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Pests of ORNAMENTALS

Reports on control experiments



Figure 1. Borer infestation caused this serious injury to the dogwood tree.

DOGWOOD BORER

Thamnospectia scitula (Harr.)

The dogwood borer is a serious pest of flowering dogwood (*Cornus florida* L.). Very young trees frequently are killed by the pest and older ones are left reduced in vitality and with dead and dying branches.

Borer-infested trees begin to show swollen, knotty, calloused, or gall-like areas on the trunk, frequently just at or immediately below the surface of the ground, or between the level of the soil and the branches above. Injury may also occur at the union of the trunk and the principal branches or smaller twigs and branches. Young dogwood trees are attacked mostly at the crown.

Adult is a Clear-Wing Moth

The adult dogwood borer (*Thamnospectia scitula* (Harr.)), is a clear-wing moth. It has narrow transparent wings and is blue-black in color with some yellow markings. There is only one generation a year. The adults begin to emerge late in May and continue to do so throughout the remainder of the spring and summer months. Adults may appear as late as the end of September. Wallace (2) has reported that the appearance of the first moths will coincide with the beginning of weigela flowering and that they reach their greatest abundance in late June and early July.

Eggs are deposited on both smooth

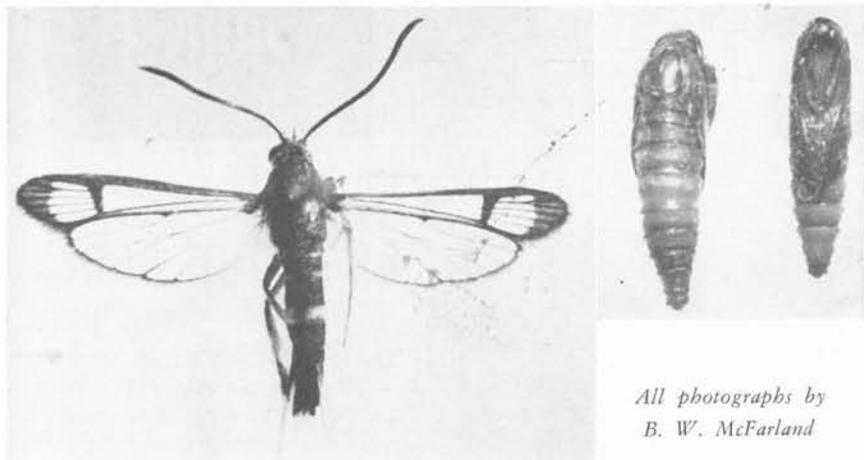


Figure 2. Adult is a clear-winged moth; at right, pupal stage of dogwood borer.

All photographs by
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and rough bark, frequently near an injury. The larvae wander around aimlessly until an opening in the bark is reached. They then tunnel in. The free-moving larvae are unable to chew their way through smooth or roughened bark, so they seek an opening of some sort to admit them to the cambium (2). Borers may be found in various stages of development feeding in the bark and cambium throughout most of the year, according to Underhill (1). They do not feed in the sapwood. Winter hibernation occurs in the larval stage with pupation taking place in the spring. Most of the larvae pupate in the tunnels just below the surface of the outer bark. Occasionally, however, one may emerge and drop to the litter or soil around the base of the tree where transformation to the adult stage takes place.

Trees planted 300 yards or more from established infestations were never seriously affected by borers, according to Wallace (2). An infested tree 4 inches in diameter may be killed by a single borer in the course

of a season. Under most conditions several borers would be required to kill a large dogwood.

Earlier Control Measures

Control measures used against cambium bark borers have been varied and not always successful. Wrapping the trunk of newly transplanted trees with kraft crepe paper has given some good results in preventing infestation. Wallace (2) prevented entrance by borers into injured bark by painting wounds with shellac or asphalt paint. A report on the control of pear borer in apple trees by Woodside (3), using organic insecticides as bark sprays, indicated that good results were obtained in control of the moths during flight period in new infestations and fair control in established infestations. This suggested use of the materials on dogwood trees.

The experiments were intended to provide information concerning the quickest, simplest, and least expensive method of preventing injury to dogwood trees by borers.

Materials and Methods

The experiments were carried on from 1952 to 1955 inclusive. The insecticides used in the tests were lindane, aldrin, DDT, dieldrin, and Thimet, which is (0,0-diethyl S-(ethylthiomethyl) phosphorodithioate.

Experimental treatments were applied to 20-year-old dogwood trees in a public park and to 5-year-old trees in a nursery. Sixteen trees were used in the park area, eight for treatments and the remainder as checks. More than 150 trees were used in the nursery. Counts to determine degree of infestation were made before and after application of treatments.

Treatments were made with a 12-quart wheelbarrow mist blower, a 3-gallon hand pressure sprayer and a 500-gallon speed sprayer. Control data were obtained by digging the borers out of the injured areas of the trees with a jackknife.

The first experiment in 1952 was planned to determine the value of lindane and aldrin for destruction of the overwintering borers in the cambium of infested dogwood trees. On May 5, lindane 12.9 per cent and aldrin 25 per cent emulsions were sprayed on trees at dosages of 1:200 and 1:400. Treatments were applied as bark washes to the trunks and main branches by means of a wheelbarrow mist blower. About 4 quarts

Table 1. Control of dogwood borer with lindane and aldrin, treatments on May 5, 1952

Material and dilution	Borers dissected from trees on May 19		
	No. Dead	Per cent	No. Alive
Lindane 1:200	8	80	2
Lindane 1:400	2	100	0
Aldrin 1:200	9	90	1
Aldrin 1:400	2	50	2
Untreated	0	0	2

of material were used on each tree. Each treatment was duplicated. Results of the treatment are given in Table 1.

Data in Table 1 indicate that good control of overwintering borers was obtained with the two insecticides used in the tests with the possible exception of aldrin at the lowest dilution.

An additional experiment was undertaken during 1952 to study ways of preventing reinfestation in trees freed from borers through early spring treatments, or those from which uninjured clear-winged moths issued after treatment. DDT 25 per cent and dieldrin 15 per cent emulsions were used at dosages of 1:200 and 1:400 as bark washes to destroy the egg-laying moths, or larvae in the event eggs were laid and hatched. These two insecticides were chosen because of their known residual properties. Treatments were made four times during the growing season (June 2, July 2, August 1, and August 28) to make certain that the trees would be reasonably well protected from borer invasion from spring until autumn. Each treatment was duplicated. All were applied by means of a wheelbarrow mist blower using 3 to 4 quarts of spray on each tree.

All of the treated trees were examined on October 30 and 31. With the exception of one tree sprayed with aldrin at 1:200, none was infested with borers. The exception had one small borer in a tunnel on the underside of a branch at the back of the tree. Because of its position it may not have been reached by spray material. An examination of one untreated tree gave a count of 11 live borers in various stages of development from a first instar larvae to several in the final stage of development.

The experiments conducted during the spring and summer of 1953 and 1954 were similar to those of the first two years. DDT and dieldrin emulsions were used at 1 : 200 and 1 : 400. The treatments were duplicated and all were applied in the same manner as before, using 4 quarts of spray on each tree in 1953 and 2 to 3 quarts in 1954. In both years Triton B-1956 was added to the sprays. The treatments in 1953 were made on May 25, July 1, August 3, and August 31. There was one less treatment given in 1954: the dates were June 7, July 9, and October 13.

Results of the 1953 tests checked during October showed that none of the sprayed dogwood trees was infested with borers. Only one live borer and no dead ones were found in an untreated tree.

The 1954 treatments were not checked for results until April 25, 1955. All treated trees were without borer infestation. Eight untreated trees contained a total of 12 live borers and no dead ones. Two trees had two

borers each, one three, and the remaining five trees, one each.

Experiments in 1955 included trials with lindane and Thimet, and use of absorbent banding to lengthen the effectiveness of the treatment. Neither lindane nor Thimet controlled the dogwood borers after a single treatment by any method of application tried.

Summary

The dogwood borer is a serious pest of trees planted within 300 feet of an existing infestation. Damage is especially severe when the bark of the trees has been injured.

Spraying trunks of trees with either DDT or dieldrin emulsions four times at monthly intervals starting June 1 gave good protection against reinfestation. A single spray of aldrin or lindane early in May gave good control of overwintering larvae.

Benzene hexachloride (BHC) paste may be used to kill borers in the galleries of infested trees.

Literature Cited

1. UNDERHILL, G. W. 1935. The pecan borer in dogwood. Jour. Econ. Ent. 28: 393-396.
2. WALLACE, P. P. 1945. Biology in control of the dogwood borer, *Thamnosphæcia (Synanthedon) scitula* Harris. In Conn. Agr. Expt. Sta. Bull. 488: 373-395.
3. WOODSIDE, A. M. 1952. Pear borer in apple trees. Jour. Econ. Ent. 45: 98-101.

This publication is one in a continuing series on research conducted at this Station to control insect pests on ornamentals. Titles of other publications in this series to date are given below.

B 578 Scale Insects and Their Control

B 588 Aphids and Scale Insects on Ornamentals

B 591 Mite Pests of Ornamentals and Their Control

Notice

The accompanying publication, printed some years ago, contains descriptions and biological information, and suggestions for control by spraying. It suggests the use of DDT.

Present regulations of the State Board of Pesticide Control restrict use of DDT by custom spray operators for this purpose.

Carbaryl (Sevin[®]) or lindane may be used to control these pests.

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THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION