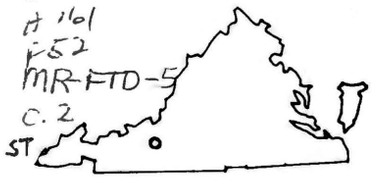
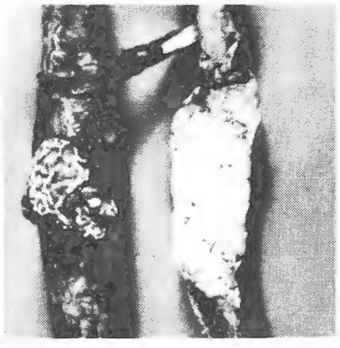
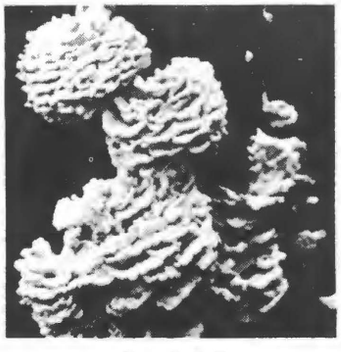


Forest Tree Diseases of Virginia



RUST

DECLINE



DECAY

CANKER

August 1973 MR-FTD-5

Fomes Root and Butt Rot

by
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The importance of Fomes root and butt rot to the Southern forest industries is well documented. Thinned loblolly pine plantations suffer the most severe attacks by the fungus Fomes annosus (Fr.) Cke. and with the rapid increase in the numbers of planted trees reaching thinning age, the potential of this disease is expected to increase in the future. A positive correlation has been demonstrated between the number of thinnings in an affected plantation and the increase in the amount of infection by the causal fungus. In one survey, conducted throughout the Southeast, 59 percent of all loblolly pine plots had some mortality due to root rot and 2.8 percent of all loblolly pine trees examined were dying.

Figure 1. Infection center of Fomes root and butt rot. Note thin crowns and dead trees.

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Range: Fomes root and butt rot occurs throughout the north temperate regions of the world and has been found in some subtropical and tropical areas. Although this disease occurs from Canada to Florida in the East, it is of major concern in pine plantations of the Southeast. It has long been a serious problem in natural stands of conifers in the West and Pacific Northwest.

Suscepts: Fomes annosus has been found on a variety of conifers and hardwoods. It has recently been described on rhododendron. Of the widely planted species loblolly pine is the most severely affected with other species being only slightly less susceptible.

Symptoms: Fomes root and butt rot is characterized by a white stringy rot of the root system accompanied by thin chlorotic crowns, dieback, death, or windthrow of affected trees (Figure 1 and 2).

In many instances, no symptoms are evident until windthrow of living trees has occurred. The fungus produces conks in the litter layer at the base of infected trees. These conks are very inconspicuous, brown in color, and very uneven in shape (Figure 3). The lower surface of the conk is usually light tan when dormant and very white when active. A white cast may be evident on needles in the duff surrounding a spore producing conk.

Like many root diseases, the symptoms are often overlooked during the initial stages of decline and when death occurs, other types of damage are thought responsible. This disease is often confused with the effects of Littleleaf disease and bark beetle damage. In many instances all three factors may play a role in the death of trees within pine stands.

Spread: The fungus has been demonstrated to spread from infected to healthy trees by several methods. The first method listed below is assumed to be the most significant in the spread of this fungus.

Figure 2. Decayed roots of infected tree. Note the white stringy appearance of roots. These roots provide very little support for infected trees and windthrow soon follows.

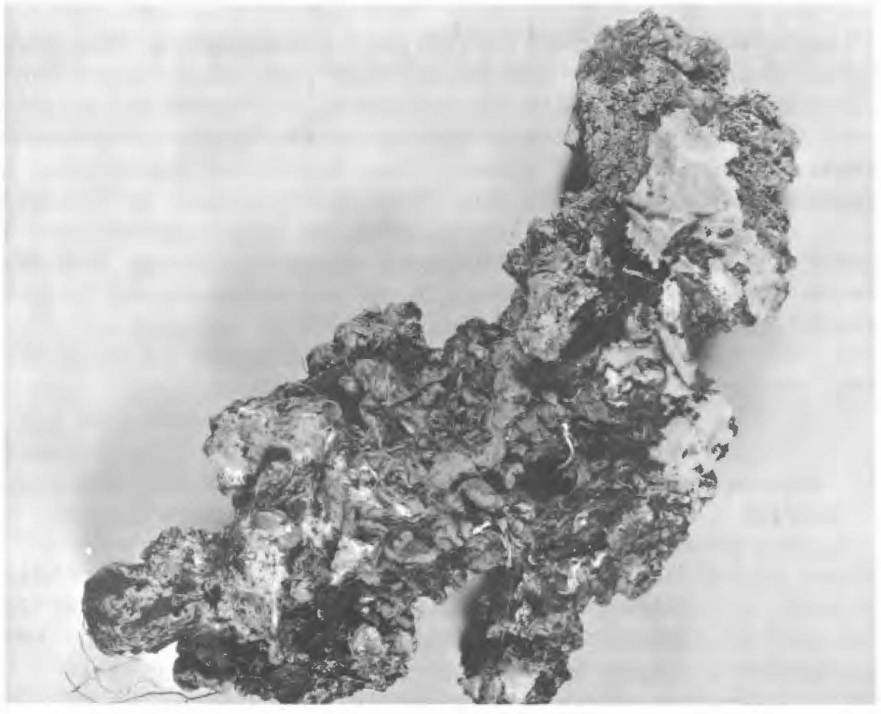

Figure 3. A conk of Fomes annosus removed from the base of an infected Loblolly pine. Note the irregular shape. Conks vary in size from ¼ inch to 15 inches or more broad. White pore layer is present on lower surface as seen in upper right section of this inverted conk.

1. Spore movement from conks on infected trees to freshly cut stump surfaces or through mechanical wounds on the roots or root collar and subsequent growth through root grafts or root contacts to adjacent standing trees.
2. Insect or rodent transmission
3. Cutting tools
4. Spores carried on nursery stock
5. Movement of infested material to new locations.

Control: Due to the intensive management of pine plantations (thinning and harvesting schedules) early recognition of the symptoms of F. annosus infection will effect the best control practices. Control through the various methods described below should only be attempted where this disease has been known to cause damage in the past or where it is known to exist in stands growing on moderate or high hazard "soils" as indicated below.

Thin during the months of July and August in eastern Virginia. High temperatures during this period are effective in destroying (F. annosus) spores.

Stands should only be thinned once during the rotation cycle and when thinnings are conducted at other periods of the year, the use of a chemical stump protectants is advised. Stump treatment with 97 percent borax in the powdered form should follow immediately after felling. A light even dusting of the entire stump surface is recommended. A "salt shaker" may be devised for this purpose.

Urea (45%) applied at the rate of 2 lbs/gallon water until runoff of the stump surface has also been shown effective against stump infection. The use of a water carrier may make the application of urea less desirable than the dry form of Borax suggested above.

Recent studies by the Virginia Division of Forestry, indicate that the infection hazard for any particular pine plantation can be predicted based on several characteristics of the soil. In general, stands growing on deep, sandy, well drained soils have a much greater chance of severe infection than do those located on other soil types. The following guidelines have been provided to management foresters of the Virginia Division of Forestry.

1. Examine all first generation pine plantations and all natural stands under age 30, prior to the first thinning, using the criteria of soil texture, depth of A horizon, and height of the water table to predict rate of spread should the stand become infected with F. annosus.
2. Hazard rating based on soil texture as related to future stand management considerations indicate that:
    a. Clays and clay-loams can be considered low hazard soils.
    b. Loams and silt loams are intermediate hazard soil.
    c. Sandy loams, loamy sands and sands are high hazard soils if deeper than 10 inches. Deep sandy soils are the dangerous ones!
3. Exceptions to the above:
    a. If high hazard textural soils are underlain at 10 inches or less with a soil horizon in which clay can be detected in field examination, they become "intermediate" or "low" hazard as far as stand management is concerned.
    b. If the water table is high during much of the year (indicated by extensive organic matter build up or if the top soil is mottled at 18 inches or less) danger of spread of F. annosus is negligible even though the soil is sandy.

The regeneration of previously infested sites does not appear to cause any long range serious problems. However, severe mortality has been observed on occasional sites and further study of such areas is needed before any recommendations can be made.

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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 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. 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.