

Studies are now underway to determine the factors associated with slowly dying wood that make it unsuitable for this fungus and also to investigate the agents causing the different infection courts. Results of preliminary studies indicate that a characteristic mycoflora (one that is possibly favoured by a reduced water content) invade slowly dying structures and become established in the tissues before death has occurred. Laboratory experiments have shown that the presence of such fungi in wood test blocks can prevent decay by *S. sanguinolentum*, but the reasons for this are not known. The bulk of the infection courts were found to be the result of adverse climatic conditions such as freezing rain, snow, wind, and damage from falling trees. An assessment of these factors in relation to topography, stand composition and density, and cutting and silvicultural practices, will be undertaken to determine their importance as sources of decay variation in this species.—David E. Etheridge.

PRAIRIE PROVINCES

Aphid Behaviour.—Aphids of the genus *Cinara* readily drop from the host trees when disturbed. The effectiveness of this alarm reaction in terms of survival of the aphid obviously depends on the ability of the insect to regain a feeding position on a suitable host. Preliminary studies of this ability were carried out in July, 1961, at Cedar Lake, Ontario.

Test specimens were individual apterous females, either full-grown or in the last nymphal stage. They were obtained by jarring branches of jack pine on which colonies of *Cinara canadensis* Hottes and Bradley were feeding. The specimens were carried to a large open area where they were dropped on a four by four-foot sheet of plywood covered with paper, on which the subsequent movement of each was traced. An eight-foot jack pine, cut off at the base, was held at each of four positions of the test surface in turn, as indicated in Figure 1.

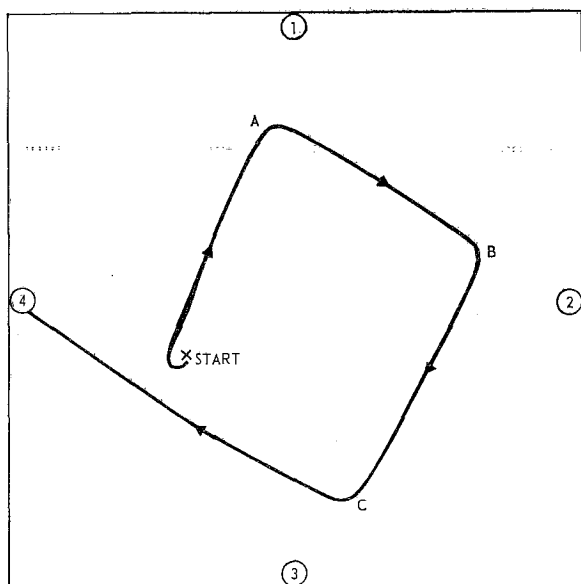


Fig. 1.—Characteristic path of aphid moving towards host tree placed at positions 1, 2, 3, and 4 in turn.

The target tree was held at the No. 1 position when the aphid was dropped. In most trials the aphid began walking towards the tree within a few seconds either going straight towards it, or first moving through part of a circle, as in the track shown in the figure. When the aphid was within about eight inches of the tree trunk at point A, the tree was moved quickly to the No. 2 position. The tree was moved to position 3 as the aphid reached point B, and to position 4 as it reached point C where it was left until the aphid reached it.

The following observations were recorded: (1) The aphid changed direction very quickly after the tree had been moved, usually without any visible interruption of its forward progress. (2) When the trunk was finally reached the aphid proceeded up it immediately, changing from movement in the horizontal to that in the vertical plane without hesitation. (3) The position of the sun in relation to the test surface had no observable effect on the direction in which the aphids moved. They appeared to be responding to a visual stimulus induced by any large opaque object, and would move towards a poplar tree, or the body of the operator, as readily as to

the jack pine. (4) In nine trials the test aphid travelled an average of just over eight feet in about three minutes. By continuing to move the tree around the board, one aphid was induced to make fourteen rounds, a total distance of 125 feet, covering this distance in 43 minutes, and showed no signs of exhaustion at the end of this time.

This study indicates that full-grown or nearly full-grown apterous females of *C. canadensis* have the ability to travel considerable distances to regain feeding sites. However, chances of survival may be reduced by the lack of initial discrimination between hosts and non-host objects. The reactions of smaller nymphs and the fate of those that climb unsuitable trees or shrubs have yet to be investigated.—G. A. Bradley.

ROCKY MOUNTAIN REGION

Poplar and Willow Borer in Alberta.—Heavy damage to willow caused by *Sternonchelus lapathi* (L.) was observed in southwestern Alberta. This is the first recorded instance of this insect in the Province. Approximately 70 per cent of the willows with a diameter of one inch or more were affected. The insects were found in an area extending for about six miles along Ptolemy Creek, south of Crowsnest Camp Ground. Indications are that this pest became established at least two years previous to its actual discovery in 1961. Although the attack on willow resulted in some mortality, poplar in the area appears to be unaffected.—D. S. Kusch.

BRITISH COLUMBIA

Two Systemic Insecticides Phosphamidon and Systox Used Against the Douglas-fir Cone Midge, *Contarinia oregonensis* Foote.—In 1961, the systemic insecticides Phosphamidon and Systox were used experimentally on young Douglas-fir trees near Cowichan Lake, B.C. The object was to determine if the materials would be absorbed by the trees and translocated into young cones at concentrations strong enough to kill larvae of the cone midge, *Contarinia oregonensis*.

Materials were applied with a portable mist blower at rates of 6 gm. and 12 gm. active ingredient in one-half gallon of water per tree. Spraying was done on May 16 and May 18. Trees varied from 15 to 20 feet in height. Young cones ranged in development from horizontal to nearly pendant, with the majority in the more advanced stage.

Cones from sprayed trees were examined on May 25, June 8, and June 20. First mortality was recorded on June 8; on this date one dead larva was taken from a Phosphamidon treatment. On June 20 five dead larvae were taken from cones on three Phosphamidon-treated trees, and two from one Systox-treated tree. Mortality occurred only on trees which received the heavier application.

On June 8, cone-bearing twigs were placed in jars containing Phosphamidon and Systox solutions in the laboratory. On June 15, of 31 larvae examined from these cones 30 were dead. One living larva was from a Systox treatment. In August, cones were collected from all sprayed trees and examined. The data show that many of the trees were severely infested. However there is apparently a reduction in the percentage of cones infested for some trees, compared with the checks.

There was evidence of phytotoxicity on some trees. On one tree the heavier application of phosphamidon caused slight needle burn to 1961 foliage and bracts of some cones, and some needle drop on 1960 foliage. A second tree experienced some needle burn on 1961 foliage. Phytotoxicity resulting from applications of Systox was observed on one tree which received the lighter application; some foliage buds were killed on the side of the tree from which application was made.

INFESTATION BY *CONTARINIA OREGONENSIS* IN DOUGLAS-FIR CONES FROM PHOSPHAMIDON- AND SYSTOX-TREATED TREES

Treatment	Gm./tree	No. trees	No. cones examined	Cones infested	
				No.	%
Phosphamidon.....	6	10	208	88	42
Phosphamidon.....	12	6	126	61	48
Systox.....	6	11	220	102	46
Systox.....	12	5	105	21	20
Check.....		3	140	74	53

These experiments demonstrate the phosphamidon and Systox can be absorbed by Douglas fir and translocated to young cones in concentrations that will kill larvae of the

midge, *C. oregonensis*. However much more information on concentrations and number and time of applications is necessary before the materials can be considered to be beyond the experimental stage. Experiments will be continued in 1962. It is felt that several properly timed applications of a suitable concentration of systemic insecticide may give reasonably good control with a minimum of foliar damage.—A. F. Hedlin.

Attraction of Douglas-fir Flowers to Cone Insects.—

Little is known about the movements of most species of Douglas-fir cone insects between time of adult emergence and egg laying. Infestations on different trees in the same locality may vary considerably indicating that insects may prefer flowers on some trees over those on others.

Newly opened Douglas-fir flowers range in colour from green through various shades of rose to crimson, and are consistent for any particular tree. To study the possibility that adults of the cone midge, *Contarinia oregonensis* Foote, and the cone moth, *Barbara colfaxiana* (Kft.), select flowers on the basis of colour a number of trees at Cowichan Lake, B.C., were examined soon after bud burst and classified as to flower colour. In late summer mature cones were collected from each tree and examined for infestation. Although there was considerable variation in percentage of cones infested, there was no indication that the insects selected any particular colours.—A. F. Hedlin.

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O. H. M. S.

D. C. Eidt

FI.

D. C. EIDT,
FOREST BIOLOGY LABORATORY,
COLLEGE HILL,
FREDERICTON, N.B.

DEPARTMENT OF FORESTRY
OTTAWA