



Timber Talks



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DAMAGE TO WESTERN HEMLOCK BY DWARF MISTLETOE

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Dwarf mistletoes are among the most injurious pathogens in the coniferous forests of N. America. The prevalence and distribution of the hemlock dwarf mistletoe in British Columbia is well known, and there is an understanding of the effect of the disease on the wood density, moisture content and vigor of older trees (200 + years). Further information was obtained from an investigation of trees, aged 58 to 203 years (average 110) from an uneven-aged stand, on the loss sustained, the effect of the pathogen on tree vigor and the means of disease assessment.

Dominant and co-dominant western hemlock infected with dwarf mistletoe were assessed by a 9-point scale and classed as lightly, moderately or severely infected. Trees were sectioned and bole volume calculated by 5-year intervals from 1865 to 1960. Branch infections were described as to size and location, and in some instances infection age and number and length of aerial shoots determined. All trees over 5" d.b.h. were tallied by infection classes on 3.6 acres to evaluate growth impact of the disease on an acreage basis.

Severely infected trees had larger branches, greater taper in the lower bole and were, on the average, older than moderately and lightly infected trees. The rate of height and volume growth was greatest in lightly infected trees, particularly in recent years. From 1945 to 1962 (the last year before felling), the percentage increase in volume of lightly infected trees was nearly double that of severely infected trees. For the last 5-year period, percentage volume increments were 20, 13 and 10 for lightly, moderately and severely infected trees, respectively.

Exclusive of loss from additional tree mortality and diseased intermediate and suppressed trees, the loss from 1960-62 was 37 per cent of the total stand growth for that period. The number of infections varied from 23 to over 1,350 per tree, the greatest number occurring in the middle third of the tree. The quantity and vigor of aerial shoots of the parasite improved with increasing height above ground, which would be conducive to better discharge of the mistletoe seeds. Despite poor production of shoots from infections on lower branches, most trees were capable of producing abundant mistletoe seed in middle and upper portions of the tree crowns.

The intensity of infection is best evaluated from the middle third of the tree. This portion is easily visible and contains the largest number of infections. Detection in the upper third is often difficult from the ground and assessment from the lower third may be unreliable because of dead, broken and missing branches.