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CANAVIRGELLA NEEDLECAST OF WHITE PINE

During 2007, Canavirgella Needlecast was diagnosed on many samples of white pine submitted to The Plant Disease Information Office (PDIO) of the Experiment Station. This disease was first diagnosed in Connecticut in 1998. At that time, the PDIO received an unusual number of phone inquiries and samples of ailing white pines from throughout the state. The symptoms on the affected trees were distinctly different from those associated with common diseases of white pine previously reported in Connecticut. After extensive microscopic examination and a search of the literature, the disease was identified as Canavirgella Needlecast. This disease had never been reported for Connecticut, although it was thought to be present along the Eastern Seaboard, from North Carolina to Maine. The first report documenting the association of the fungus *Canavirgella banfieldii* with this needlecast disease in the U.S. appeared in 1996.

SYMPTOMATOLOGY AND DISEASE CYCLE:

Canavirgella Needlecast, caused by the fungus *Canavirgella banfieldii,* is a disease of *Pinus strobus* (Eastern white pine) and *Pinus peuce* (Macedonian white pine). Infected trees appear distinctly reddish-brown from a distance in late July and early August (Figure 1). Upon close inspection, the symptoms are usually confined to current-season needles. Tips of infected needles first appear yellowish-tan and develop a distinct reddish-brown color by late August. By the following spring, infected needles curl and fade to tan or gray. One of the diagnostic characteristics of the disease is that not all needles within a fascicle are infected. Additionally, individual needles within a fascicle may exhibit differing amounts of symptomatic tissue (Figure 2).

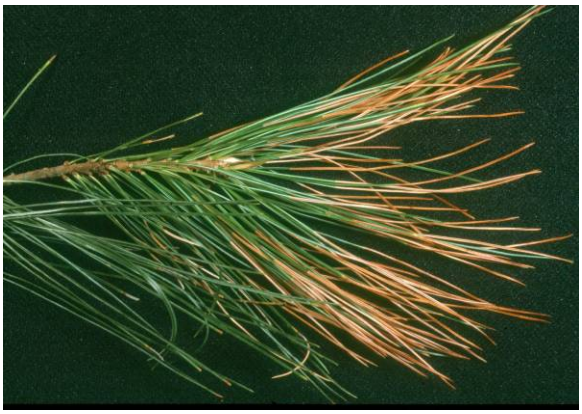

Figure 1. Diagnostic symptoms of Canavirgella Needlecast. Note reddish-brown color of infected needles.

When needles are infected with *Canavirgella*, the bases of the symptomatic needles usually remain green and the

needles and the fascicle often remain attached to the tree. Symptomatic portions of individual needles may break off before the fascicles drop during periods of normal needle shedding. The general symptoms of this needlecast have frequently been confused with those associated with acute ozone injury and other needlecast diseases. However, with ozone, symptoms usually develop on all of the needles within a fascicle and needles exhibit the same extent of injury.

Figure 2. Individual needles in a fascicle show different levels of browning.

Fruiting bodies (hysterothecia) of *C. banfieldii* begin to form in infected needles in late fall and winter and continue to develop throughout the winter and spring. They appear as somewhat lenticular, raised, blister-like structures barely visible with a hand lens (Figure 3).

As the fruiting bodies mature, they appear dark gray and can be found along the length of the needle. Numerous fruiting bodies can develop on an individual needle.

Infection of succulent, elongating, current-season needles occurs in late June or early July. The spores (ascospores) of the fungus are thought to be released during the early stages of needle elongation and during periods of favorable weather. As with most needlecast pathogens, extended periods of free water on the needles are conducive for infection.

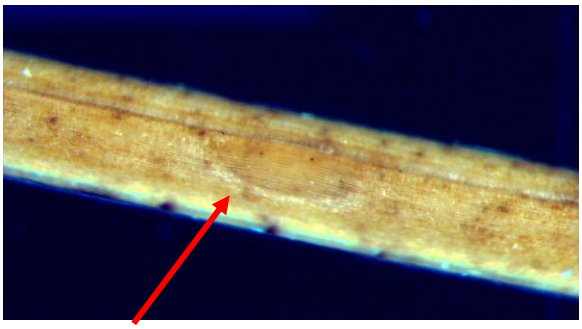

Figure 3. Developing fruiting body of *C. banfieldii*. Note lenticular shape of the raised, blister-like structure (arrow).

The disease does not appear to be site-specific since heavily infected trees have been found on warm, exposed, south-facing slopes as well as on cool, moist, north-facing exposures.

Secondary fungi are often associated with infections by *C. banfieldii*. The presence of these secondary organisms often creates problems with accurate diagnosis.

Not all white pines are susceptible to the disease, and it is believed that susceptibility may be hereditary. If this is the case, stands with related trees will show significant damage if susceptible, or relatively no damage if resistant.

MANAGEMENT STRATEGIES:

As with most needlecasts, control of Canavirgella Needlecast can be achieved using a multifaceted approach. This disease can often be effectively managed by

following good sanitary and cultural practices. Tree vigor should be maintained by attention to watering, fertilizing (as determined by a soil test), and pruning. Although needlecasts are usually considered to be more aesthetic than life-threatening and are rarely serious enough to warrant chemical control, there are situations where they can be serious and cause permanent damage, disfigurement, or even tree death. Newly transplanted trees or trees weakened by stress are particularly sensitive to repeated premature needle drop. In such cases, chemical control could be beneficial. However, once symptoms are visible on the needles it is too late for chemical applications. Please contact the Experiment Station for the most current information on control.

January 2008 (revised)