

# BLUEBERRY DISEASE FAST FACTS

## Leaf Rust

Cathy Heidenreich<sup>1</sup>, Dena Fiacchino<sup>2</sup>, Wolfram Koeller<sup>1</sup>



Figure 1



Figure 2



Figure 3

**What:** Leaf rust is caused by the fungus, *Naohidemyces vaccinii*, formerly known as *Pucciniastrum vaccinii*. The rust's alternate host, hemlock (*Tsuga* sp.) needs to be present for the disease cycle to be completed. The disease first appears as yellow (chlorotic) leaf spots on the upper leaf surface of new blueberry leaves. Spots later turn reddish brown (**Figure 1**). Entire leaves may turn brown, die, and drop prematurely if infections are severe. Yellowish orange pustules (uredinia) become visible on the lower leaf surface about mid-summer (**Figure 2**).

**When:** Airborne spores (aeciospores) infect newly expanded blueberry leaves in spring. Leaf spots usually are first visible mid-season. Spores (urediniospores) released from rust pustules (uredinia) formed mid-season on blueberry lower leaf surface below these leaf spots may re-infect blueberry leaves, leading to disease build-up on blueberry (**Figure 3**). Telia form in the blueberry leaf infections late in the season. They appear as flat, dark-colored crusts on the lower leaf surfaces. Infected leaves with telia drop to the ground where the fungus overwinters. In early spring, these telia release spores (basidiospores) that infect young hemlock needles. Aeciospores formed on hemlock needles are released to start new infections on blueberry leaves. In southeastern states where hemlock is not present, the disease overwinters on evergreen blueberry leaves.

**Where:** Leaf rust has been reported from Europe, Argentina, Asia, Mexico, Canada, New Zealand, Australia, and the United States. The disease is most prevalent in the southeastern United States; with localized plant disease outbreaks (epiphytotic) occasionally occur on high bush blueberry in east coast states.

Sources for the disease in the midatlantic states are believed to be wind-borne urediniospores from southern growing areas. Leaf rust is most prevalent in areas within the natural range of hemlocks.

**How:** Details on conditions needed for infection under natural conditions are sketchy at best. Leaf rust reportedly develops on newly emerging blueberry leaves in early spring when temperatures reach 20 °C. A leaf wetness period of 48 hours is sufficient for infection under controlled environmental conditions. Pustules are evident on newly infected leaves 10 days after inoculation.

<sup>1</sup>Cornell Cooperative Extension of Oswego County, Mexico, NY

<sup>2</sup>Department of Plant Pathology, Cornell University's New York State Agricultural Experiment Station, Geneva, NY

# BLUEBERRY DISEASE FAST FACTS

## Leaf Rust

(continued)

**Control Strategies:** Leaf rust is a minor disease of blueberries in New York State. However, epiphytotics may occur sporadically under favorable weather conditions. The disease generally has little effect on yield unless defoliation is severe. In cases of severe defoliation, yield is reduced the *following* season.

- Plant resistant cultivars whenever possible. 'Bluecrop', 'Burlington', 'Collins', 'Dixi', 'Earliblue', 'Gem', 'Ivanhoe', 'Olympia', 'Stanley', and 'Weymouth' are resistant. 'Jersey', 'Herbert', 'Berkley', 'Blueray', and 'Pacific' are moderately susceptible. 'Coville', 'Pemberton', 'Washington', and 'Atlantic' are susceptible.
- Removal of hemlocks (alternate host), especially those trees upwind within a 0.4 km radius of the planting may be beneficial.
- No fungicides are currently registered for control of this disease.

For more information see *Cornell Pest Management Guidelines for Berry Crops*. Apply all pesticides according to label rates and instructions.

### References:

1. Caruso, F.L., and Ramsdell, D.C. (eds.) 1995. Compendium of Blueberry and Cranberry Diseases. APS Press, St. Paul Minn.
2. DeMarree, J.B., and Wilcox, M.S. 1947. Fungi Pathogenic to Blueberries in the Eastern United States. *Phytopathology* 37: 487-506.
3. Sato, S.K., Katsuya, K., and Hiratsuka, Y. 1993. Morphology, taxonomy, and nomenclature of *Tsuga*-Ericaceae rusts. *Trans. Mycol. Soc. Japan* 34:47-62.
4. Schilder, Annemiek. 2005. Michigan Blueberry Facts: Leaf Rust. <http://www.blueberryfacts.org/leafrust.htm>.
5. \_\_\_\_\_. Common Tree Diseases of British Columbia Conifer Rust Fungi: Hemlock-Blueberry Rust. [http://www.pfc.cfs.nrcan.gc.ca/diseases/ctd/Group/Rust/rust10\\_e.html](http://www.pfc.cfs.nrcan.gc.ca/diseases/ctd/Group/Rust/rust10_e.html).
6. Ziller, W.G. 1974. Tree Rusts of Western Canada. Can For. Ser. Publ. No. 1329, Victoria, BC.

This fact sheet is brought to you courtesy of:  
**The New York State Berry Grower's Association**  
<http://www.hort.cornell.edu/grower/nybga/index.html>.