

Garden Bad Guys – Rust

By Nanette Londeree

What happens when you combine mild spring weather, a rain that lasts for a day or two and rapidly growing plants fighting for space? Besides the proverbial May flowers, foliage might take on a rusty orange-splattered look. Nature's overhead irrigation is not only a boon for the garden and the gardener, but also a host of fungal diseases – and one of the most common is rust.

There are thousands of different species of this ubiquitous disease that infect a wide range of host plants including birch, hawthorn, juniper, pine and poplar trees, crops such as corn and wheat, cotton, soybeans and sunflowers; vegetables and fruit, turf, and many ornamentals – ferns, fuchsias, rhododendrons, roses, chrysanthemums, geraniums, lilies and snapdragons, to name a few. The disease has been a scourge to humans for centuries. Aristotle described epidemics in ancient Greece, while the Romans held an annual festival, *Robigalia*, to appease the gods they believed responsible for the dreaded malady. It has been the cause of many famines throughout history and continues to result in significant economic damage to food and other crops.



It is fairly easy to identify rust with its orange, powdery pustules on the undersides of infected leaves and other plant parts. Rub an infected leaf on a piece of white paper and spores of the disease will leave behind rusty orange-colored streaks. Early in the season the pustules may appear yellow to light orange, deepening in color to dark orange - red brown in the summer. Many form black overwintering spores in the autumn that start the disease cycle again in the spring. The upper surface of severely infested leaves may turn yellow and drop prematurely. On some types of evergreen hosts, orange, gelatinous masses may be apparent. Some rusts can produce swelling of tissue, galls or cankers on bark and still others, distorted, dwarfed and discolored leaves and shoots that form “witches’ brooms.”

Many types of rust have complicated life cycles that take them between different host species. For example, rusts that can kill pines spend part of their life cycle on *Ribes* (currant and gooseberry); another type moves between the common weed mallow and hollyhocks. The alternate host allows for the development of the disease without being harmed by it. Some rusts are very specific – rose rust, *Phragmidium mucronatum*, affects only the one host species. Some forms of the disease result in little damage to the plants they infect, while others may cause dieback and occasionally kill the entire plant.

The fungus requires free water to reproduce so rainy weather or overhead watering that wets leaves without enough time to dry produce optimum conditions for this disease, especially with temperatures at 65–70°F. Infection is spread primarily by windblown or water-splashed spores that have survived over the winter.

Preventing rust from getting a foothold in the garden starts with choosing types of plants that are not susceptible to the disease and confirming that any new acquisitions are disease-free. You may also want to eliminate alternate host plants. Excellent cultural conditions - plenty of sunlight and air circulation, along with good garden sanitation (removing and destroying affected plants or plant parts as soon as they appear) can reduce the risk of infection. Most

importantly, avoid overhead watering, or if necessary, do it early in the day to allow time for leaves to dry quickly.

Fungicides, including neem oil, applied at the first signs of infection, may prevent serious damage from the disease. Products containing sulfur can be effective, especially ones formulated with soap.