

Corn Rootworm May Spell Economic Loss

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During the past 10 years, western corn rootworm (WCR) has established itself as the major insect pest of corn grown for silage and grain in New York.

Since the first detection of WCR in western N.Y. in 1979, populations of this insect have continued to increase and have moved east to the eastern seaboard. Results from field scouting during 1992 have indicated that 60-70 percent of the continuous corn fields in western and central New York are at high risk for economic loss from WCR feeding damage during the 1993 growing season.

If these continuous corn fields are planted to corn in 1993, growers should consider the use of a soil insecticide.

Corn Rootworm Biology and Management: Two species of corn rootworm (CRW) can cause economic loss in our commercial corn fields. Northern corn rootworm adult beetles are bright lime green and have been inhabitants of our corn fields for many years. The western corn rootworm, which is yellowish with dark stripes, has invaded New York only in the past few years and currently is most numerous in western and central New York.

Adult CRW beetles are found in corn fields from pollination until the first killing frost (late July — September). During this time, the adult females are laying eggs in the soil cracks and around the bases of corn plants which will overwinter and hatch in late May the following year. Newly hatched larvae locate the young corn plants and begin feeding on the developing roots. Larval development and root feeding damage is completed by mid July; larvae pupate and emerge as adult beetles during late July and early August to begin laying eggs to complete their life cycle.

CRW larvae damage corn by feeding on the root system and if present in sufficient numbers, will reduce corn yields by inhibiting the ability of the

corn plant to uptake water and nutrients.

Recent field studies (1991-1992 growing seasons) using field plots artificially infested with WCR eggs by Paula Davis from the Entomology Department at Cornell University has shown that corn grown for silage is much more sensitive to WCR larval feeding damage than corn grown for grain. In general, root damage ratings of 3.0-3.5 have been considered the range of damage ratings where economic yield losses begin to occur.

Results from the 1991-92 field studies indicated that silage losses both years were economically significant with a root rating of approximately 3.0 (100 eggs/row foot) and the value of the crop loss approximately equaled the cost of the soil insecticide used to control WCR larvae in corn. By con-

trast, corn grown for grain could tolerate a root rating of at least 4.0 (300 eggs/row foot) before the yield loss from WCR larval feeding approximately equaled the cost of the soil insecticide needed to control WCR larvae.

Yield losses from WCR larval feeding demonstrated in this study were physiological yield loss (the corn plant did not produce the yield) rather than harvest loss from lodging. Lodging of corn plants usually occurs only after the root rating damage is 4.0 or greater.

Fields at Risk: Fields planted to continuous corn are at greater risk of economic CRW infestations than first-year corn because CRW eggs are laid the previous fall in existing corn fields. Fields in continuous corn production are more likely



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to develop economic CRW infestations the longer corn is continuously planted to the field. Continuous corn planted after late-planted corn the previous year is at high risk because the late-pollinating corn is attractive to the adult CRW, resulting in heavier than normal egg laying in the field.

Management: Potentially damaging CRW populations are managed by rotating the field to a non-host crop or by using soil insecticides incorporated in the seed bed at planting or cultivation. The need to rotate the field or use a soil insecticide next year to manage

CRW can be determined by counting the number of adult CRW beetles per 55 corn plants (5 plants in 11 different field locations within a field) in each corn field during and shortly after pollination (see Cornell Extension Fact Sheet 501.00). If these beetle counts exceed 1 beetle per plant as a field average, the field is at high risk for CRW damage, providing the field is planted to corn in 1993. If the field cannot be rotated and must be planted to corn in 1993, then a registered soil insecticide is recommended at planting or during cultivation next spring.

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