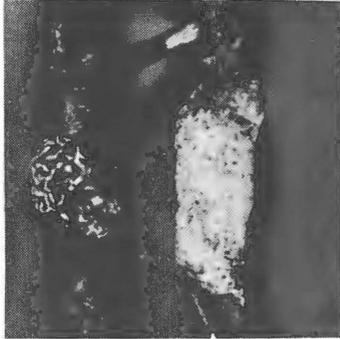


Forest Tree Diseases of Virginia

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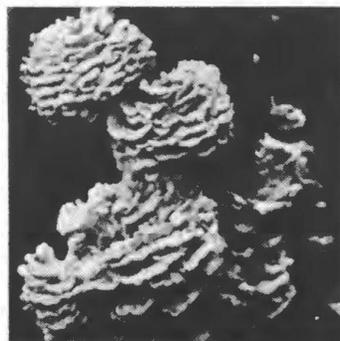
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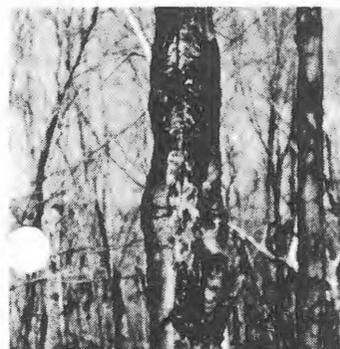
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Needlecast of Conifers

by

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Needlecast is a serious disease of many conifers. Many fungi can cause this disease. *Lophodermium* needlecast has in recent years caused considerable damage in Christmas tree plantations and nurseries in the United States. This disease has caused damage in plantations from South Carolina north to Canada with particularly severe damage in the north-central States. Infected trees have a very unsightly appearance and even though they usually are not killed, they are unsalable as Christmas trees. This disease can be a very serious problem when moist weather conditions occur for extended periods. Needlecast is only rarely important under forest conditions; few trees are killed by defoliation, but the sustained needle loss will eventually reduce the growth rate of infected trees.

Range:

Needlecast of conifers is prevalent in all regions of North America and Europe.

Cause:

Many species of fungi are known to cause this disease; however, only 6 genera are of economic importance. These are Rhabdocline on Douglas fir, and Lophodermium, Hypodermella, Hypoderma, Elytroderma and Bifusella on pines or other conifers. L. pinastri is the fungus currently causing the most serious damage within red and Scotch pine Christmas trees.

Suspects:

This disease occurs on all species of conifers including pine, spruce, fir, larch, and



Figure 1. Fruiting structures of Lophodermium pinastri. Note their erupted black appearance. Such structures are indicative of the presence of needlecast infections.

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cedar. It is most serious on Scotch, Virginia, red and white pines. Short-needled Scotch pine varieties are highly susceptible with long-needled varieties more resistant to the disease.

Symptoms and Disease Cycle:

The foliage of infected trees generally is yellowish brown to red in color; some thinning of the crown may be evidenced by needle drop or cast. Needlecast symptoms rarely affect the entire needle; instead, irregular dead areas appear on the needles. In many instances completely green needles may be found among the infected needles. Black elongate fruiting bodies of the causal fungus are produced on the brown surface (Figure 1).

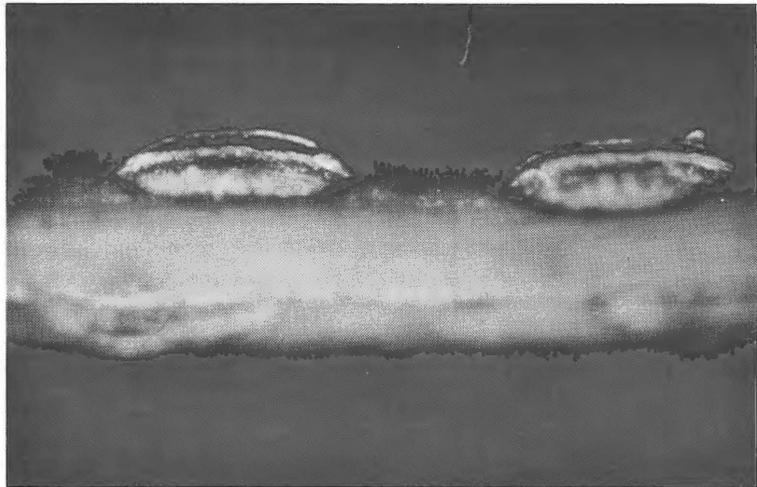


Figure 2. Closeup view of fruiting structures of needlecast fungus. Spores are ejected from these structures and are deposited on newly emerging needles during the late spring.

With *Lophodermium* needlecast, the disease is found in the lower part of infected trees, although when the disease is severe, the entire tree may be infected. Spots having brown centers and yellow margins, produced by the previous year's infection, appear on the needles in early spring. These needles begin yellowing and then turn brown followed by needle drop or cast. All the foliage of severely infected trees may turn brown before bud break. In most cases, new buds are healthy, and shoot and needle growth may proceed normally through the growing season if not infected during this period.

The fruiting bodies of *L. pinastri* develop on the dead needles dropped during the spring. These fruiting bodies are tiny, black, football-shaped structures with a longitudinal slit down the center. During rainy weather in late summer and fall, spores are discharged from these structures and disseminated by wind to infect susceptible pine needles. Control measures must be taken before this time if the foliage is to be protected. By late fall, most of the older, infected needles have been cast, resulting in trees with only current year's needles present. Trees in this condition are unsalable as Christmas trees. The fungus overwinters in needles infected during the late summer and fall.

Control:

Control is seldom feasible under forest conditions. Constantly infected trees should be removed during normal thinning operations, but spray programs are not economically feasible.

In nurseries, shade tree or Christmas tree plantings, where control is economically feasible, spray programs can control needlecast disease. Bravo 6F at 2.5 pts/100 gal water for hydraulic spray or 3 qts/100 gal water for high pressure mist spray, Maneb at 1.2 lbs a.i./100 gal water or 1.5 lbs of formulated (80%) with 4 oz spreader sticker, or bordeaux mixture (8-8-100) are recommended for control. These fungicides should be applied when the needles are one-half developed in the spring. In severely infected plantations or during an unusually wet year, a second spray should be applied 3 to 4 weeks later.

Cultural practices for control are as follows: 1) plant only healthy nursery stock; 2) do not plant just one species or variety; 3) plant resistant Scotch pine varieties or other conifer species and 4) do not plant susceptible pine species in plantations in areas where needlecast disease is prevalent.

Photographs courtesy of Dr. W. Merrill, Department of Plant Pathology, The Pennsylvania State University, University Park, Pennsylvania.

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KEYS TO PROPER USE OF PESTICIDES

1. Read the label on each pesticide container before each use. Follow instructions to the letter; heed all cautions and warnings, and note precautions about residue.
2. Keep pesticides in the containers in which you bought them. Put them where children or animals cannot get to them, preferably under lock and away from food, feed, seed, or other material that may become harmful if contaminated.
3. Dispose of empty containers in the manner specified on the label. If disposal instructions are not printed on the label, burn the containers where smoke will not be a hazard, or bury them at least 18" deep in a place where water supplies will not be contaminated.

SEE YOUR DOCTOR IF SYMPTOMS OF ILLNESS OCCUR DURING OR AFTER USE OF PESTICIDES.