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EDITOR'S
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SYNOPSIS OF PRESENT INFORMATION CONCERNING

PORIA WEIRII ROOT ROT IN DOUGLAS-FIR

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We still have much to learn about this common disease. Many of the following statements are based on scanty data, and some of them will undoubtedly have to be modified when more detailed and accurate knowledge becomes available. Until that time, however, even the little that is now known can be useful to forest managers in western Washington and Oregon.

Behavior of the Disease

Poria weirii is present in most Douglas-fir stands, but does not always cause serious damage. It is most conspicuous, and probably most destructive, in stands from about 70 to about 150 years old. Damage consists principally of killing of many or all trees in numerous small patches ("foci") of infection, which gradually become larger. The fungus spreads from tree to tree through the roots. Within a half-chain of a killed tree, in pole-size and larger stands, about half of the trees are infected. At distances greater than a chain, few trees are infected. Most infected trees cannot be recognized by crown symptoms.

The rate of damage usually doubles every 10 to 20 years. Where foci are common in a small-pole stand, damage will be serious before the trees reach saw-timber size, even though it has been negligible up to the time of observation. Openings caused by the disease give little effective release to remaining Douglas-firs, which are usually too badly infected to utilize the additional growing space. Even when their root systems remain healthy enough to maintain good growth, increased exposure and reduced windfirmness usually result in windthrow within a few years. Suppressed western hemlocks and western redcedars, however, are benefited by the release.

The disease persists in dead root systems, sometimes for more than a century, and spreads from these into the succeeding young stand. Slash-burning gives no protection. When Douglas-fir immediately follows Douglas-fir, damage during the second rotation will be more severe than at

corresponding ages during the first rotation. True firs are about as susceptible as Douglas-fir, western hemlock is less susceptible, and western redcedar is much less susceptible.

Natural control apparently occurs through replacement of Douglas-fir by less susceptible conifers or by brush, so that the fungus gradually dies out as the old dead roots disintegrate. There is real danger that management for continuous production of Douglas-fir will result in increased damage by the disease during future rotations. No methods of direct control are known, and it is problematical whether adequate indirect control can be obtained by cultural operations in pure Douglas-fir stands.

Recommendations

Where the disease is attacking only a few, small, and widely separated groups of trees in stands approaching commercial maturity, it can be ignored in management planning. Where it is severe, the forest manager will find it profitable to forego the advantages of extensive uniform stands of Douglas-fir, and to practice "forestry by the acre" instead.

As a basis for cutting plans in young merchantable stands, assume that three trees will be killed during the next 30 years near each dead tree, standing or down, in which Poria weirii can be found now. Other factors permitting, clear-cut first in those parts of the stand where infection is most severe, and leave until later those areas where net growth can be obtained during the intervening period.

Where the final cut must be deferred, and where logging of small volumes is economically practicable, clear-cut the larger foci and the surrounding stand for a distance of about a chain. Some of the resultant openings will be occupied by brush, but the cutting merely hastens what would soon have occurred in any event. Advantages of such cuttings are salvage of values otherwise lost, and establishment or release of less susceptible conifers in many of the openings.

Where P. weirii is common in stumps, or where damage was conspicuous before logging, the likelihood of damage to the next stand is so great that planting Douglas-fir probably cannot be justified on the basis of direct financial returns. Douglas-fir should be planted in such places only if planting is essential for site protection or some other purpose in addition to commercial timber production, and if less susceptible species cannot be used. If either western redcedar or western hemlock will make crop trees, these species should be favored during thinnings, improvement cuttings, and either natural or artificial reforestation. They will often be less productive than a healthy stand of Douglas-fir, but will exceed in value, in many instances, the disease-riddled crop of Douglas-fir that would be obtained from old infection centers, and will also help purify the site for future healthy crops of Douglas-fir.