

167-168

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The Use of Lure Trees for the Detection of *Sirex noctilio* in the Field

Sirex noctilio F. was first discovered in Australia in 1952 in a plantation of radiata pine (*Pinus radiata* D. Don) at Pittwater, Tasmania (Gilbert and Miller 1952). In 1961 it was discovered in the mainland State of Victoria (Irvine 1962), and an intensive programme of search and eradication commenced. The distribution and spread of the pest within Victoria was determined, and the numbers of infested trees in potential outbreak areas has been reduced by destruction under quarantine.

It was evident that the search for *Sirex* would be more efficient if an adequate attractant were available, or if preferential attack could be obtained on specific trees. Madden (1971) has shown that when trees were girdled, the part of the trunk below the girdle was highly attractive to *Sirex* females provided that all limbs and foliage below the girdle were removed. The present note reports on the effectiveness of girdled trees as aids in the detection of *Sirex*.

During the 1964-65 *Sirex* flight season a number of radiata pine trees in the natural regeneration at Pittwater were pruned to a height of 16-20 feet and girdled, by the removal of a 2 in. band of phloem tissue, just below the remaining branches. The stem section below the girdle became attractive to *Sirex* females some 10-12 days after the pruning and girdling operation. The section above the girdle was initially not preferred by the insect and it resisted the lethal effect of *Sirex* attack for a time. The retention of the green top enabled the lower part of the tree to remain attractive for long periods. The section below the girdle retained its attractiveness for variable periods (range 5-11 weeks during the flight season). This period was significantly longer than the period of 2-4 weeks for which trees remained attractive under natural attack. Some of the trees which remained alive after being girdled and attacked in one season were also attractive in the next season.

Five trees in the Pittwater regeneration were pruned and girdled at a height of 16 feet each month from June 1965 to January 1966, and fourteen trees per month were similarly treated over the same period in 1966-67. The activity of *Sirex* was severely limited by a heatwave in early February 1967.

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Most of these trees were attacked (Table 1). The intensity of attack in each of these seasons was such that the trees in the stand were a

Sirex attack per cent on trees at Pittwater, Tasmania. Five trees

Time of treatment

- June
- July
- August
- September
- October
- November
- December
- January
- Annual average

During the summer of 1965-66 trees were treated variously for the same purpose. Their locations ranged from moderate *Sirex* infestation to severe for at least two seasons. The present note reports on the effectiveness of this method of attracting *Sirex* summarised in Table 2.

Sirex attack on treated

- Numbers of locations at which *Sirex* was present
- Number of locations on which *Sirex* was present
- Numbers of locations on which *Sirex* was present
- Numbers of locations on which *Sirex* was present
- Numbers of locations on which *Sirex* was present
- Percentage success of treated trees where *Sirex* was present

* A unit is a treated tree.

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Australia in 1952 in a plantation at Pittwater, Tasmania (Gilbert) were girdled in the mainland State of Victoria as part of a programme of search and eradication of the pest within Victoria and to prevent potential outbreak and quarantine.

It would be more efficient if an essential attack could be obtained that when trees were girdled, they were highly attractive to Sirex females and the girdle were removed. The girdled trees as aids in the

A number of radiata pine trees were pruned to a height of 16-20 feet and the phloem tissue, just below the girdle became attractive after pruning and girdling operation. It was preferred by the insect and it remained attractive for long periods. The retention of the green material was attractive for long periods. The attractiveness for variable periods. This period was significantly longer than trees remained attractive under control conditions after being girdled in the next season.

Trees were pruned and girdled at a height of 16-20 feet from January 1966, and fourteen trees were girdled in the same period in 1966-67. The trees were destroyed in early February 1967.

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Most of these trees were attacked by Sirex during the following flight seasons (Table 1). The intensity of attack within the experimental area as a whole in each of these seasons was determined by sampling; about 0.1 per cent of the trees in the stand were attacked.

TABLE 1

Sirex attack per cent on trees pruned and girdled at 16 feet in different months at Pittwater, Tasmania. Five trees were treated each month in 1965-66, and 14 trees per month in 1966-67.

Time of treatment	Sirex attack per cent	
	1965-66	1966-67
June	100	71.4
July	80	71.4
August	80	85.7
September	100	71.4
October	100	78.6
November	100	71.4
December	80	37.5
January	80	—
Annual average	91.1	60.9

During the summer of 1965-66 a number of trees in Victoria were treated variously for the same purpose by the Victorian Forests Commission. Their locations ranged from plantations to windbreaks and from areas of moderate Sirex infestation to areas in which no infestation had been recorded for at least two seasons. There was some variation in the method of treatment and in the time of installation. Pruning and girdling was a very effective method of attracting Sirex females in this trial also. The results are summarised in Table 2.

TABLE 2

Sirex attack on treated trees on various properties, Victoria 1965-67.

	1965-66	1966-67
Numbers of locations at which trees were treated	92	86
Number of locations on which attack was located	46	29
Numbers of locations on which units* only attacked	22	4
Numbers of locations on which units plus other material attacked	16	8
Numbers of locations on which units not attacked, but other material was	8	17
Percentage success of treated trees on properties where Sirex was present	82.6	41.3

* A unit is a treated tree.

Fifty-five trees at Moondarra, Victoria, were treated in 1966 and 1967, in a plantation consisting of approximately 12,000 trees. *Sirex* attacked 42 of the treated trees and it was found in only 90 others in the plantation, most of the latter being in the vicinity of the treated trees. Thus 76 per cent of the treated trees were attacked, as compared with less than 1 per cent of untreated trees. The treated trees, which represented less than 0.5 per cent of the total number of trees, received about one-third of the total *Sirex* oviposition.

These tests show that the technique of high pruning and girdling Monterey pine to attract *Sirex* can be successfully employed to establish its presence or absence in an area. Weak and suppressed trees can be selected for treatment and once infested they may be removed during thinning operations or at any time before the next flight season. The longer period of oviposition on girdled trees must result in much wasted oviposition.

In two plantations near Scottsdale, Tasmania, the high-pruned and girdled trees have been more effective in attracting *Sirex* in one forest where there is little alternative host material than in the other where wind and logging have left numbers of damaged trees.

The method could be used as an operational procedure for *Sirex* detection in Victoria and Tasmania. Treated trees could be established in November just prior to *Sirex* emergence in December. Treated trees could be used in a supplementary control measure particularly where the *Sirex* density is low, in that the treated trees might be effective in diverting a substantial amount of the natural attack to specific sites.

ACKNOWLEDGEMENT

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The arguments used to justify
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import bill. Australia is deficient
bill is large, it is not excessive co
either on a per capita or per \$1000

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