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INSECTICIDAL TREATMENTS FOR THE CONTROL OF THE
EUROPEAN CORN BORER 1/

By W. A. Baker and W. G. Bradley
Division of Cereal and Forage Insect Investigations

Insecticides are coming into rather extensive use for control of the European corn borer (Pyrausta nubilalis (Hbn.)) in market sweet corn and hybrid seed corn. With the advent of new materials and more efficient equipment for their application, the use of insecticides may eventually become practical even on sweet corn grown for the cannery and on field corn.

The most consistent control of the European corn borer in market sweet corn has been obtained through applications of a spray. The most effective sprays that have been found, considering cost and tolerance by the corn plants, are preparations of DDT, ground stems of Ryania speciosa, and a rotenone powder (either ground derris or cube root). Finely ground dust mixtures containing not less than 25 percent of DDT with an inert diluent, such as certain clays, have been used very effectively in water suspension at the rate of one-half pound of DDT per 100 gallons of water, plus a suitable spreading agent 2/.

Derris or cube should be used at the rate of 4 pounds of the ground root, containing approximately 5 percent of rotenone, per 100 gallons of water plus a suitable spreading agent.

The ground stems of Ryania speciosa should be used at rate of 4 pounds per 100 gallons plus a spreading agent.

1/Excerpt from a forthcoming revision of U. S. Dept. Agr. Farmers' Bul. 1548, The European Corn Borer: Its Present Status and Methods of Control.

2/Spreaders are sold in powder or liquid form and packaged under various trade names. Ordinary soap powders should not be used because of their tendency to burn the plants. The only spreading agents tested that have given consistently satisfactory results without plant injury are the sodium monosulfonate of butylphenylphenol, sold under the trade name Areskap, and an aromatic monosodium sulfonate, sold under the trade name Ultrawet. Other spreading agents are on the market, but the suitability of most of them for use in sprays for application to growing corn has not been determined.

The spreading agent facilitates the penetration of the spray deep into the whorl and between the leaf sheaths and the stalk where the young larvae feed. Thorough treatment of these areas is necessary to insure that the young borers will be reached.

Caution. DDT is moderately poisonous to warm-blooded animals and is excreted in small quantities in the milk of animals fed hay or feeds containing appreciable quantities of it. Chemical analyses have shown, however, that practically no insecticide reaches the kernels inside the husks of corn treated according to the following instructions, and that roasting ears from such corn may be eaten with complete safety. On the other hand, light residues may remain on the leaves, stalks, husks, and silks. The available evidence indicates that these parts of the plants may be safely fed to meat animals, provided the DDT is applied to the crop in strict accordance with the instructions given in this circular. Because some of the DDT is known to be excreted in milk, plant materials bearing residues of it should not be fed to animals that are producing milk for human consumption, at least until more is known concerning the hazards resulting from the use of such milk or the products made therefrom as food for man.

How to Mix Sprays

As there is danger of injuring corn by the use of too much spreader, the quantity of this material should be carefully regulated. To prepare the spreading agent for mixing with a spray, dissolve 1 pound in 2 quarts of water and then add enough water to make 3 quarts (96 ounces) of solution. This makes a stock solution of the spreader sufficient for 300 gallons of spray.

The procedure for mixing the spray is as follows: (1) Place the stock spreader solution to a small quantity of water in a container; (2) add the proper amount of DDT, rotenone powder, or Ryania speciosa to this solution, stirring the mixture until thoroughly wetted; and (3) add this mixture to the bulk of spray water, stirring it thoroughly. Smaller quantities of the spray may of course be prepared, but in so doing care should be taken to use the ingredients in the exact proportions indicated above.

How to Apply the Spray

Enough spray should be applied to penetrate the whorls, leaf axils, and other protected places where borers feed, and to cause run off at the base of the plant. The quantity of spray required for each application will range from about 100 to 200 gallons per acre, depending on the stand, size, and variety of corn.

A nozzle delivering a solid cone, rather than a hollow cone or other type of spray, has been found the most satisfactory for directing the insecticide toward the places where young borers are feeding.

On corn in the early growth stages the spray should be directed downward into the whorl of leaves. When a power sprayer equipped with a boom is used, three nozzles per row of corn should be provided. After the ears begin to develop, the two outside nozzles should be lowered to not more than 1 foot below the center nozzle and turned slightly inward. The direction of the spray should remain downward and toward the ear, to form a band of spray that will thoroughly treat all places where the borers are feeding.

The insecticide should be constantly agitated in the sprayer during the application.

Compressed-air sprayers of the portable 3-gallon size and the larger wheelbarrow type have been found useful for spraying in home gardens and small acreages. Horse-drawn and self-propelled, high-clearance boom sprayers have given highly satisfactory control of the borer in commercial fields of sweet corn.

Dust Treatments

Dusts containing 5 percent of DDT mixed with talc or pyrophyllite have been found to provide a high degree of protection when applied at a rate per acre of 40 pounds of mixed dust. Satisfactory results have also been obtained with dusts containing powdered derris or cube root mixed with one of the diluents mentioned above. This mixture should contain not less than 1 percent of rotenone when applied at the rate of 40 pounds per acre.

Applications to small plantings may be made with hand-operated, bellows or rotary-type implements, fitted with a single extension tube and nozzle. Power-operated, multiple-row dusters are more practical for larger acreages. They are available in high-clearance design and are equipped to treat four or more rows with two nozzles per row adjustable to various plant parts and heights.

When to Apply Sprays and Dusts

The first insecticidal application should be made when the corn borer egg masses in the field begin to hatch. Three additional applications should be made at 5-day intervals, since egg laying and hatching continue during a considerable period, the insecticidal residues become diluted, and new, unprotected surfaces become exposed through rapid growth of the plant.



The time when the borer eggs begin to hatch varies from year to year, and from field to field. For this reason the insecticide applications must be timed by the first hatching within the field to be treated. Careful and timely observations must therefore be made in each field. When hatched eggs are found, or eggs in which the black heads of worms can be seen, it is time to make the first application. Equipment and materials should be made ready well in advance of the time when they are likely to be needed.