DEPARTMENT OF FORESTRY · CANADA ·

Timber Talks

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BEETLES CAN SMELL

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Concentrated attacks of bark- and ambrosia beetles kill or damage healthy trees and cause destruction of logs. Such attacks result from the production of large insect broods on single trees or logs. This is accomplished through a sense of smell possessed by the beetles and from their ability to exude an odour that attracts other beetles. It has been demonstrated that initial or primary infestation by "pioneer" beetles of either sex increases the attractiveness of the tree or log to both sexes of other beetles. Biological and chemical characteristics of the attractants are being investigated, and when they are produced synthetically an important means of insect control will be available.

The use and efficacy of an odour attractant requires a knowledge of the pattern of insect flight in response to odours. In coastal British Columbia flights are limited and confined to the warmest part of the day during the spring. Later in the season and during the first days of high temperature (75°-85° C.), there is a general heavy emergence of insects.

The response of insects to odours is influenced by the turbulence of the layer of air that extends up to about 300 ft. above ground level. When there is comparatively little turbulence, as before noon or in the evening of warm days and prior to summer rainstorms, odours are more easily detected and response efficiency is high; at mid-day when unstable air conditions are prevalent, due to convection currents, odours are quickly and widely dispersed and response efficiency is low. Wind further influences flight activity by its direct physical effect on the insects. When it is strong, flying ceases or the course of direction is lost.

Programs of insect control by the use of odour attractants should be based on understanding the dispersal of the odours within the forest environment and the insects' response to the attractant, and timed to coincide with habits of flight.

REPORT: Odour Attraction of Scolytid Beetles in Relation to Air Movement Near the Ground. J. A. Chapman, Forest Research Laboratory, Victoria. B. C.