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THE USE OF AIRCRAFT

IN

EUROPEAN CORN BORER CONTROL

by

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The European corn borer is at present considered to be the No. 1 insect pest of corn in South Dakota. It is now known (by specimen records) to be present in every county east of the Missouri river and in Lyman, Gregory and Tripp counties west of the Missouri river in South Dakota. During 1948 the corn borer did an estimated $2,500,000 worth of damage in our state. In 1949 this damage figure was increased to $7,545,000.

An undetermined number of corn fields in the southeastern part of the state were chemically treated for corn borer control in 1949. A great many more fields were left untreated in which chemical control of borers would have resulted in an increase in returns that would have paid several times the cost of treatment. With favorable conditions for corn borer development this spring there will be many more cornfields in which borer control will definitely pay good returns to the grower.

Experimental evidence indicates that for control of the European corn borer, applications of dusts and sprays made from aircraft are not as effective as applications made from ground equipment. However, low gallonage emulsions as airplane sprays are practical and the airplane has a very definite place in the plans for corn borer control. While aircraft applications are less effective, there are certain advantages over the use of ground equipment which may at times outweigh the disadvantage of a lower percentage of kill. Some of these advantages are as follows:

(a) Considerable area may be treated in a short space of time.

(b) Applications may be made even when fields are so muddy that ground equipment could not be used.

(c) The height of the corn is not a limiting factor whereas it is with most ground machines.

Both (a) and (b) are important from the standpoint of proper timing of insecticide application, while (c) is very important in connection with the control of second brood borers.

The use of aircraft for the application of insecticides for control of corn borers is recommended when more satisfactory or lower-cost methods are not available or are not practical. Spray boom attachments for the plane should be provided with multiple nozzles, arranged to give as even a distribution as possible across the swath. The swath may vary with different equipment. The <u>effective width</u> of swath for sprays and dusts will be no greater than the wing span or rotor length of the machine; it may be less than this width. The flight height should not be greater than six feet from

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the top of the corn to the wheels of the plane. Airplane applications, to give best results, should not be undertaken during wind movements in excess of four miles per hour.

Recommended Dosages of Insecticides for Application by Aircraft

The only spray at present recommended for application by aircraft in corn borer control is a DDT emulsion. Only emulsions which have been found to be safe for application to growing corn are recommended for use.

One and one-half pounds of technical DDT should be used per acre. Emulsion concentrate containing this amount of DDT should be added to water to make from two to five gallons of finished spray for application per acre per treatment.

For DDT used as a dust the recommended dosage is 2 pounds of technical DDT per acre. If 10% DDT dust is used then 20 pounds of finished dust should be applied per acre. If 5% DDT dust is used then 40 pounds per acre should be applied. (See chart below).

Ryania is another insecticide which has given good results in the control of corn borers. Twelve to sixteen pounds technical should be used per acre. If a 40% Ryania dust is used then 30 to 40 pounds per acre should be applied.

Chart Showing Recommended Dosages of Insecticides

Insecticide	Dosage per acre per application	Application rate mixed spray or dust per acre per application
DDT emulsion concentrate*	1½ pounds technical	2 to 5 gallons
DDT, 10% dust	2 pounds technical	20 pounds
DDT, 5% dust	2 pounds technical	40 pounds
Ryania, 40% dust	12 to 16 pounds technical	30 to 40 pounds

* Use only concentrates which have been proven safe for use on growing corn. The proper use of xylene base emulsion concentrates is safe.

Insecticides NOT Recommended

The use of DDT in solution in diesel oil or other oil (except as an emulsion concentrate) is NOT recommended.

In general, benzene hexachloride, chlordane, toxaphene, methoxychlor and TDE (also called DDD) do not give satisfactory control at economical dosages.

Parathion, because it is such a deadly poison and in view of the known hazards to those handling it or applying it, is NOT recommended for use.