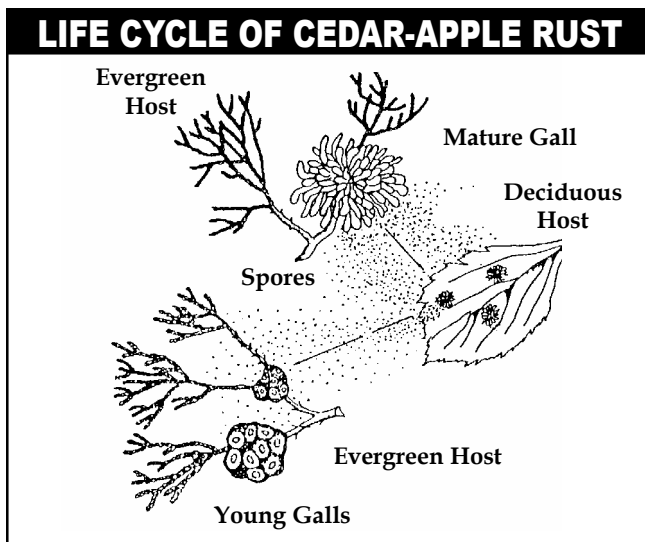


Home Grounds Fact Sheet

Cedar-Apple Rust

The disease, cedar-apple rust, is caused by minute organisms known as fungi. Several of the rust fungi attack various junipers and cedar (*Juniperus* species). Though the fungi usually do little harm to these trees and shrubs, they make them unsightly and thus detract from their value as ornamentals. Cedar-apple rust fungi must live also in the foliage of certain broadleaf woody plants for definite periods of time in order to complete their life cycle. These intervening hosts are essential for survival and intensification of the disease on coniferous hosts. Many of the alternate hosts are valuable ornamental and horticultural trees and shrubs which may be severely injured by the rust fungus.



The common coniferous hosts are *Juniperus communis*, *J. horizontalis*, *J. sabina*, *J. sibirica*, *J. scopulorum*, *J. virginiana*, and many of the varieties. The alternate hosts include ornamental crab, pear, quince, mountain ash, chokeberry, Juneberry, hawthorn, and members of the apple group, including some of the cultivated forms.

The fungi which cause cedar-apple rust are classed in the genus *Gymnosporangium*. Three of these fungi, *Gymnosporangium juniperi-virginiana*, *G. clavipes* and *G. globosum*, cause apple rust, quince rust and haw-

thorn rust respectively in New York State.

These fungi live within the tissues of their hosts and reproduce by means of spores. The fungi are unable to spread from juniper to juniper or from one broadleaf host to another, but must alternate between the two kinds of plants. That is, the spores produced by a rust fungus on eastern red cedar or juniper can cause the disease only on a broadleaf host and vice versa. Consequently, if either host is absent, the fungus cannot spread and will eventually die.

Symptoms

When these rust fungi become established upon evergreen hosts, they cause either swelling in the wood tissues or definite gall-like growths which may enlarge to as much as two inches in diameter. During rainy weather, yellow, gelatinous, finger-shaped bodies protrude from the galls and swollen twigs. These are known as spore horns and consist of fungus spores. These spores produce other spores which in turn are blown about by the wind and are capable of establishing the fungus on the alternate broadleaf hosts.

The rust fungi invade the leaves and fruits on the broadleaf hosts, causing them to become discolored and often deformed. Spores of another type are formed on the underside of the infected leaves and upon the fruits. These spores are windborne and spread the fungus to nearby susceptible evergreens of the juniper group.

The fungi live only one season in the foliage of a broadleaf host but persist for two or more seasons in tissues of the junipers.

Damage

No serious harm results ordinarily to coniferous hosts from the presence of the rust fungi. However, in unusually heavy infections, eastern red cedar may be retarded in growth or even killed. Heavily infected cedars become somewhat unsightly due to the presence of many brown galls and dead branch tips which therefore detracts from their ornamental value.

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Integrated Pest Management (IPM)

Considerations

IPM is a common sense approach to pest control and plant care. It employs a number of measures to prevent, control or reduce plant problems. These include using resistant plant varieties, proper plant selection and placement, good aftercare and biological and/or mechanical controls. As a last resort, after all other remedies have been explored, a pesticide* that is least toxic to people and natural predators, can be considered. Prior to using any pesticides, plants should always be monitored for the degree of infestation and a sensible control measure considered.

* A pesticide is a substance that kills, or attempts to kill, a particular pest, e.g. *insecticide*, *fungicide*, *herbicide*, etc.

Control

On Crabapple:

Cultural Control: Eliminate nearby red cedar and common juniper to whatever extent possible. Plant less susceptible varieties of: Ellwangerina, Henry Kohankie, Ormiston Roy or Red Barron.

(see note A.)

On Hawthorn:

Cultural Control: Plant the resistant cockspur (*Crataegus crus-galli*).

(see note A.)

On juniper:

Cultural Control: Remove galls in early spring. Apply sulfur if needed, according to label directions. Plant resistant varieties: *Juniperus chinensis*: 'Femina', 'Keteleeri' or var. *sargentii*, *Juniperus communis*: 'Aureospica' var. *depressa*, var. *saxatillis*, or 'Suecica'; *J. sabina*: all varieties; *J. squamata* var. *fargesii*; or *J. virginiana* cv. 'Tripartita'.

(see note A.)

On quince:

Control: Apply sulfur according to label directions.

(see note A.)

Pesticide recommendations obtained from **Pest Management Around the Home**, Miscellaneous Bulletin 74, and **Pest Management Recommendations for Commercial Production and Maintenance of Trees and Shrubs**, Cornell Cooperative Extension publications.

note A. Chemical pesticides are available. If you choose to use chemical pesticides, contact your local Cooperative Extension office for specific recommendations.

"This publication contains pesticide recommendations. Changes in pesticide regulations occur constantly and human errors are still possible. Some materials mentioned may no longer be available, and some uses may no longer be legal. All pesticides distributed, sold or applied in New York State must be registered with the New York State Department of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension specialist or your regional DEC office (631) 444-0340. Read the label before applying any pesticide. Cornell Cooperative Extension and its employees assume no liability for the effectiveness or results of any chemicals for pesticide usage. No endorsement of products is made or implied."