

2-1949


EC1506 Corn Rootworm Control in Nebraska

Ephriam Hixson
University of Nebraska - Lincoln

Martin H. Muma

Roscoe E. Hill

Follow this and additional works at: <http://digitalcommons.unl.edu/extensionhist>

 Part of the [Agricultural Science Commons](#), [Agriculture Commons](#), [Agronomy and Crop Sciences Commons](#), [Entomology Commons](#), and the [Other Pharmacology, Toxicology and Environmental Health Commons](#)

Hixson, Ephriam; Muma, Martin H.; and Hill, Roscoe E., "EC1506 Corn Rootworm Control in Nebraska" (1949). *Historical Materials from University of Nebraska-Lincoln Extension*. 2628.
<http://digitalcommons.unl.edu/extensionhist/2628>

This Article is brought to you for free and open access by the Extension at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Historical Materials from University of Nebraska-Lincoln Extension by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

5
85
E7

1506
C.1
Feb. 1949

E. C. 1506-49

CORN ROOTWORM CONTROL IN NEBRASKA



Rootworm Injury



Normal

Cooperative Extension Work in Agriculture and Home Economics
University of Nebraska College of Agriculture, and the United States
Department of Agriculture cooperating, H. G. Gould, Acting Director,
Lincoln.

CORN ROOTWORM CONTROL IN NEBRASKA

Ephriam Hixson, Martin H. Muma, Roscoe E. Hill

There are three species of corn rootworms in Nebraska, the southern¹, northern², and western³. The southern or spotted species occurs throughout the state. The pale green to yellow northern species occurs westward to North Platte but is not important west of Wood River and Grand Island. The black striped western species occurs eastward to Center, Seward and Wilbur but is not important east of Grand Island.

Type of Injury

Newly hatched larvae feed on the small roots of corn. Later they tunnel and usually cut the roots from the plant. Brace roots also are tunnelled, often so severely that the corn stalks fall. The secondary entrance of root rots into roots damaged by the worms frequently contributes to the injury. Where large numbers of beetles are present in the field they may reduce or prevent pollination by eating the fresh silks.

Life History⁴

The northern and western species lay their eggs in the corn fields in the late summer and early fall. The eggs pass the winter in the soil and the larvae or worms hatch about the time the spring planted corn comes up. Southern corn rootworm beetles fly into the fields in the spring and lay their eggs after the corn is up. Larvae of all three species feed on the

¹ Diabrotica undecimpunctata howardi Barber

² Diabrotica longicornis (Say)

³ Diabrotica vergifera Lec.

⁴ For details read Nebraska Exp. S. B. 381, 1946.

roots of the corn and reach maturity in 25 to 45 days. The larvae pupate in the soil and change to the adult beetle. The beetles emerge and are present in the corn fields from mid-July to September, being most abundant in mid-August.

Control

Corn rootworms can be controlled either by crop rotation or insecticides. Recovery from injury can be partially accomplished by the use of nitrogen fertilizers and timely application of water.

Crop Rotation

Crop rotation is highly effective against the northern and western corn rootworms since the eggs are in the fields that grew corn the previous year. If corn is not planted in infested fields the larvae hatching from the eggs have nothing to eat and therefore starve. Eggs are not usually laid outside of fields unless there are pollen producing weeds or volunteer corn present. Frequently such growths are permitted in small grain stubble. If corn is planted the following year in such fields, injury by corn rootworms is possible.

The southern corn rootworm will not be controlled by rotation of crops since the eggs are laid in the fields after the corn is up. Weedy fields are more attractive to this species than clean fields. Therefore clean cultivation may help avoid infestation.

Control With Insecticides

Soil Treatments

Benzene hexachloride is the only insecticide tested that has given good larval control. In 1947 and 1948 this insecticide was applied as a wettable powder in sprays at rates of one half pound, one

pound and two pounds of the gamma isomer per acre. The insecticide was applied with a power sprayer before plowing or planting. In one test in 1947, the insecticide was applied as a dust side-dressing in bands on each side of the row when the corn plants were about 5 to 6 inches tall at the rate of 0.8, 1.6 and 2.4 pounds of the gamma isomer per acre.

All of the soil applications of benzene hexachloride in these tests gave good larval control, prevented root injury and lodging and, likewise, prevented the development of the beetles. There was no apparent injury to the corn plants from the applications.

Aerial dusting

Aerial dusting with 3 per cent DDT at the rate of 25 to 30 pounds per acre in 1946 and 1947 when most of the beetles were in the field gave almost perfect control. There was practically no lodging of corn the following year in fields so treated. This type of control does not protect the current crop and therefore may not be as desirable as rotation or soil treatment with insecticides.

Nitrogen application

Forty pounds of nitrate nitrogen applied at a late cultivation in the presence of abundant moisture will usually cause a rapid root recovery of corn injured by corn rootworms. Such applications will have little effect on the amount of root injury or number of rootworms. Fertilizer should be used on the advice of agronomists for the purpose of increasing fertility, but not as a corn rootworm control.

Recommendations for corn rootworm control in Nebraska

1. Crop rotation with corn following some other crop, preferably a legume, is the surest, safest and cheapest corn rootworm control for the western and

northern species. Due to its erratic attacks on corn, no practical control for the southern species can be recommended.

2. For soil treatment with an insecticide only benzene hexachloride is recommended. It should be used as a spray applied on the corn stubble shortly before plowing and planting at the rate of one pound of the gamma isomer per acre.

Only the wettable powder of benzene hexachloride has been tested and therefore that form is recommended. The use of an emulsion or solution of benzene hexachloride may be equally as effective as wettable powder, but in the absence of specific tests these forms cannot be recommended by the Nebraska Experiment Station.

3. Danger from soil treatments: There is little information as to how long benzene hexachloride will remain active in the soil. There is no information on the effects of repeated applications to succeeding crops over a number of years or the effects of such applications on soil organisms which are so important to soil fertility. It will take several years of careful research to determine these effects. In the meantime the grower should use the smallest possible amount of insecticide per acre and use soil treatment only when necessary.