New Sugar Beet Pest

100% control of sugar beet crown borer achieved in 1949 tests

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The sugar beet crown borer—*Hulstia undulatella*—a relatively unknown lepidopterous pest of sugar beets caused severe damage to seedling and half-grown sugar beets in Yolo, Yuba, and Solano counties during 1949. Although it probably causes some damage annually it apparently has not been reported in the scientific literature as a California pest since 1905 when damage was reported at Chino, Huntington Beach, Oxnard, Spreckels, and in the Santa Ana Valley.

During June, 1949, this insect was first found damaging experimental, nutrient-fed sugar beets grown in sand at Woodland. By late June and during July the larvae were causing extensive damage to sugar beets in the field. During August caterpillars attacked seedling broccoli.

The known food plants of the caterpillars are sugar beets, broccoli, pigweed, purslane, sour dock, and spinach. Probably other food plants remain to be discovered. On sugar beets the larvae may feed on the crowns of the plants, on the petioles near the ground, on leaves touching the soil surface, or may actually bore into the roots. The larvae move back and forth inside characteristic silken tubes which are often two to six inches long and radiate out from the beet roots just under the surface of the soil. The tubes can often be removed in their entirety. The caterpillars feed primarily upon the crown area and their feeding may be superficial in nature, or may actually cause girdling of the roots. At night the caterpillars apparently leave the burrows to feed. Partial girdling of the roots may cause a weakened condition so that the wind often breaks off the roots at the ground level. The feeding holes may also allow an avenue for the entrance of rot organisms.

On broccoli the caterpillars feed upon the stems near the soil surface often causing the plants to fall over and the leaves touching the soil surface are subsequently webbed to the ground.

Life History

The adult moth is gray with a wing expanse of about three-fourths inch, and the fore wings have two characteristic undulating transverse white lines. The elliptical, yellow eggs are laid singly on the petioles of the plants. Upon hatching the larva is one-eighteenth inch long and crawls down to the crowns where it starts feeding. Five instars occur, the caterpillars attaining a length of three-fourths inch when mature. The mature caterpillars are flesh-colored with undulating, reddish, longitudinal stripes. The brown pupae occur inside the silken tubes.

Adult females during 1949 laid from 36 to 637 eggs, with an average of 294

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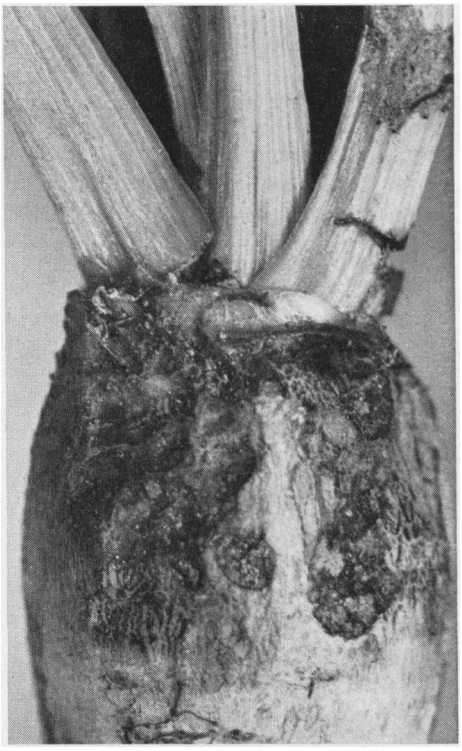
A beet cut off at the crown level by borings of the larvae.



Blackened scars on an older beet.

Results of hand applications of insecticides to sugar beets for the control of caterpillars of the sugar beet crown borer. U. S. No. 33 sugar beets were planted at Woodland June 1, 1949 and insecticides applied July 11, 1949. Control determined July 18 and 19, 1949.

Treatment and material used	Amount actual chemical per acre, pounds	Average number live larvae per plant	Control
DDT dust, 10%	9.00	0.00	100%
DDT spray, 50% wettable powder	1.00	0.12	88%
Lindane spray, 25% wettable powder	0.25	0.31	69%
Aldrin dust, 1%	1.07	0.49	51%
Aldrin dust, 2½%	2.87	0.22	78%
Aldrin spray, 25% wettable powder	0.25	0.43	56%
Dieldrin spray, 25% wettable powder	0.25	0.39	60%
Chlordane emulsion spray, 74%	1.00	0.34	66%
Chlordane spray, 40% wettable powder	1.00	0.30	70%
Parathion dust, 2%	2.14	0.00	100%
Parathion spray, 20% wettable powder	0.40	0.00	100%
No treatment	...	0.99	....

edible portion of the spear is left in the field.

In California the spears are trimmed mechanically in the cannery to the desired length rather than hand snapped as in the East. Therefore, snapped spears would not save labor except in butt disposal. Since the snapped spears are of unequal length there is a loss of usable asparagus when trimmed to equal lengths. Thus the cost to the canner on the actual asparagus canned would be increased proportionally to the loss in trimming.

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is not applied against the aphids, the predators may well be in a position to check the infestation before too much damage is done.

Caution Required

Although the results obtained with the speed-type sprayer look very promising, further investigations are very much needed: the effect of parathion and tetraethyl pyrophosphate upon predators and parasites has not been determined adequately; effects upon bird and other wildlife have not been ascertained; it is not known whether continued use will result in plant injury or in the increase of another pest; and, until some of these possible problems are more fully understood, commercial use of these materials should proceed with caution.

Exceptionally good control of the aphid was obtained where tetraethyl pyrophosphate was applied as a smoke aerosol. Despite this, it is considered too hazardous to warrant a general recommendation because there is no way of controlling the drift of the smoke.

Because of the extreme toxicity of tetraethyl pyrophosphate and parathion to human beings, these insecticides should be used and handled with caution. The precautions as given by the manufacturer should be followed carefully.

Highly satisfactory control of the walnut aphid can be obtained where nicotine dusts are applied under favorable weather conditions. Treatments should not be applied during periods of unsettled cool weather, for poor control will result, making frequent treatments necessary. This should be avoided because observations indicate that trees covered with an excessive amount of dust are more subject to serious attacks by orchard mites than are those which are covered with only moderate amounts of dust.

No matter what method is used, satisfactory control of aphids will result only where the proper dosage is used and the insecticide is evenly and thoroughly applied.

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LAMB

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being marketed has become so large that retail trade disfavor has resulted in a producer price penalty recently amounting to approximately 2½ cents per pound live weight on lambs dressing at 48 pounds and above.

When feed supplies are available, both producers and feeders try to utilize it through heavier weight lambs. With increasing feed supplies in prospect for the next several years, this pressure will probably continue and intensify.

The attitudes of retail meat dealers towards heavy lambs vary all the way from outright refusal to handle them at any price to a willingness to handle them even at the same price as lightweight carcasses. The position of the bulk of the trade seems to lie between these extremes—they are willing to handle a limited number of heavy lambs at a wholesale price differential of four to eight cents per pound below the lighter weights.

Habit and custom of both the retailer and his customers apparently bear heavy influence. Some retailers have experimented with cutting lamb steaks from the heavy legs; others have tried cutting the leg in two parts. The latter method has been more successful, particularly in the self-service market, where the customer can easily see the cut in a cellophane package.

Some retailers will refuse any experimentation whatever and are certain that cuts of these types have no prospect of selling.

Lamb consumption patterns, extremely variable in character and under the heavy hand of habit and custom, have for years confronted lamb producers and distributors with perplexing problems. To these are now added the questions of why demand for lamb by the middle income groups has declined, and what to do about marketing heavy lambs. These questions deserve investigation for the prospects are that the supply of lamb will increase towards its prewar relative position and that feed and production conditions will be favorable to heavy lambs.

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eggs. About two days elaped between mating and egg laying and adults lived about two weeks. The egg period varied from five to six days at mean average temperatures of from 74° F to 78° F.

At least two generations occur in the field a year. Under caged conditions at a mean average temperature of 76° F, a complete life history was completed in from 34 to 39 days.

Two larval parasites were found during 1949 but parasitism was extremely low as shown by the fact that only four specimens representing two species—a tachinid and a hymenopterous parasite—were recovered from thousands of larvae collected.

Control

A series of replicated plots was treated by means of rotary hand dusters and compressed air sprayers during July, 1949, at Woodland. The chemicals were applied when the beets were four to five inches high. These experiments indicated that DDT and parathion both as dusts and sprays showed promise and should be included in future experimental work. DDT as a 10% dust at the rate of 90 pounds per acre was effective as was a 50% wettable DDT powder applied as a spray at the rate of two pounds per 88 gallons of spray per acre. A 2% parathion dust at the rate of 107 pounds per acre, and a parathion spray of two pounds of 20% wettable powder to 88 gallons of spray per acre, were also effective. Under the conditions of this experiment the other materials used were not as effective as DDT and parathion. In order to secure adequate control it was found necessary to concentrate the chemicals at the bases of the plants.

Control of the caterpillars attacking broccoli was difficult, although the repeated application of DDT sprays concentrated in the plant rows was fairly successful.

The periodicity of abundance of this insect makes it difficult to predict its future economic status as a sugar beet pest in California. Damage to sugar beets in 1949 was correlated with time of planting. Beets planted in May and June were in a more susceptible stage of growth during July and August than those planted prior to this time. During years when beets can be planted prior to May and June they usually will be established firmly prior to abundance of the crown borer.

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