

Forest Pest Bulletin



SOUTH DAKOTA
DEPARTMENT OF AGRICULTURE
DIVISION OF RESOURCE
CONSERVATION & FORESTRY



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CEDAR-APPLE GALL RUST

CAUSAL AGENT

Gymnosporangium juniperi-virgineanae

HOSTS

This rust disease has two hosts. The first host of the life cycle are species and varieties of Apples and Crabapples (*Malus spp.*). The alternate hosts are on Eastern red cedar (*Juniperus virginiana*) and Rocky Mountain juniper (*Juniperus scopulorum*).

SYMPTOMS

Symptoms on *Malus spp.* include swollen spots on the upper surfaces of leaves and fruit occur in late spring and early summer. They are first greenish yellow, then orange-yellow, often bordered by a red band (Fig. 1). Little black dots will often appear in these lesions. Symptoms of *Juniperus spp.* include small lesions on needles and globular branch galls. During wet periods, especially in the spring, these will grow orange, gelatinous, fingerlike horns (Fig. 2).



Figure 1. Lesions formed on apple leaves and fruit.

University of Georgia Plant Pathology
Archive, www.forestryimages.org

LIFE CYCLE

The red-brown galls form for over two years. In April or May, the disease galls on *Juniperus* begin to grow bright orange horns. The galls with horns almost appear to be flowers. Spores from these horns are released during rainy periods in the spring. The spores infect the leaves and fruits of *Malus* through the end of June. Rust first appears on *Malus* leaves as tiny, greenish-yellow spots on upper leafy surfaces. The spots are roughly circular and enlarge, becoming orange-yellow in color. Later the leaf tissue swells, and projections emerge, split and curve. A second type of spore is formed on these projections and is dispersed, infecting *Juniperus* foliage. Galls appear on infected *Juniperus* trees 18 months later. These galls are brown, small, ¼ to

½ inch across, and dimpled like irregularly shaped golf balls. Orange horns and spores develop from the galls two years after infection.

MANAGEMENT

The most common control of Cedar-apple gall rust is removing the host from the proximity of the other trees. During the winter months, it is possible to remove the galls by pruning the branches before the horns are formed. If removing galls, it is recommended that they be burned to prevent further infection.



Figure 2. Orange horns that produce spores. Linda Haugan, USDA Forest Service, www.forestryimages.org

To prevent Cedar-apple gall rust on Crabapple trees that will not be used for fruit production, apply Chlorothalonil or Mancozeb as the leaves unfold, then apply three more times at 10-day intervals. continually on a seven to ten-day interval schedule until the spread of spores has stopped. For Apple trees that are used for fruit production, plant resistant varieties when planting. Avoid planting Juniper and rust-susceptible hosts near each other.

Due to numerous pesticide labels and/or label changes, be sure the product label includes the intended use prior to purchase or use. Please read and follow all pesticide label instructions and wear the protective equipment required. Spraying pesticides overhead increases the risk of exposure to the applicator and increases the likelihood of drift to non-target areas. Consider the use of a commercial applicator when spraying large trees due to the added risk of exposure and equipment needs. The mention of a specific product name does not constitute endorsement of that product by the South Dakota Department of Agriculture.

For further information contact your nearest South Dakota Division of Resource Conservation and Forestry office. Hot Springs 605-745-5820; Lead 605-584-2300; Mitchell 605-995-8189; Pierre 605-773-3623; Rapid City 605-394-2395; Sioux Falls 605-362-2830; Watertown 605-882-5367.

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