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The Sugarbeet Crown Borer in Idaho

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The sugarbeet crown borer (*Hulstia undulatella*) is relatively new as a pest of sugarbeets in Idaho. It was observed in western Idaho during the 1950's but did not cause serious damage and was considered a non-pest. Although it has been collected in several eastern states, the crown borer is a western species occurring in Arizona, California, Colorado, Montana, Nevada, New Mexico, Oregon, Washington, Utah and the western Canadian provinces.

Outbreaks damaging to sugarbeets were recorded in California in 1904 and to a lesser extent in Washington and Oregon that same year. Colorado beet growers experienced the crown borer at damaging levels in the late 1930's. That outbreak led to the early field research done on this insect.

In 1985, several fields near Parma, Idaho, were found to be 30 to 40 percent infested. Some fields were disked out and replanted. Since then, additional infestations have occurred near Fruitland and across the Snake River near Adrian, Nyssa and Vale, Oregon. Sugarbeets in Twin Falls and Cassia counties were infested in 1987 and 1988. The crown borer has become an important concern of Idaho-Oregon beet growers.

Description

Adults are small grey moths about 1/2-inch long. Their forewings are dark grey with scattered areas of dark brown. A small red spot is usually present near the wing base and several zigzag lines are found near the wing margin. The hindwings are dusky brown. Larvae are slender caterpillars up to 1 inch in length and dirty white with a greenish tinge (Fig. 1 on back). In the field, larvae are found in characteristic soil-covered silk tubes 2 to 6 inches long in the top layer of soil, around the plant base and extending from beet to beet. Pupae are 1/3-inch long and light yellow-brown in color. They also are found inside the silk tube.

Life Cycle and Habits

First or spring generation moths emerge in April and May, mate within a few days and lay eggs on beet leaves and stems around the base of the plant. Each female moth lays an average of 300 eggs, which hatch in about 7 days. Larvae require 20 to 30 days to mature and pupate. The

second or summer generation emerges in late June or July and repeats the life cycle. A third generation begins in early- to mid-September and develops through October, eventually pupating to overwinter in the soil.

Injury and Symptoms

Visible symptoms of spring generation feeding include wilted, dead beets (Fig. 2 on back) with holes and feeding pits around the crown and leaf bases. Individual beets or several beets in succession may be affected. Close examination will often reveal the silk larval tube extending from beet to beet at the soil line. When this occurs at thinning time, from late May to late June, severe stand mortality may result. Second generation larvae cause insignificant damage to healthy, vigorous beets. Larval feeding of the third or September generation affects beet vigor very little in the field, but the damage (Fig. 3 on back) allows secondary bacterial infection and fungal growth in harvested beets. This results in decomposition and subsequent heating during storage in beet piles.

Plant Hosts

Sugarbeets are the primary host plant and the only crop to be seriously affected by the crown borer, although other plants such as broccoli, curly dock, lambsquarter, pigweed, purslane and spinach are known hosts. These weeds serve as alternate hosts for the crown borer and allow it to survive and multiply during non-beet rotation years. Extra effort should be made to control these weeds.

Natural Enemies

Several species of tiny chalcid wasps and tachinid flies parasitize crown borer larvae, but the rate of parasitism is less than 2 percent. Effective, long-term control does not result with this low rate of parasitism. To allow beneficial insect populations to build up and enhance natural control, insecticide use during the growing season should be limited to only those situations absolutely requiring it, regardless of the pest involved.

Cultural Control Methods

No cultural practices provide completely effective crown borer control. However, early season practices such as



Figures: (1) Crown borer larva (center) on young sugarbeet. Soil-covered silk larval tube visible above and below larva. (2) Dead sugarbeet plant resulting from early season crown borer feeding. Usually this is the first symptom that is visible. (3) Mature sugarbeet showing late season crown borer feeding. This may result in secondary bacterial or fungal infection in the beet pile.

cultivation and thinning expose and destroy many first generation larvae. The flex-line beet harrow is somewhat effective in disrupting the webbing and moving the larvae away from the beet row. Irrigation practices are not known to have any effect on crown borer populations, since most irrigation takes place after early insect damage has occurred.

Crop rotation is an important method of maintaining crown borer damage at low levels. Grower experience in Idaho and Oregon during 1986-88 indicates that at least a 3-year rotation of beets with alternate crops is necessary to prevent insect buildup, provided that the weed hosts are controlled in the field during those 3 years.

Chemical Control and Timing

In those areas where sugarbeets have been damaged by crown borer, an effective chemical is available. Counter 15G should be applied at planting to coincide with sugarbeet root maggot control efforts. Insecticide applications during the summer for second and third generation of the crown borer are unnecessary.

Recommendations

(Use one application only)

At planting — Apply 4 to 8 ounces of Counter 15G per 1,000 feet of row for any row spacing (minimum 20-inch spacing). Apply in furrow at planting time 2 to

3 inches behind the seed drop zone after some soil has covered the seed. Do not place granules in direct contact with the seed because crop injury may occur. Do not incorporate deeper than 2 inches. Only one application per year.

Post-emergence — (Banded). Apply 4 to 8 ounces of Counter 15G per 1,000 feet of row for any row spacing (minimum 20-inch row spacing). Apply in 5- to 7-inch band over the row and lightly incorporate into the soil. Only one application per year.

Pesticide Residues — These recommendations are based on the best information currently available for the chemical listed. If followed carefully, residues should not exceed the tolerance established. To avoid excessive residues, follow label on dosage levels, number of applications and minimum interval between application and reentry or harvest.

Trade Names — To simplify information, trade names have been used. No endorsement of named products is intended nor is criticism implied of similar products not mentioned.

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