



Rust Diseases of Hawthorn

Thomas R. Martin, Plant Protection Specialist

Bruce R. Fraedrich, Ph.D., Plant Pathologist

Hawthorns (*Crataegus*) are widely used as small landscape trees. They are selected for their showy spring flowers and seasonal red to orange fall fruit. Hawthorn has a reputation as a tough tree, tolerant of a wide range of growing conditions, however, some selections are very susceptible to disease problems.

Hawthorn is host to at least nine different rust fungi. **Hawthorn Rust** caused by the fungus *Gymnosporangium globosum* and **Quince Rust** caused by the fungus *Gymnosporangium clavipes* are the most common. Two host plants, one in the cypress family and one in the rose family, are needed to complete a life cycle.

With hawthorn rust diseases, the alternate host are primarily juniper and eastern red cedar. Fungal spores produced on the juniper in early spring can only infect the hawthorn, while spores produced on the hawthorn in summer can only infect a juniper host.

Symptoms

On juniper twigs, either a dark brown spindle-shaped woody gall (quince rust) or quarter-inch reddish-brown round gall (hawthorn rust) is formed. In the spring these galls more than double their size by producing an eye-catching mass of orange jelly-like material, which are actually millions of spores.

These rust diseases usually cause minor damage to the juniper host. Most concern is over the damage inflicted to hawthorn or other hosts in the apple family. **Quince rust** affects primarily fruit, green stems, and leaf petioles. Infected fruit and shoots may even be killed. On green stems and petioles, a spindle-shaped swelling, up to two inches in length, is formed. These woody galls and the infected fruit become covered with prominent orangish-yellow tubes of the fungus. They bear fungal spores that can infect juniper and complete the life cycle.



Jelly-like rust gall on juniper



Rust "tubes" of quince rust on hawthorn life cycle

Hawthorn Rust most often infects leaves and may lead to premature leaf drop. The bright yellow spots can make an entire plant appear yellow. Hawthorn rust may also form spindle-shaped gall on young, expanding shoots.

Disease Prevention and Control

A program of hawthorn rust management is made up of two primary components - protective fungicide treatments and



Symptoms of hawthorn rust on hawthorn

selection of disease resistant varieties. Elimination of juniper from an area can reduce disease and is a measure used in commercial apple growing regions. but is neither a realistic nor desirable practice in urban landscapes. Close placement of the two hosts can, however, increase the severity of the disease.

When dealing with susceptible hawthorn varieties, properly chosen and timed fungicide treatments will do an excellent job of managing rust diseases, keeping your plants healthy and attractive. Results from research performed at the Bartlett Tree Research Laboratories found that good disease suppression is obtained with three spring fungicide treatments with a first application at budbreak.

Proper cultural practices are still the cornerstone of any management program to help trees and shrubs deal with stresses imposed by insect and disease attack. Therefore, proper mulching, irrigation, and soil nutrient and pH management are important in both helping plants recover from stress, and to prepare them to deal with future injury.

Select resistant hawthorn varieties with new plantings

Resistant Hawthorn Varieties

Washington hawthorn (*C. phaenopyrum*)

Lavalle Hawthorn

Cockspurthorn (*C. crus-galli*)

'Winter King' variety

C. x mordenensis ' *

* Highly susceptible to a damaging leaf blight caused by the fungus *Entomosporium*.