CHINCH BUG CONTROL

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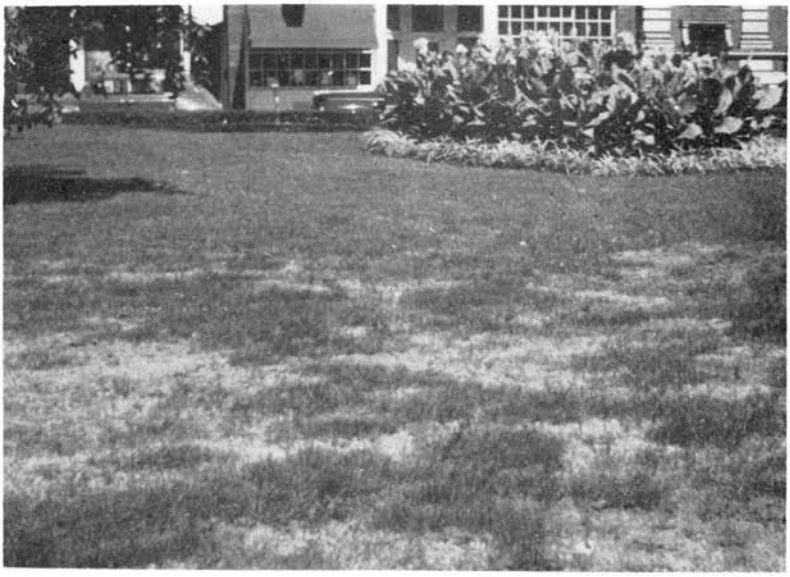

Chinch bug feeding was responsible for the severe lawn damage shown here.

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The hairy chinch bug (*Blissus leucopterus hirtus* Mont.) is the most injurious insect in lawn grasses in Connecticut. Since the latter part of the eighteenth century the species has been reported from many areas of the Northeast. Certainly it has been more troublesome in Connecticut during the 1960's than heretofore. Bent grasses are more susceptible to attack than other species. Bluegrass (with the possible exception of Merion bluegrass) and fescues support fewer individuals.

Chinch Bug and Weather

The effect of weather on the prevalence of chinch bugs is one of several complex natural conditions which determines annual increases or declines. Frequently heavy rainfall and lower temperatures during the time of critical development of the insects in early summer will tend to limit population density. Many of the nymphs may be drowned or smothered in mud. In contrast low rainfall and persistent dry, warm weather encourage increase in numbers.

Determining Infestation

The hairy chinch bug injures grass by sucking the sap from the stems and foliage. Extensive feeding causes areas of reddish-brown grass, small or large in size and irregular in outline. In time, the injury expands until all of the turf is destroyed. Damage is often less noticeable during early summer when chinch-bug-infested turf may show only an occasional small patch of dead grass. However, as the season advances and the first generation of bugs is succeeded by a second, the injured areas expand, becoming more obvious and persistent.

The presence of the insects may be detected by examining the turf at or near the surface of the ground. The fast-moving adults and young will be seen scurrying through the grass, sometimes by the hundreds. They are always more numerous at the periphery of the injured spots. Fewer chinch bugs occur towards the center of dead grass areas. Sun-drenched turf is more seriously injured than shaded grass near buildings or under trees and shrubs.

Another method of examining turf for chinch bugs is to flood the affected areas with warm water and then cover the grass with a small piece of white cloth. If insects are present they will crawl up the blades of grass to the underside of the cloth.

Fig. 1. Short- and long-winged forms of adult chinch bugs.

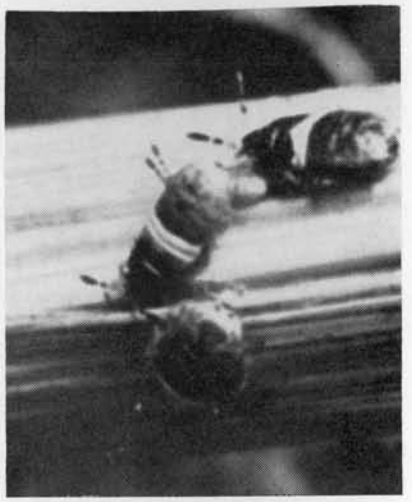

Fig. 2. Early stages of chinch bug nymphs.

Description

The adult chinch bug is from 1/6 to 1/5 of an inch long. It is black with white wings and reddish legs. The wings cross over the back. On the outer margin of each wing is a small triangular black spot. The young are orange to brick-red with a transverse white band just behind the wing pads. The brighter colors are later replaced by gray, then black. When crushed, the insect emits a disagreeable odor.

Life History and Habits

A temperature of 70° or higher favors the activity of the over-wintering adults (nymphs do not survive the winter in Connecticut). The continuation of balmy weather in spring encourages dispersal by flight, mating, and egg laying. Egg laying continues throughout life. Females may deposit several hundred eggs, which hatch in 1 to 2 weeks. The young reach maturity in 4 to 6 weeks.

There are only two generations a year. The adults of the second generation hibernate in protected places such as hedge rows, accumulated litter in open places, clods of heavy sod and dense thatch (especially fescue thatch) which may develop in lawns over a period of years; also in houses under shingles and clapboards (Leonard 1966). Increased winter mortality occurs when an excess of water freezes where the chinch bugs are hibernating.

Natural Enemies

Leonard (1966) noted that the most important natural control agent appears to be the white fungus, *Beauveria*, which is most prevalent during

wet weather. No parasites have been reared from this chinch bug, but it is preyed on by some insects and birds.

Control with Insecticides

Because of the lack of natural control of the chinch bug during seasons favoring its outbreak, insecticides have been used to prevent injury to turf.

Nicotine in several forms, sabadilla, and rotenone were used extensively years ago to control chinch bugs. After 1945, several chlorinated hydrocarbon insecticides including chlordane took their place. Insects acquired resistance where the latter material was used repeatedly. At first it was believed that if the insecticide was not used, or was used only occasionally, it would give satisfactory control. Information accumulated during the past decade refutes this assumption. Migration of resistant individuals has resulted in resistant populations occurring almost everywhere.

Schread (1963) suggested the use of Diazinon®, Sevin®, or ethion to control the insects. More recently reports of poor control with Sevin® indicate a probable current build-up of resistance to this insecticide.

Control Experiments

1964

An experiment using Bandane® 10% granules was undertaken on May 28, 1964. The material was applied to a heavy infestation of chinch bugs at the rate of 6.8 pounds of formulation to 1000 sq. ft. of lawn. A total of 1500 sq. ft. of grass were included in the test. A 4-foot fertilizer spreader was used to apply the granules. The weather was clear and warm when the experiment was undertaken and continued so for several successive days. Results of the treatment assayed on June 30 indicated an average of 182 dead chinch bugs (all stages) per sq. ft. of turf.

In an additional experiment on August 9, Banol® 75% wettable powder was applied to 400 sq. ft. of turf (there was an average of 148 chinch bugs per sq. ft.) at the rate of 1½ pounds of formulation per 100 gallons of water. Twenty-five gallons of spray mixture was used on 400 sq. ft. of turf. Data were taken on August 16 using the water flotation method for the purpose. All chinch bugs were killed by the treatment.

On September 3, Trithion® 5% granules was spread on chinch bug injured turf at the rate of 10 pounds of formulation per 2500 sq. ft. of lawn. It was indicated 6 days later that all of the insects had been killed by the insecticide.

1965

Dursban® 3% granules was applied on Augst 12 by means of a 22-inch fertilizer spreader to infested turf where the chinch bug population was heavy (200 per sq. ft.). The formulation was used at the rate of 20

pounds to 2700 sq. ft. of lawn. The granules were spread at right angles to assure a more even distribution of the material.

Results obtained on August 20 indicated an average of 17 live chinch bugs per 3 sq. ft. in the treated area and 108 in an untreated one.

1966

On August 25, Baygon® 5% and Akton® 5% granules were applied each to 1500 sq. ft. of turf infested with all stages of chinch bug. Infestation ranged from 400 to 500 chinch bugs per sq. ft.

It was obvious by August 28 that the insecticides had killed all stages of the insect. The flotation method of counting individuals provided a maximum count of 576 dead chinch bugs per sq. ft. of turf.

1967

Dylox® 5% granules were applied to infested grass on June 21. The formulation was used at the rate of 20 pounds and 40 pounds per 11,000 sq. ft. of turf, hence providing 4 and 8 pounds of technical insecticide per acre. An average of 173 live individuals in all stages of development were present.

Results assayed (flotation method) on August 8 showed 100 per cent kill of all chinch bugs in the 8-pound and a survival of 8 to 12 individuals per sq. ft. in the 4-pound treatment areas.

1969

A lawn infested with an average of 19.3 chinch bugs per sq. ft. of grass in a range of 8 to 40 was treated with 1% Akton® granules on August 6. Approximately 900 sq. ft. of lawn received the insecticide at a 2-pound rate and 900 sq. ft. at a 4-pound rate of technical Akton® per acre. A 22-inch fertilizer spreader was used to apply the granules which were mixed beforehand with 25 pounds of Milorganite® per area as a diluent for more even distribution of the material.

Control data obtained on August 14 by means of the water flotation method showed that all chinch bugs in both treated areas had been killed by Akton®.

In an additional experiment undertaken on August 27, Akton® 1% granules was applied to turf infested with an average of 48 chinch bugs per sq. ft. The granules were mixed with Milorganite® and distributed with a 3-foot fertilizer spreader at the rate of 15 pounds of Akton® formulation per 11,000 sq. ft. The treatment provided about 0.6 pounds of technical insecticide per acre.

Control results obtained on September 11 (water flotation assay) indicated complete kill of all stages of chinch bug in the treated turf. An experiment undertaken on September 15 with Aspon® 5% granules used at the rate of 6 pounds per 1000 sq. ft. controlled chinch bug completely.

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PUBLICATION

Summary

In many areas chlordane no longer provides effective control of chinch bug. Sevin appears to be following suit. Diazinon, ethion, Bandane, Trithion, Dursban, Baygon, Akton, Dylox, and Aspon have given outstanding control of the insects.

Since the publication of Station Circular 223 in 1963, newer insecticides have been tested for control of chinch bugs in Connecticut. Several of the materials were shown to be outstanding in their effectiveness while others provided relief from serious injury to grass by the insects.

Registration

As of January 1970, diazinon, ethion, chlordane, Sevin, Akton, Aspon, Trithion, Dursban and Baygon were registered for the control of chinch bugs.

There is no registration for Bandane and Dylox. These two experimental compounds may or may not be registered subsequently for use in the control of chinch bugs.

Literature Cited

Leonard, David E. 1966. Biosystematics of the "*Leucopterus* complex" of the genus *Blissus*. Conn. Agric. Exp. Station Bull. 677: 47p.

Schread, John C. 1963. The chinch bug and its control. Conn. Agric. Exp. Station Cir. 233: 4p.