DEPARTMENT OF FORESTRY · CANADA ·

Timber Talks

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WHAT LOGS ARE ATTACKED BY AMBROSIA BEETLES? No. 28

Douglas fir logs are damaged by ambrosia beetles but logs from trees felled at the same date are attacked at different intensities. Damage to some is serious, to others negligible. The insects are aided in their search for hosts that are suitable for brood production by odour attractants that emanate from the host material. This preferential behaviour of the beetles is attributed to variations in the attractiveness of the logs. Some characteristics of the logs were investigated to determine if they were related to the differences in attractiveness.

Logs were cut from 50- to 60-year-old Douglas fir trees felled each month from August 1961 to May 1962. The log characteristics evaluated were moisture content, duration of cell viability, and starch content of sapwood. Insect brood productivity was estimated by trapping parent and young beetles leaving the logs.

Trees felled between September and December were attacked more than those felled at other dates. Fast-growing and large trees, having a proportionately high volume of sapwood, were particularly prone to attack and contained the largest insect broods. This suggests that logs from second-growth stands would be especially vulnerable to beetle infestations.

Except for parts just beneath the bark, the moisture content of the sapwood within the logs was generally uniform and showed very little seasonal change. Investigation did not reveal a clear relationship between moisture content of sapwood and density of beetle attack. Viability of the cells declined slowly over a period of several months after felling, and while they retained their viability, attack by the insects was light or negligible. Seasonal changes were evident in the starch content of sapwood of trees and was highest in early spring. In the logs starch disappeared at a rate comparable to the rate of decline in cell viability. Insect attack was mainly confined to logs whose cells had a low or negligible content of starch.

As attractiveness to ambrosia beetles was not found to be directly related to moisture content, viability or starch content of cells in the logs, further investigation of log chemistry is necessary.

REPORT: Characteristics of Douglas-fir Logs and Attack by an Ambrosia Beetle. J. A. Chapman and E. D. A. Dyer, Forest Research Laboratory, Victoria. B. C.