



University of Idaho
College of Agriculture

Cooperative Extension System
Agricultural Experiment Station

Current Information Series No. 924

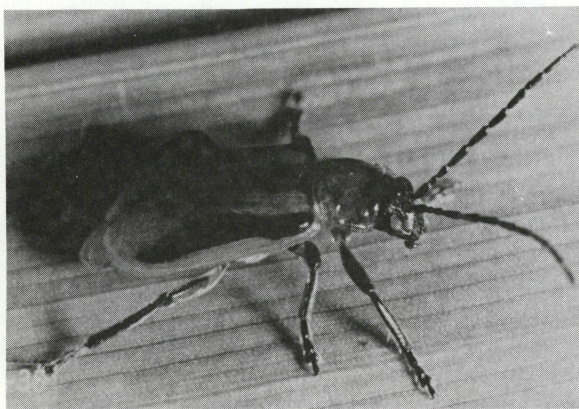
LIBRARY

JUL 13 1992

UNIVERSITY OF IDAHO

Western corn rootworm

*H. W. Homan, D. G. Bolz,
and C. R. Baird*



The western corn rootworm, a beetle native to the Great Plains, has been in southern Idaho for about 20 years. It is still a new pest in some areas.

Adult beetles damage corn by feeding on developing silks before pollination, causing kernels to fill only partially. Larvae feed on the roots, causing plants to have poor vigor and to lodge during summer. Adult and larval feeding results in poor yield and harvesting difficulties.

Description

Adult beetles are about $\frac{1}{4}$ - to $\frac{3}{8}$ -inch long, slender, and yellowish green with three dark stripes on the back. The three stripes may merge into a single dark area. Adults are present from mid-July to September, are very active, and fly readily when disturbed.

Females lay small, pale-yellow, faintly sculptured eggs in the soil within 6 inches of the surface. Egg laying usually occurs in corn fields from late July until frost. Eggs do not hatch until the following spring. This insect has only one generation per year.

Eggs begin to hatch when the soil surrounding them warms to 52°F in spring. Hatching in southern Idaho may occur from the middle of June to early July.

Larvae are slender, threadlike, white to pale-yellow worms. At maturity larvae are about $\frac{1}{2}$ -inch long with brown heads.

Newly hatched larvae move through the soil in search of corn roots. They feed on root hairs and tunnel into corn roots for about a month before they reach maturity. Their feeding may stunt plants, reduce yields, and allow disease-causing organisms to enter. Stalk rot or other diseases may further weaken the plants. Damaged plants may lodge, increasing harvesting costs. Fully grown larvae change into fragile, white pupae about $\frac{1}{4}$ -inch long.

The adults feed on tender portions of the plant, especially pollen and silks. Generally, if two or more adult beetles per ear are present on seed corn or five or more adult beetles per ear are present on field corn during silking, yields may be seriously reduced. Adult feeding on tassels has little effect on the corn plant and does not affect pollination or plant vigor.

Sampling and thresholds

Sample for adults when they first appear at the end of July and again in 10 days. Take samples by walking through the field in an "M" or "W" sampling pattern and examining two plants at each of 40 locations for each 40 acres or for each variety of corn. If you find one adult per plant, treat the field at planting next year if it will be planted to corn. If you find two adults per plant in seed corn or five adults per plant in field corn **and** 50 percent or fewer of the plants have been pollinated (corn is pollinated when the silks turn brown), you may need to treat adults (Table 1).

Sampling for larvae is very time consuming but can be done by sampling areas next to the roots of corn. Put the sample in water and collect the larvae, which will float to the surface. Usually, check suspect fields for rootworm larvae if some plants show wilting, stunting, or lodging in June. If you find larval damage, you may apply an insecticide in a cultivation band application to protect the field from further injury (Table 2).

Nonchemical control

The best control for corn rootworm is to rotate corn with another crop. Growers who plant corn after corn should expect injury, especially if the field has a history of corn rootworm injury.

5
53

322
924

Table 1. Foliar insecticides for controlling western corn rootworm adults.

Insecticide	Days between application and harvest
Lannate ¹	0 days; 3 days for forage
Lannate L ¹	0 days; 3 days for forage
Penncap-M	12 days
Methyl parathion 4E	12 days
Methyl parathion 5EC	12 days
Savit 80W	0 days
Sevin 80S	0 days
Sevin 50WP	0 days
Sevin XLR	0 days
Sevimol 4	0 days
Malathion 5EC	5 days
Cythion	5 days
Malathion ULV	5 days
Lorsban 4E	35 days
Diazinon 4EC	0 days

¹Certain varieties of sweet corn may be injured by Lannate.

Table 2. Insecticides for controlling western corn rootworm larvae.

Type of application	Insecticide	
Soil broadcast before planting	Dyfonate 4EC	Dyfonate 10G
	Dyfonate 20G	
Soil band application at planting	Dyfonate 4EC	Thimet 15G
	Dyfonate 10G	Thimet 20G
	Dyfonate 20G	Mocap 6EC
	Furadan 15G	Mocap 10G
	Counter 15G	Lorsban 15G
Cultivation band application postemergence in June	Dyfonate 10G	Counter 15G
	Dyfonate 20G	Lorsban 15G
	Diazinon 14G	Phorate 15G
	Diazinon 50WP	Phorate 20G
	Diazinon AG500	Thimet 15G
	Furadan 15G	Thimet 20G

(field corn only)

Chemical control

Larvae

Broadcast applications — Immediately before planting, apply insecticide to the soil surface as a spray or granules and immediately incorporate it into the soil with a disk to prevent the insecticide from breaking down.

Band applications at planting — Apply insecticide as a spray or granules in a 6- to 8-inch band over the row. Place the granule spreader spout or the spray nozzle between the seed spout and covering wheel to place the insecticide near the seed but not in contact with it. Generally, this technique will cover the insecticide with soil, but if it does not, adjust the covering wheel.

Cultivation band applications — Apply insecticide as a spray or granules in bands 3 to 4 inches from corn rows and on both sides; sprinkle irrigate or cover with soil. Use this application method only if you find the rootworm infestation after corn emergence.

Adults

Treat using one of the products listed in Table 1 when rootworm numbers exceed the threshold.

Caution: All foliar insecticide applications are hazardous to pollinators. Spray in late afternoon or evening when bees are less active. Avoid spraying corn tassels. Consult CIS 458, *Prevent Pesticide Poisoning of Pollinators*, for the hazards of insecticides to pollinators.

In home gardens

Diazinon 5G may be used at planting or at cultivation in June to control larvae. Foliar sprays of diazinon, malathion, or carbaryl can control adults during silking. Apply them to the ears, not the tassels.

Pesticide recommendations

Pesticide residues — These recommendations for use are based on currently available labels for each pesticide listed. If followed carefully, residues should not exceed the established tolerances. To avoid excessive residues, follow label directions carefully with respect to rate, number of applications, and minimum interval between application and reentry or harvest.

Groundwater — To protect groundwater, when there is a choice of pesticides, the applicator should use the product least likely to leach.

Trade names — To simplify information, trade names have been used. No endorsement of named products is intended nor is criticism implied of similar products not mentioned.

When selecting insecticides, prevent illegal residues by considering all the crops in the rotation. Also, consider any possible drift onto adjacent crops. Growers are responsible for residues on their crops as well as for problems caused by drift from their properties to other properties or crops.

Keep records of all pesticide applications.

The authors — Hugh W. Homan, Extension entomologist, UI Department of Plant, Soil and Entomological Sciences, Moscow; Darrell G. Bolz, UI Extension agricultural agent, Canyon County; and Craig R. Baird, Extension entomology specialist, UI Department of Plant, Soil and Entomological Sciences, Parma Research and Extension Center.

For further information

CIS 458, *Prevent Pesticide Poisoning of Pollinators* (35 cents)
To order copies of this or other University of Idaho College of Agriculture publications, contact the University of Idaho Cooperative Extension System office in your county or write Agricultural Publications, Idaho Street, University of Idaho, Moscow, ID 83843-4196 or call (208) 885-7982.