Cedar-quince rust does not produce galls, but appears as small orange sticky globs from cracks along infected juniper stems

fore the orange spore horns develop. This may reduce, but not eliminate, rust problems, since neighboring landscapes and native junipers may be harboring inoculum sources.

FOCUS ON MANAGEMENT

There is some good news, however; although there are many kinds of rust fungi, they are all host specific. They only spread to the same type of plant and not to all the other plants in your yard. So, don't panic when you see rust, just focus on the management strategies needed for that specific host-pathogen situation. Or focus on moving that rusty pickup truck. 🚚

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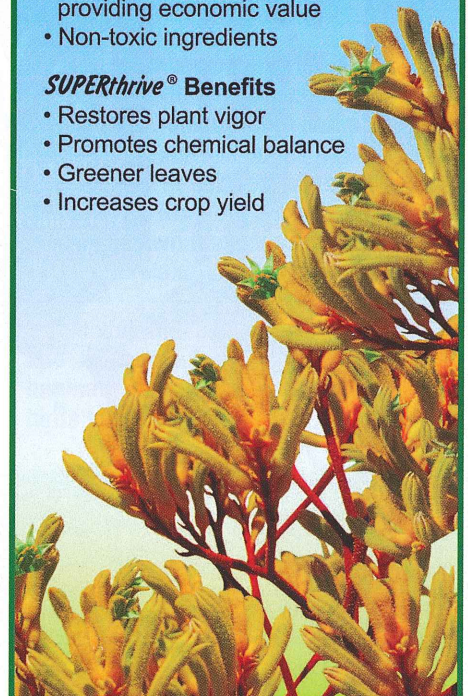


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