

Plant Disease Diagnostic Clinic

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**White Pine Blister Rust:** *Cronartium ribicola*

**Introduction**

White Pine Blister Rust (WPBR), caused by the fungus *Cronartium ribicola*, is one of the most important diseases of white pine in the northeastern United States. White pines, especially young trees, and plants belonging to the genus *Ribes* (currants and gooseberries) are susceptible to the disease. Although WPBR is occasionally a severe foliar disease on *Ribes* plants, on white pines it is lethal if allowed to spread from an infected branch into the trunk.

**Symptoms and Signs**

On white pine, the initial symptoms appear in late summer or autumn as small, yellow spots on needles. The infection spreads down the needle and into the twig, where slight swelling and yellowing develops during the next growing season. Numerous pale-yellow blisters (called aecia) may be as large as 3 mm (1/4 inch) across and break through the infected bark in mid-April to mid-May a year or more after the bark first becomes infected. These blisters rupture and release large numbers of dry, yellow-orange spores (Fig. 1). Blisters disappear after spore discharge and form again the next year. As the bark dries out it appears roughened. The sporulation pattern continues over the years until the stem is girdled.

Rodents frequently feed on rust-infected bark because of its high sugar content. Bark injured by the rodents yields copious amounts of resin, often obscuring the typical symptoms of rust infection.



Figure 1: Blister on an infected pine branch.

On*Ribes*, the symptoms develop throughout the growing season and are comparatively mild. The lower leaf surface, when infected, becomes pale. This is followed within a few days by the development of tiny orange pimple-like fruiting bodies (uredinia) in which yellow-orange rust spores are produced. These spores cause repeated new infections on *Ribes* leaves from May through late summer, when another spore-bearing structure of the rust fungus appears. This structure, called a telium, is a short, yellow-brown, hair-like filament (**Fig. 2**). Large numbers of these filaments give the lower leaf surface a fuzzy brown appearance.



Figure 2: Telia on an infected Ribes leaf**.**

**Disease Cycle**

During moist weather in August and early September, after seasonally cool weather has prevailed for about 2 weeks, telia on leaves of *Ribes* plants produce spores that cause new infections on pine needles. The rust fungus grows slowly within the pine needle and twig; aecia (blisters) first rupture the bark in April-May of the second or third growing season after infection. The spores from these blisters (aeciospores) cause new infections on the growing leaves of *Ribes* plants but are not capable of causing infections on pine. This alternation of host plants is essential for the perpetuation of the fungus; it cannot complete its life cycle on the pine or *Ribes* alone.

The pimple-like uredinia that develop on infected *Ribes* leaves produce orange spores (urediniospores) that cause new infections on *Ribes* leaves throughout the growing season. These spores, however, are not capable of causing infections on pines. The telia that develop on infected *Ribes* leaves in late summer produce spores (called basidiospores) that cause new infections on pines. The infected pine trees provide a place where the rust fungus may safely overwinter; it cannot survive in the *Ribes* leaves or outside a living host plant.

**Management Strategies**

On pine, branches with cankers should be cut off where they join the next healthy branch. This cut should be made at least 15 cm or 6 inches beyond the yellowish margin of the canker. This margin can be easily detected by rubbing the area with a wet cloth. Lower branches are most commonly infected. If lower branches are removed, the probability of infection is greatly reduced.

Historically, another management strategy has been to restrict growth of the alternate host in areas where white pines were grown as the fungus requires both hosts. Black currants (*R. nigrum*) were highly susceptible to the pathogen while other *Ribes* spp. varied in susceptibility. A federal ban once restricted where Ribes could be grown, but it was rescinded in 1966. Individual states however, including New York, retained that ban or quarantine. With the later development of varieties of black currant that were resistant, more widespread planting is allowed. In 2003, growth of *Ribes* spp. for fruit production (home garden or commercial) was allowed in what were known as fruiting districts. This included growing red currants, gooseberries, or resistant varieties of black currant.

**Additional Considerations**

Any discussion of white pine blister rust as it infects pine trees must be linked to a discussion of the alternate host for the fungal pathogen. In this case, that is a group of plants that produce an edible fruit-making the alternate host also a desirable commodity. For more information, read on, and consider checking out some of the references listed below.

Although laws may change at any time, as regards the status of currant production in New York, the most recent list of fruiting districts that we found for NYS was included in the “State Compilation of Codes, Rules and Regulations of the State of New York” Title 6 Part 192.3 (6 CRR-NY 192.3). The version we found on-line was noted to be current through October 15, 2021 and was worded as follows:

*“The following districts where the growing of plants of the genus Ribes (currants and gooseberries) for the production of fruit is carried on extensively, or is a potentially important commercial enterprise, are hereby designated as fruiting currant districts:*

*(a) All of Cattaraugus, Cayuga, Chautauqua, Columbia, Dutchess, Erie, Nassau, Niagara, Onondaga, Ontario, Orange, Putnam, Rockland, Schuyler, Seneca, Steuben, Suffolk, Tompkins, Westchester and Yates counties.*

*(b) In Clinton County, all of the Towns of Altona, Beekmantown, Champlain, Chazy, Clinton, Keeseville, Mooers, Peru, Plattsburgh, Rouses Point and Schuyler Falls.*

*(c) In Greene County, all of the Towns of Athens, Catskill, Coxsackie, Greenville and New Baltimore.*

*(d) In Ulster County, all of the Towns of Esopus, Gardiner, Kingston, Lloyd, Marbletown, Marlborough, New Paltz, Plattekill, Rosendale, Saugerties, Shawangunk and Ulster.”*

For other counties or towns, there may still be some limitations regarding growing of highly susceptible varieties of black currant so if you have any questions, please contact the NYS DEC *before purchasing or planting* to determine ifyou can plant in your area, and what cultivars you may be able to plant.

Keep in mind too, that resistant varieties are not the same as Immune varieties. If you wish to grow white pines for use as Christmas trees or nursery plants, it is still best not to grow the two hosts together.

**References**

Minor Fruits: Gooseberries and Currants Ribes spp. [Cornell Fruit Resources, Cornell University](http://www.hort.cornell.edu/fruit/mfruit/gooseberries.html) <http://www.hort.cornell.edu/fruit/mfruit/gooseberries.html> (Accessed December 5, 2024)

Sinclair, Wayne A. and Howard H. Lyon. 2005. Diseases of Trees and Shrubs, 2nd ed. 660 pages Comstock Pub. Associates.

STATE COMPILATION OF CODES, RULES AND REGULATIONS OF THE STATE OF NEW YORK

TITLE 6. DEPARTMENT OF ENVIRONMENTAL CONSERVATION CHAPTER II. LANDS AND FORESTS

PART 192. FOREST INSECT AND DISEASE CONTROL: 192.3 Fruiting currant districts. [View Document - Unofficial New York Codes, Rules and Regulations](https://govt.westlaw.com/nycrr/Document/I21ef995bc22211ddb7c8fb397c5bd26b?viewType=FullText&listSource=Search&originationContext=Search+Result&transitionType=SearchItem&contextData=(sc.Search)&navigationPath=Search%2fv1%2fresults%2fnavigation%2fi0a89c4f20000019397fb23a454978941%3fppcid%3df325f19724944b2e861c3502064b3a77%26Nav%3dNYREGULATION_PUBLICVIEW%26fragmentIdentifier%3dI21ef995bc22211ddb7c8fb397c5bd26b%26startIndex%3d1%26transitionType%3dSearchItem%26contextData%3d%2528sc.Default%2529%26originationContext%3dSearch%2520Result&list=NYREGULATION_PUBLICVIEW&rank=1&t_title=6&t_section=192.3) (Accessed December 5, 2024)

UMass Extension, Center for Agriculture: Currants at: <https://ag.umass.edu/sites/ag.umass.edu/files/fact-sheets/pdf/currants.pdf> (Accessed December 5, 2024)

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**READ THE LABEL BEFORE APPLYING ANY PESTICIDE!** Changes in pesticide regulations occur constantly. All pesticides distributed, sold, and/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.

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