



## Cedar quince rust

The fungus *Gymnosporangium clavipes* causes cedar quince rust.

### **Host Plants:**

The fungus spends part of its annual life cycle in several broadleaf rosaceous (rose family) hosts including: *Amelanchier*, *Aronia*, *Cotoneaster*, *Crataegus*, *Malus*, *Photinia*, *Pyrus*, and *Sorbus*, as well as common quince (*Cydonia*), and flowering quince (*Chaenomeles*). Cedar quince rust spends the other part of the annual cycle in junipers such as eastern red cedar (*Juniperus virginiana*), common (*J. communis*), prostrate (*J. horizontalis*), Savin (*J. sabina*) and Rocky Mountain junipers (*J. scopulorum*).

### **Description:**

The portions of twigs and branches of juniper infected with quince rust swell up two to three times the size of adjacent healthy branches. The fungus becomes perennial in the cambium that can eventually encircle branches of eastern red cedar, which die. It is difficult to see these elongate bulges in the branches until the red-orange, slit-like fruiting structures emerge through fissures in the bark about mid-spring. When the fruiting structures are wet, they have a gelatinous appearance.



**Fruiting structures on juniper branches**

Leaf curling and premature loss during the summer call attention to the inconspicuous fruiting structures of cedar quince rust on the leaves of rosaceous hosts. The infection induces swelling of infected parts of rosaceous host branches. The branch develops a stubby surface where another type of fruiting structure develops in the late spring and early summer. At that time, the tissue can have an orange cast due to the presence of spores. Branches encircled by aecia die after aeciospore discharge. Infected fruit of some hosts develop numerous bristly, white to orange fruiting structures in early to mid-summer. They look like small white tubes evenly distributed over the surface of the fruit.



**Bristly fruiting structures on hawthorn fruit.**

**Disease Cycle:**

*Gymnosporangium clavipes* spends part of its time on juniper and part on the rosaceous host as it completes its annual life cycle. Along the way the cedar quince rust fungus develops four different fruiting structures and spore stages. In the spring, red-orange, slit-like fruiting structures emerge through fissures in the bark of infected juniper. When the fruiting structures are wet, they are gelatinous and the spores that they form germinate in place. These spores grow into another type of fruiting structure that releases its spores, which blow to rosaceous hosts. These spores germinate and infect leaves, green shoots, and fruit if they are wet for several hours. The first fruiting structures that develop do not form infectious spores. However, in two to six weeks the bristly fruiting structures develop and release orange spores that are windblown and infect wet foliage and green shoots of junipers from late summer into the fall.

**Management Strategies:**

Cedar quince rust often kills infected branches, though this may be 4-6 years after the initial infection. Remove infected, swollen branches in late winter or early spring before red-orange telia are visible and basidiospores discharge. Avoid growing alternate juniper and rosaceous hosts in close proximity to one another. There is seldom a need for fungicide protection of rosaceous hosts except with specimen plants or in nursery situations. Begin fungicide sprays as the buds break open and repeat applications at labeled intervals until fruit approaches mature size, or dry conditions prevail.

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