

College of Food, Agricultural, and Environmental Sciences, Department of Plant Pathology

# Blueberry Leaf Rust

**Melanie L. Lewis Ivey**, Assistant Professor, Department of Plant Pathology, The Ohio State University-Ohio Agricultural Research and Development Center, Wooster, OH.

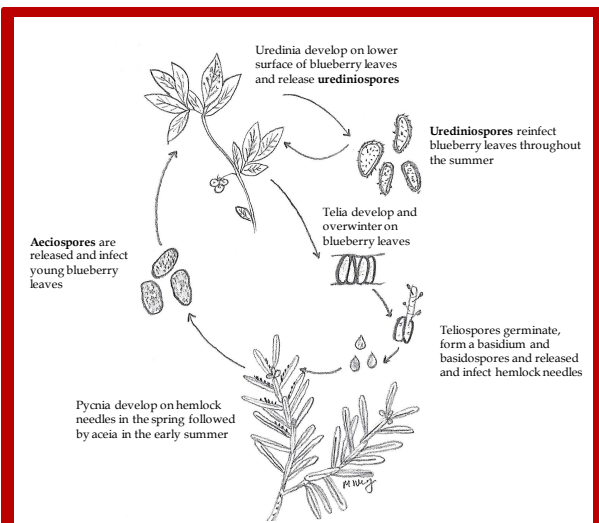
Leaf rust of blueberry is caused by the fungus *Pucciniastrum vaccinia* (synonym *Naohidemyces vaccinia*). The fungus has a wide host range including species of *Vaccinium* spp. (blueberry, cranberry, huckleberry), *Tsuga* (hemlock, spruce), and *Rhododendron* (azalea, rhododendrum). The disease has been reported in Asia, Argentina, Australia, Canada, Europe, Mexico, and the United States. In Ohio, and other northern states, the disease is sporadic and localized. Leaf rust can cause premature defoliation of affected bushes. Over time, and if not properly managed, bushes slowly decline and produce fewer marketable berries.

## Disease Development and Symptoms

Mild temperatures (65-68 degrees F) and multiple days of rain are conducive to infection and disease development. On blueberry, the rust fungus produces two spore types (urediniospores and teliospores) (Figure 1).



**Figure 2. Leaf rust symptoms on blueberry.**



**Figure 1. Blueberry leaf rust disease cycle. Aeciospores and urediniospores both infect blueberry resulting in disease.**

A third spore type (aeciospore) is produced on hemlocks (*Tsuga* sp.), the alternate host for the fungus. In early spring or summer aeciospores are dispersed by wind and infect young blueberry leaves. The disease first appears as small yellow (chlorotic) spots on the upper surface of young blueberry leaves. As the infection progresses the spots turn a reddish-purple color with a discrete yellow halo (Figure 2). On the underside of the leaves, spots have a distinct brown edge with pustules of yellow-orange urediniospores in the center (Figure 3). These spores are capable of causing new infections throughout the growing season. Later in the season black teliospores form in the pustules. Teliospores then produce a final spore type, the basidiospore, and these spores are dispersed by the wind and infect hemlock needles. On hemlocks the fungus produces overwintering structures called pycnia, which release aeciospores in the spring starting the yearly disease cycle over again (Figure 1).



**THE OHIO STATE UNIVERSITY**

COLLEGE OF FOOD, AGRICULTURAL,  
AND ENVIRONMENTAL SCIENCES



**Figure 3.** Leaf rust spots on the underside of a blueberry leaf. Spots have a distinct brown edge (A) with pustules of yellow-orange urediniospores (B and C) in the center.

## Leaf Rust Management

The best way to manage blueberry leaf rust is to plant resistant varieties. Popular varieties grown in Ohio with a high to moderate level of resistance to leaf rust include ‘Bluecrop’, ‘Burlington’, ‘Collins’, ‘Earliblue’, and ‘Weymouth’ (Table 1).

**Table 1.** Disease resistance in blueberry varieties commonly grown in Ohio.

	Leaf rust	Mummy berry	Phomopsis twig blight and canker
Bluecrop	VR	MR	-
Burlington	VR	R	-
Collins	VR	S	-
Weymouth	VR	S	-

VR=very resistant; R=resistant; MR=moderately resistant; S=susceptible and – indicates that resistance is not known.

Because leaf rust is a minor disease of blueberry in Ohio, varieties with resistance to major diseases such as mummy berry (*Monilinia vacciniae-corymbosi*) and Phomopsis twig blight and canker (*Phomopsis vaccinii*) should be considered first in the selection process.

The removal of hemlocks from surrounding blueberry plantings, especially those upwind of fields, will break the disease cycle of the rust fungus and significantly reduce the number of aeciospores available to infect young leaves in the spring.

Yearly intensive fungicide spray programs specific to leaf rust are generally not needed in Ohio. If environmental conditions are very conducive for leaf rust fungicides can be applied when symptoms are first observed. Consult the *Midwest Fruit Pest Management Guide* (Bulletin 506) for current fungicide recommendations. This guide can be obtained from your county extension office or the CFAES Publications online bookstore at [estore.osu-extension.org](http://estore.osu-extension.org).

## Useful References

Nelson, S., *Blueberry Rust*. University of Hawai'i at Manoa, Cooperative Extension Service, PD-51

The College of Food, Agricultural, and Environmental Sciences and its academic and research departments including, Ohio Agricultural Research and Development Center (OARDC), Agricultural Technical Institute (ATI) and Ohio State University Extension embraces human diversity and is committed to ensuring that all research and related educational programs are available to clientele on a nondiscriminatory basis without regard to age, ancestry, color, disability, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, race, religion, sex, sexual orientation, or veteran status. This statement is in accordance with United States Civil Rights Laws and the USDA.

Bruce McPherson, Ph.D., Vice President for Agricultural Administration & Dean

For Deaf and Hard of Hearing, please contact the College of Food, Agricultural, and Environmental Sciences using your preferred communication (e-mail, relay services, or video relay services). Phone 1-800-750-0750 between 8 a.m. and 5 p.m. EST Monday through Friday. Inform the operator to dial 614-292-6891.

Copyright © 2014, The Ohio State University