

PLANT DISEASE CONTROL NOTES

EXTENSION DIVISION • VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Revised February, 1980

Control Series
V.P.I. & S. LIBRARY

ORNAMENTAL AND FLOWER DISEASES

HEMLOCK TWIG RUST

JUN 4 1980

R. C. Lambe
Extension Specialist, Plant Pathology

BLACKSBURG, VIRGINIA

Eastern or Canadian hemlock (*Tsuga Canadensis*) and to a lesser extent Carolina hemlock (*T. caroliniana*), are disfigured by a rust disease that occurs both in nurseries and in ornamental hedges. The disease is rarely found below 2,000 feet elevation in Western Virginia, but does occur at lower elevations in the northern part of the state.

SYMPTOMS: The first noticeable symptoms of the disease is a yellowing of new needles about a month after the buds break and new growth starts. Within a week or 10 days after this yellowing, orange areas appear on the new shoots at the base of the yellowed needles. The shoots in these areas become limp and droop (Figure 1). Most of the affected needles soon drop off and during the growing season the infected shoots die. The dead shoots remain on the tree for a year or more and take on a characteristic bare, curled, or crooked condition (Figure 2). The fungus attacks the needles and cones and kills current-season shoots. Diseased cones remain closed, frequently are malformed, and do not produce seed. Affected trees appear ragged and look as though they had been singed by fire.



FIGURE 1. Orange areas appear at the base of the leaves and the shoots become limp and droop.

DISEASE CYCLE: Hemlock rust is caused by the fungus, *Melampsora farlowii*. Although most rust fungi require an alternate host to complete a life cycle, it is interesting to note that no alternate host has ever been reported for the hemlock rust fungus. The fungus is capable of going from tree to tree, causing infection, and does not have to spend part of its life on any other plant species. The fungus overwinters in twigs and cones which were killed the preceeding spring. During warm, moist conditions in early spring, the overwintering bodies of the fungus produce spores. These are carried by air currents to cause infection in healthy needles, shoots, and cones. The period of greatest infection hazard is from the time the buds break in the spring until mid-June.

CONTROL: Removing and burning infected twigs and cones may be practical on a small hemlock in home yard, but this is hardly feasible for control of the disease in hedges and commercial nurseries. It does not reduce the chance of infection coming in from other hemlocks in the area. Refer to Pest Management Guide 7 for information on chemical control.



FIGURE 2. Infected shoots are killed. Note the characteristic bare, curled conditions of current season shoots.

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 residues.
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.

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