

1950 Recommendations for Corn Borer Control

by

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INFORMATION and recommendations given in Bulletin 257 (Revised May, 1949) are still satisfactory. In this supplement, we are making some new recommendations and elaborating on others. The recommendations are given in the order they will be needed during the growing season.

VARIETIES

Plant hybrids of well-adapted maturity, with strong stalks, and suitable to your locality. If certain hybrids have tolerated borer injury and have produced high yields in spite of heavy borer infestation, plant such "tolerant" varieties.

Extensive studies have not yet been made on the resistance or tolerance of all hybrids under heavy infestation of the borer. Considerable information has, however, been secured by the staff of the Division of Agronomy and Plant Genetics on Minhybrid 408. This hybrid, which is suited to the southern zone of Minnesota, is not borer resistant but it has tolerated injury and produced high yields in spite of borer attack.

PLANTING DATE

Plantings of sweet corn may be so scheduled that they escape most of the attack of both broods.

In our studies at the University's branch station at Waseca last season, a planting on May 24 escaped much of the attack. It was infested with fewer first-brood borers than was an earlier planting (May 10) and with fewer second-brood borers than a later planting (June 7).

Due to differences in seasons and growing conditions in the different

zones of the State, we cannot make general recommendations on planting dates from studies made in one season at one place. With the information given above, growers should try to determine for themselves, on plantings made at different times, which is infested least in their particular fields.

INSECTICIDES

Materials

DDT and Ryania are recommended as in Bulletin 257, except that DDT should be used at a rate of 1½ pounds of actual DDT per acre per treatment.

Ryania is recommended especially for protection of canning corn and market sweet corn from second-brood borers if the crop remains are to be used for livestock feed.

Parathion has shown considerable promise but is a deadly poison. Because of the known hazards to those handling or applying it, it is **not recommended**. It should not be used where a safer material would give reasonably satisfactory control.

Growers who decide to use Parathion must be prepared to assume full responsibility for their action and for enforcing necessary precautions to insure the safety of those handling it. Details of these precautions can be obtained from the Division of Entomology and Economic Zoology or the Office of State Entomologist, University Farm, St. Paul 1, Minnesota.

Equipment

The degree of control varies with the equipment used. The equipment used for application in order of effectiveness

is: (1) high-pressure, high-gallonge ground sprayers; (2) low-pressure, low-gallonge (weed type) ground sprayers; (3) ground dusters; (4) aircraft sprayers; and (5) aircraft dusters.

Gallonge

When spraying corn the following amounts of liquid spray (including 1½ pounds of actual DDT per acre) should be used.

Market sweet corn.—Use a high-gallonge ground sprayer, applying 75-100 gallons per acre.

Canning corn.—Apply 75-100 gallons per acre with high-gallonge ground equipment. Lower gallonges give fairly satisfactory protection. Wettable powder DDT sprays should consist of not less than 15 gallons per acre. DDT emulsion sprays can be used at 5-15 gallons per acre.

Field corn.—With ground equipment use either DDT emulsions at 5-15 gallons per acre or DDT wettable powder sprays at not less than 15 gallons per acre. With airplanes apply 2-5 gallons per acre.

Ryania wettable - powder sprays should preferably be applied at 75-100 gallons per acre, per application. The problem of nozzle clogging increases as the gallonge decreases. At least 50 gallons per acre should be used; 30 gallons per acre is the absolute minimum. Ryania is usually used for sweet corn and may be too costly for field corn.

FIELD CORN

First Brood

Start looking for egg masses when moths begin to fly in June. Corn will be about 10 inches normal height or 18 inches extended height (to tip of longest leaf) at that time. Re-examine plants every two days.

Treat if the egg mass count reaches 50 egg masses or more per 100 plants. If for any reason a decision could not be made during egg laying, treat immediately when 50 per cent of the

plants **first** show shot-hole (leaf-feeding) injury.

Apply insecticides. If only one application is to be made, apply it one of these three times:

1. 10-12 days after the first eggs have hatched.
2. Four days after first shot-hole injury occurs.
3. As soon as 50 per cent of the plants **first** show shot-hole injury.

If for any reason more than one date for treatment has been determined, use the earliest date.

Early-planted corn is more likely to justify two treatments than late-planted corn. With two applications make:

First application 5-7 days after the first eggs have hatched or as soon as first shot-hole injury occurs.

Second application 7-10 days after first application.

The best kills are made when eggs are hatching. Treatment is rarely justified after most of the borers are approximately one-third inch long and would not be justified after the tassels appear.

Second Brood

Injury from second brood borers results principally in ear drop and stalk breakage. Such injury is more serious in late-maturing or late-planted varieties. Picking corn as early as it is safe to crib will minimize these losses. If it appears that corn cannot be picked early, then one application of insecticide should be made if and when the egg mass count reaches 100 masses or more per 100 plants.

CANNING CORN

Early plantings are subject to infestation by first-brood borers, but in general not by second-brood borers.

Start looking for egg masses when corn is 9-10 inches normal height or 16-18 inches extended height—in June when moth flight has begun. Re-examine plants every two days.

Treat if the egg mass count reaches 25 egg masses or more per 100 plants.

Apply insecticides. If only one application is to be made apply either:

1. 10-12 days after first hatch, or;
2. Four days after first shot-hole injury occurs.

Early-planted corn is more likely to justify two treatments than is later-planted corn. With two applications:

First application 5-7 days after first hatch or when the first shot-hole occurs.

Second application 5-7 days after the first application.

If 5-7 days after second application there are still 25 or more unhatched egg masses per 100 plants, make another application immediately.

Second Brood

Start looking for egg masses in August when examination of first brood tunnels shows empty pupal cases or when moth flight has begun. Light traps are an aid in determining occurrence of moth flight.¹ Re-examine plantings every three days.

Treat if first brood borers are known to have been abundant in the locality.

Make application as soon as the first black-head or hatched egg mass is observed in the field. The first treatment should be made at the time of first hatch regardless of egg mass count since a delay in waiting for higher egg mass counts might permit early hatched larvae to penetrate the husks.

Continue treatment at 5-day intervals as long as there are unhatched egg masses in the field or until 10-12 days prior to canning.

For protection of corn from second-brood borers the nozzles should be directed toward the ears and the spray applied to the ear zone.

¹Light traps are not recommended as a direct control.

MARKET SWEET CORN

The treatment requirements for market sweet corn are the same as the high-gallonage sprays (75-100 gallons per acre) and ground machine dusts recommended for canning corn, with the following exceptions for the first-brood treatment:

Start treatments when the count reaches 25 egg masses per 100 plants and as soon as first hatch occurs.

Continue treatments at 5-day intervals until four treatments have been made or until 10 days prior to harvest.

For control of second-brood borers, follow recommendations canning corn.

FALL FIELD OPERATIONS

Pick field corn early in the fall as soon as it is safe to crib. Delay will mean stalk breakage and ear drop.

Apply barnyard manure to the fields before they are plowed.

Plow crop remains and manure under in the fall. If soil tests indicate that phosphorus is inadequate apply phosphates with the manure.

Present evidence indicates that barnyard manure and phosphate applied to the old corn fields in the fall before they are plowed will result in a decrease in emergence of moths in the spring. While evidence on which this recommendation is made is preliminary, it is offered since it also increases yields and aids in soil conservation.

BORER RESISTANT CORN

Although marked progress has been made by the Division of Agronomy, in cooperation with the Division of Entomology in breeding corn-borer resistant high yielding corn, it will be some years before these hybrids will be available.

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Cooperative Extension Work in Agriculture and Home Economics, University of Minnesota, Agricultural Extension Service and U. S. Department of Agriculture Cooperating, Paul E. Miller, Director. Published in furtherance of Agricultural Extension Acts of May 8 and June 30, 1914.

20M-5-50