

## Quince Rust

### *Gymnosporangium clavipes*

**I. Introduction:** Quince rust infects fruit, but not leaves, of most apple cultivars. It infects both leaves and fruit of hawthorn. 'Delicious', which is nearly immune to cedar-apple rust, is highly susceptible to quince rust.

**II. Symptoms:** Typically, an infection on apple fruit shows up first as a slightly raised purplish area on the calyx end of the fruit. On mature fruit, the lesion is sunken and dark green or purple (photo 2-14). Usually, the entire calyx end of the fruit is involved and the flesh is deformed to the core. The fungus may produce powdery, fluorescent orange spores in tube-like structures (aecia) on the calyx end of apple fruit (photo 2-15). Similar structures are produced on hawthorn leaves and fruit. These spores infect young stems of the red cedar, resulting in cankers in branches two to five years old (photo 2-16). Spores produced on these cankers serve as inoculum for apple and hawthorn.

**III. Disease Cycle:** Basidiospores are produced on quince rust cankers on the cedar tree and released under conditions similar to those for cedar-apple rust. Fruit infection occurs only during extended wetting periods when the blossom is most susceptible, primarily from pink to the petal fall



stage. Within a few weeks after infection, fruit lesions become apparent. In late summer, aecia may form on infected apple fruit. These produce spores which re-infect young stems on the cedar tree and initiate cankers which eventually produce the spores that infect apple and hawthorn. There is no secondary infection by the rust diseases on apple or hawthorn. Although infected apple fruit may or may not produce aecia, they are commonly produced on leaves and fruit of infected hawthorn. Thus, quince rust cankers tend to be more prevalent, and disease potential greater, in areas where hawthorns are growing in proximity to cedars, such as in pastures adjacent to the orchard. Because quince rust cankers continue to sporulate for several years, inoculum pressure tends to be more constant from year to year than for cedar-apple rust, which is influenced by infection conditions during the season two years earlier.

**IV. Monitoring:** During the prebloom period and continuing through fruit set, monitor rust canker maturity on red cedar trees (photo 2-16) and temperatures during wetting periods. Awareness of wind direction from a large inoculum source may aid in selection of the most effective fungicide before or after potential infection periods. At midseason, collect rust cankers (photo 2-16) from red cedar trees and determine if they are still capable of sporulating by placing them in water in a white cup. If the water is colored orange after a few hours, the cankers are still capable of producing spores during future wetting periods. Because there is no secondary infection within the apple tree, monitoring of the apple tree serves only to pinpoint fungicide selection or timing weaknesses in the control program. Rust lesions appear on fruit within two to four weeks after infection.



Photo 2-16 - T. B. Sutton

**V. Management:** Control measures applied for cedar-apple rust are effective for quince rust. Some apple cultivars that are resistant to cedar-apple rust are susceptible to quince rust (e.g. McIntosh and Delicious), and some cultivars that are susceptible to cedar-apple rust are resistant to quince rust (e.g. Jonathan).

**TEXT PREPARED BY K.S. YODER AND A.R. BIGGS**

**READ LABELS CAREFULLY AND USE CHEMICALS IN ACCORDANCE WITH LABEL CAUTIONS, WARNINGS, AND DIRECTIONS. REQUEST A MATERIAL SAFETY DATA SHEET (MSDS) FROM THE MANUFACTURER FOR EACH PRODUCT YOU USE.**

Trade and brand names are used only for the purpose of information, and the West Virginia University Extension Service and/or West Virginia University Davis College of Agriculture, Forestry, and Consumer Sciences does not guarantee nor warrant the standard of the product, nor does it imply approval of the product to the exclusion of others, which may also be suitable. The West Virginia University Extension Service and/or West Virginia University Davis College of Agriculture, Forestry, and Consumer Sciences assume no responsibility in the use of hazardous chemicals.