

# CONTROL of CORN ROOTWORM in CORN

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The southern corn rootworm, more generally known as the "budworm", frequently causes severe injury to corn in Alabama. The life history and cultural control of the insect were determined and published in Alabama Experiment Station Bulletin No. 230 in 1929. That work was drawn upon for the accounts of life history, damage, and cultural control given in this report. Experiments on control of the corn rootworm with insecticides have been conducted over a 3-year period at the Tennessee Valley, Wiregrass, and Gulf Coast substations, and at the Plant Breeding Unit. The control practices with insecticides recommended in this leaflet are taken from the results of these experiments.

## LIFE HISTORY and DAMAGE

The adult of the southern corn rootworm is commonly known as the spotted cucumber beetle. In Ala-

bama it overwinters in rubbish, winter legumes and other green plants. Egg laying begins very early in the spring. Adults have been observed feeding and laying eggs on warm days in mid-January. However, the mass of first generation eggs is laid in March. Eggs, which are deposited in the soil, hatch in 8 to 12 days and the larvae feed on underground parts of green plants. The larvae feed for about 2 weeks after which they pupate (go into inactive stage) for about 1 week. The time required for development from egg to adult varies considerably with temperature; usually it is 4 to 5 weeks during warm weather.

Most injury to corn is caused by the larvae which occur in the soil. The larvae are greedy feeders and may cause severe or even fatal injury to young corn plants. They feed on the roots or bore into the base of the stems. The plants become stunted and appear yellow in color but may later become more vigorous and produce grain. Boring

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into the stem by the larvae causes the buds to wither and die; the entire plant is often killed outright. Corn may be attacked from the time the seed germinate until the plants are several inches high.

Injury from the rootworm is most generally found in early corn on bottom lands and in corn following winter legumes turned under. The worst injury usually occurs during cold, wet springs.

### CULTURAL CONTROL

Injury from the corn rootworm to corn following winter legumes turned under can be almost completely avoided by properly timing the date of turning the legumes and planting the corn. In the latitude of Auburn, Alabama, the best procedure is to turn and disk the legumes on or before April 15 and plant the corn early in May. The corn may be planted 1 or 2 weeks before May 1, provided the weather has been warm and reasonably dry and the legumes were turned before April 1.

There are no data available to indicate the best time to turn legumes and plant corn to avoid rootworm injury in different sections of the State. It is logical that the date of turning and planting should be a few days earlier in southern Alabama and a few days later in northern Alabama than in the vicinity of Auburn. During extremely cool springs, the date of turning and planting in any locality should be later than during a more nearly normal spring.

### CONTROL with INSECTICIDES

Experiments have been conducted

on two methods of using insecticides to prevent injury from the corn rootworm. They are mixing the insecticides with the fertilizer and seed treatment. Research is still in progress, but to date it appears that more effective control can be obtained by applying the insecticides in the fertilizer than by seed treatment.

Mixing with the fertilizer. Effective control of the corn rootworm has been obtained by mixing dilute dust formulations of insecticides with the fertilizer and applying the mixture at planting time. Aldrin, dieldrin, chlordane, parathion, tobacco dust, DDT, BHC, lindane, and toxaphene were all tested at various rates. Some control was obtained from all of the insecticides except tobacco dust. The most consistently effective treatments were aldrin and dieldrin at 1 pound of technical material per acre. Where rootworm infestations were severe, the use of aldrin or dieldrin has resulted in increased yields of as much as 20 bushels of corn per acre over no treatment. One pound of lindane per acre was also effective, but it tended to reduce the yield of corn, especially on sandy soils.

Best results have been obtained by mixing the proper amount of dilute insecticidal dust with the amount of fertilizer to be applied per acre. For example, 20 pounds of 5 per cent or 40 pounds of 2.5 per cent aldrin dust contains 1 pound of technical insecticide. If 400 pounds of fertilizer is to be applied to the corn, either 20 pounds of 5 per cent or 40 pounds of 2.5 per cent aldrin dust should

be mixed with the 400 pounds of fertilizer. The mixture should be applied to the soil with a fertilizer distributor in the regular manner.

**Seed treatment.** Research on the control of the rootworm by treating the corn seed with insecticides has not been completed. Indications are that this method of control is promising. In one experiment where seed were treated with 2.5 ounces of 40 per cent lindane per bushel, the yield of corn was 10 bushels per acre higher than no treatment. However, in the same experiment the use of 1 pound of aldrin in the fertilizer resulted in an increase of 18 bushels per acre.

#### SUMMARY

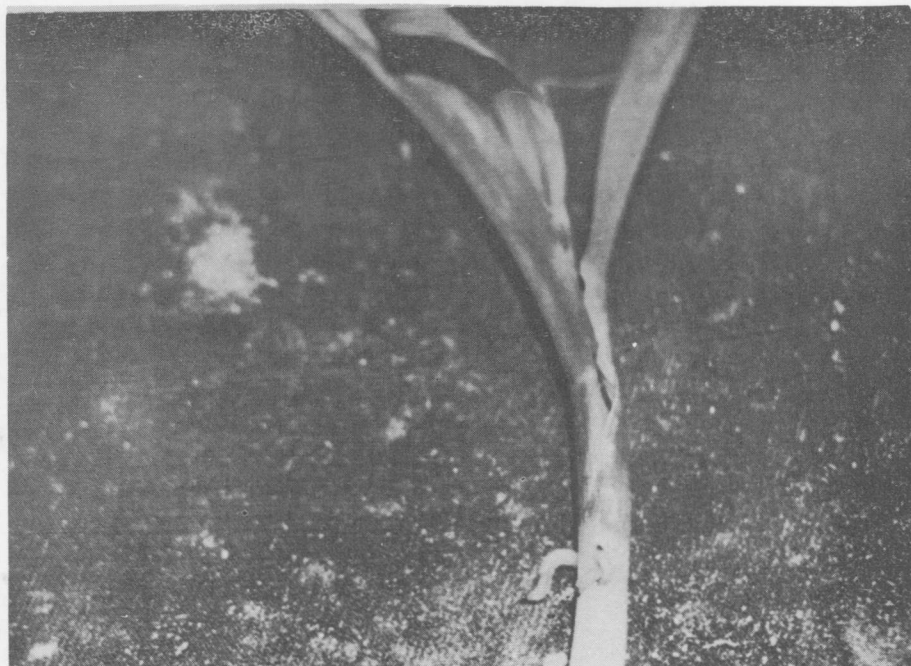
1. Corn stands in Alabama are

often severely damaged by the corn rootworm, especially following the turning of winter legumes or in bottom lands.

2. The damage to corn following the turning of winter legumes can be avoided by properly timing dates of turning legumes and planting corn. At Auburn least damage occurred when legumes were turned before April 15 and corn was planted in early May.

3. Effective control under conditions of severe infestations has been obtained by mixing insecticides with the fertilizer and applying at planting time. Best results were obtained with 1 pound of technical aldrin or dieldrin per acre.

4. Lindane seed treatments are promising, but to date they have not been as effective as insecticides in the fertilizer.



Rootworm damaging corn seedling.

