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CONTROL OF CORN EARWORM ON SWEET CORN
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The corn earworm usually causes serious damage to sweet corn in Western Oregon in the late summer and fall. The damage can largely be prevented by the treatments described below. Under present conditions, the method is not practical for use by commercial growers, but gardeners and perhaps some market growers may find its use desirable. It is particularly important to point out certain limitations and precautions.

1. The Insect: The corn earworm, Heliothis armigera (Hubner), in the adult stage is a rather large grayish-brown moth. The pearly white eggs are laid singly on fresh corn silks and occasionally on or near tassels. The eggs hatch in about four days in warm weather, and the young larvae begin feeding on the silk, working their way to the tips of the ears where they mature on the developing kernels. In three to four weeks after hatching the larvae are full grown, over an inch long, and variable cream, pink, green, or brown in color. The mature larva eats its way through the husks and drops to the ground, where an earthen cell is constructed two or three inches below the surface. Here it passes the pupal stage when the change from larva to adult takes place. This stage requires about two weeks.

There are two generations in Western Oregon. The second generation attacks sweet corn in late summer and fall. Corn harvested in August during the past two years has, in general, not been seriously damaged (usually less than 5% wormy ears). Corn harvested in September and October contained 40% to 80% wormy ears. Where feasible, growers may be able to prevent damage by planning the seeding to bring the corn into harvest during August. This is only a suggestion, because only two years' observations are available and are not considered sufficient data on which to base a general recommendation.

Varieties of sweet corn, such as Golden Cross Bantam, that have long, tight husks are less injured by the corn earworm than those with shorter or looser husks which induce the larvae to feed farther down in the ears.

2. Oil Treatment: This treatment for control of the corn earworm consists of the application of small quantities of oil, or oil containing a pyrethrum extract, to the tips of the ears.

a. Materials: Ready-mixed preparations of oil and pyrethrum extract for treating sweet corn are on the market and can be obtained from most seed and insecticide dealers.

The preparation should be based on a white mineral oil (U.S.P.) with a Saybolt viscosity of not less than 100-110 seconds and contain not less than 0.2% pyrethrins.

Preparations containing dichloro-ethyl ether should not be used under Western Oregon conditions as this material affects the flavor of the corn.

b. Time of Treatment: Timing the treatment is the most important phase of the method, both from the standpoint of preventing injury and obtaining control. Oil will prevent pollination, so treatment must not be made until most of the silks have been pollinized. This can be determined by the fact that the silks wilt and the tips turn brown soon after pollination. It is important that the ears not be treated until the silks have wilted. The oil will prevent the formation of kernels on all parts of the ear touched by it. The quantity of oil must therefore be carefully controlled.

By the time the ears are ready to treat, some of the eggs have hatched and the young larvae are feeding in the silk or at the tip of the ears. It has been observed that in loose-husked ears some of the larvae will crawl about halfway down the ears before beginning to feed. These worms cannot be killed by this method. Control is easiest on long, tight-husked varieties.

It is necessary to treat at least two times, due to the unevenness of silking. Ears should be marked as the first treatment is made to prevent duplication during later applications. White or red chalk is satisfactory for marking the ears.

c. How to Treat. Any small force oiler which can be adjusted to deliver a fixed quantity of oil at each stroke of the plunger can be used. If a large amount of corn is to be treated, a one-gallon can may be fitted with straps to be carried as a knapsack and connected by a tube to the oiler. The spout of the oiler should be so adjusted in relation to the position of the trigger that it can be easily manipulated.

The amount of oil delivered at each stroke can be regulated by means of a setscrew behind the trigger mechanism to stop the stroke at any desired spot. It should be set so that the oiler delivers one-half to three-fourths cubic centimeters per stroke (one stroke per ear). This is equivalent to 10 to 15 drops. Calibration is most accurately made by regulating the setscrew so that 45 to 60 strokes deliver one fluid ounce. (29.6 cc. = 1 fluid ounce.)

The tip of the oiler should be inserted about one-fourth to one-half inch into the tip of the husks. If it is inserted too far, the tip of the ear may be damaged; if not far enough, the oil may run back out the tip of the ear. A washer can be soldered to the spout of the oiler about one-half inch from the tip to prevent inserting the spout into the ear too far.

Home gardeners may find that a medicine dropper is satisfactory for applying the oil to the ears.

3. Dusting: Although a high degree of control cannot be generally expected, dusting with cryolite or calcium arsenate has often been suggested for corn earworm control. Inasmuch as calcium arsenate is likely to cause silk injury in the presence of moisture, a dust containing 40% cryolite is suggested for use in the Willamette Valley. The dust should be directed at the silks when they first appear and repeated three or four times at three or four-day intervals.

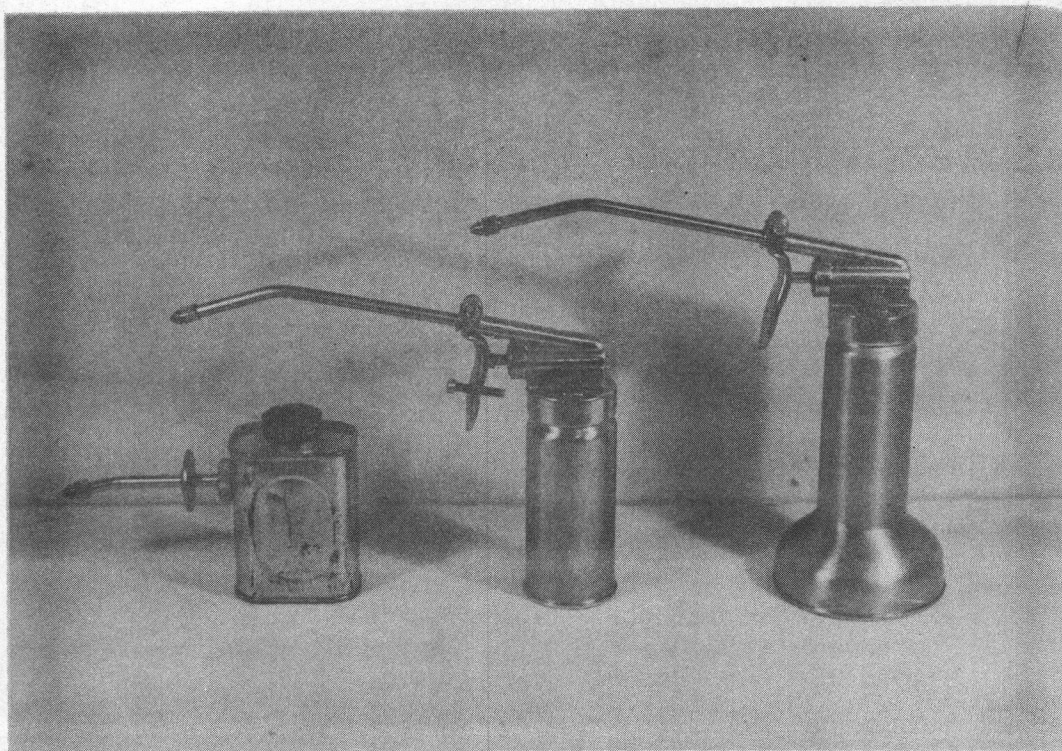


Figure 1

Three types of oilers used for treating corn. Note setscrew on trigger of center oiler for adjusting stroke.