

PLANT DISEASE CONTROL NOTES

EXTENSION DIVISION • VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

FRUIT DISEASES

APPLE RUSTS AND THEIR CONTROL IN VIRGINIA

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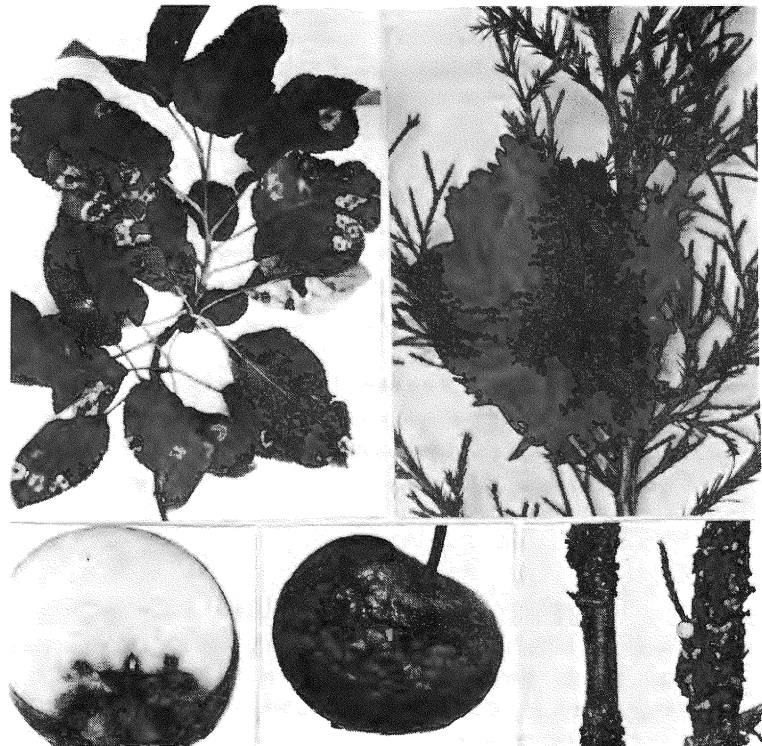
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Both cedar rust and quince rust are serious apple diseases in the Appalachian area. Red cedar is the alternate host for both the cedar-apple and quince rusts. They are not the same disease, however.

Cedar rust, caused by the fungus Gymnosporangium juniperi virginianae appears as orange or greenish yellow spots on the fruit and as yellowish to orange spots on the leaves. Leaf infection results in extensive defoliation and devitalization of the tree during dry periods. York Imperial, Rome Beauty, and Jonathon are the most susceptible of the commercial varieties grown in Virginia.

Quince rust, incited by the fungus Gymnosporangium clavipes, has caused heavy losses of Red Delicious, Stayman, Winesap, Rome, and York under Virginia conditions. The disease appears as sunken or deformed areas in the fruit, ranging from deep green to brown. The sunken or deformed areas usually are located on the calyx end of the fruit. The infection goes deep into the fruit and makes it worthless. Quince rust does not affect apple foliage.

Cedar-apple rust galls or "cedar apples" are located on the twigs of cedar. They develop masses of gelatinous spore horns early in the growing season during rainy periods from which spores are discharged that infect the apple. Infection of apples is generally not beyond a radius of 4 to 5 miles from the point



A cedar gall, with telia-horns just before spore discharge, top right. Apple leaves infected with cedar apple rust, top left. Quince rust cankers on cedar twigs, bottom right. Quince rust on apple, bottom center; and cut apple showing Quince rust infection, bottom left.

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of discharge. The galls of cedar-apple rust develop from infections on the cedar which occurred 1 1/2 years earlier. The galls die following the period of spore discharge, which usually occurs over a period of only a few weeks. During some years, however, the gall may remain active to mid-summer. The cedar must be reinfected every year for the infection to persist. This is not true of quince rust galls, which are perennial in nature.

Quince rust spores are discharged from canker-like lesions on the twigs and branches of the red cedar. Spores are discharged at the same time and under the same conditions as the cedar-apple rust spores. Fruit infection is favored by relatively warm temperatures (60-65°F). The fruit remains susceptible to infection for only a limited time, from the first exposure in the opening buds until late bloom or early petal fall.

RECOMMENDED CONTROL

CULTURAL - Red cedars should never be planted for windbreaks for an orchard. In general, it is not practical to remove the red cedars from the spore discharge danger area surrounding an orchard. Because all red cedars would have to be removed within a radius of 4 to 5 miles of the orchard to assure complete control. However, the removal of cedars that are located close to an orchard will usually reduce the source of inoculum; thus, the diseases can be more effectively controlled with chemical fungicides.

CHEMICALS - FERBAM: Use 0.6 lb. ferbam 76% WP per 100 gals. or 1 "level" tablespoon for each gallon of spray. Apply 300 to 400 gals. per acre, or 5 to 8 gals. per tree, depending on tree size, at 6-day intervals from the pre- to early pink stage until petal fall and at 10-day to 2-week intervals during the post-bloom and early cover sprays. Protection must be maintained until spore horns have dropped from the cedar galls. This "usually" will have occurred within one month after bloom.

CAUTION: Ferbam has roughened the finish of Golden Delicious, and has been an important factor in the development of enlarged lenticels on the Stayman and Delicious varieties. Allow 7 days from last ferbam spray to harvest. The residue tolerance for ferbam is 7 ppm.

OR

ZINEB: Use 0.6 lb. zineb 75% WP per 100 gals. or 1 "level" tablespoon for each gallon of spray. Apply 300 to 400 gals. of spray per acre, or 5 to 8 gals. per tree, depending on tree size, at 6-day intervals from the pre- to early pink stage until petal fall, and at 10-day to 2-week intervals during the post-bloom and early cover sprays. Protection must be maintained until spore horns have dropped from the cedar galls. This will usually have occurred within one month after bloom. The residue tolerance for zineb is 2 ppm. There is a 15-day waiting period for zineb.

OR

THIRAM (Thylate): Use 1.0 lb. thiram 65% WP per 100 gals. or 1 "level" tablespoon for each gallon of spray. Number of gals. per acre and/or tree and the time of application is the same as for ferbam and zineb. The residue tolerance for thiram is 7 ppm.

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KEYS TO PROPER USE OF PESTICIDES

1. Read the label on each pesticide container before each use. Follow instructions to the letter; heed all cautions and warnings, and note precautions about residues.
2. Keep pesticides in the containers in which you bought them. Put them where children or animals cannot get to them, preferably under lock and away from food, feed, seed, or other material that may become harmful if contaminated.
3. Dispose of empty containers in the manner specified on the label.

SEE YOUR DOCTOR IF SYMPTOMS OF ILLNESS OCCUR DURING OR AFTER USE OF PESTICIDES.