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Disease Alert: Delphinella Shoot Blight of Fir

Delphinella shoot blight is a fungal disease that was first described in Denmark in 1902. This disease only attack true firs (*Abies* spp.). In the United States, the disease was first recorded in 1957 and has been distributed in both east and west coasts. In Connecticut, an outbreak of the disease in a Christmas tree farm in 2017 caused severe damages on white fir trees and resulted in significant economic losses (Figure 1).

SYMPTOMS AND DIAGNOSTICS

The disease attacks new growth and causes needle and shoot blight on the current year growth. Severely affected needles turn reddish purple in color and curl downward along the needles (Figure 2). Late infections may result in browning of partial needle tips on the current year growth (Figure 3). Browning and wilting of needles caused by Delphinella shoot blight resemble damages that are resulted from frost damages, Botrytis blight, or current season needle necrosis. But, black fungal fruiting bodies are usually found on brown needles affected by Delphinella shoot blight in late summer and fall (Figure 4).

DISEASE DEVELOPMENT

The pathogen overwinters as black fungal fruiting bodies on infected needles that fallen on the ground or firmly attached to the stems. In the spring, fungal spores are released from black fungal fruiting bodies and infect new needles when they emerge from new buds. Prolonged cool and wet spring weather conditions in the spring are conducive for the disease development. The disease thrives best in dense plantations where high humidity results in extended periods of free moisture on the needles after precipitation. A long distance spread of the disease may be associated with contaminated seed and infected transplants.

DISEASE MANAGEMENT

Resistance: There are significant differences in resistance to Delphinella shoot blight among fir species and varieties. Subalpine firs with bluish foliage were reported more resistant to the disease than the ones with more green foliage. A selection of resistant species and lines is a more economical way to manage this disease compared to fungicide treatments.

Cultural practice: Purchase healthy and disease-free seedlings and transplants from reputable nurseries and farms. Maintain open stands with good airflow. Avoid overhead irrigation during bud break in nurseries and transplant beds. Remove and burn diseased shoots or whole trees if they are severely infected.

Fungicide application: Applications of chlorothalonil fungicides (Bravo Weather Stik, Daconil Weather Stik, and Echo DF) provide effective control of this disease, but timing of fungicide sprays is critical. Initial application need to be done as soon as bud breaks occur. Always read the label carefully and use only as directed.



Figure 1. Needle and shoot damages on white fir resulted from Delphinella shoot blight in a Christmas tree farm



Figure 2. Dead needles and shoots on the current year new growth of Concolor fir



Figure 3. Partial needle damages on the current year new growth of Concolor fir

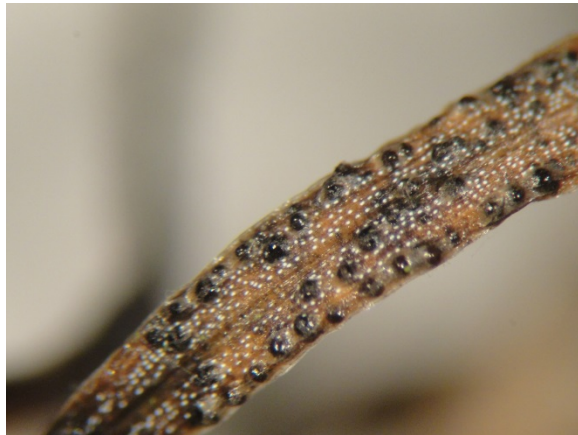


Figure 4. Black fungal fruiting bodies on infected needles of Concolor fir