

Field Crops

Department of Entomology

MONITORING AND DECISION RULES FOR WESTERN CORN ROOTWORM BEETLES IN SOYBEAN

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Why Is there Rootworm Damage in Corn Following Soybean?

Portions of northern Indiana have been affected by a dramatic change in western corn rootworm (WCR) beetle behavior. Previously, WCR adults laid eggs primarily in cornfields. In the last 10-12 years however, the a “variant” behavior, where adults lay eggs in non-corn fields (including soybean fields), resulting in economic root damage to corn the following growing season. This behavioral change has virtually eliminated the benefit of crop rotation as a rootworm management tactic in the most severely affected regions of the problem area and has resulted in routine applications of soil insecticides to most cornfields.



WCR damaged roots



Lodging from WCR root feeding

What Can Be Done to Reduce Unnecessary Insecticide Applications?

One way to reduce unnecessary insecticide applications on first-year corn is to monitor soybean fields for WCR beetles and treat the following year’s corn only if significant beetle numbers are found in soybean. Using IPM practices (i.e., scouting and thresholds) as part of a management program will provide reliable information that can be used to make WCR



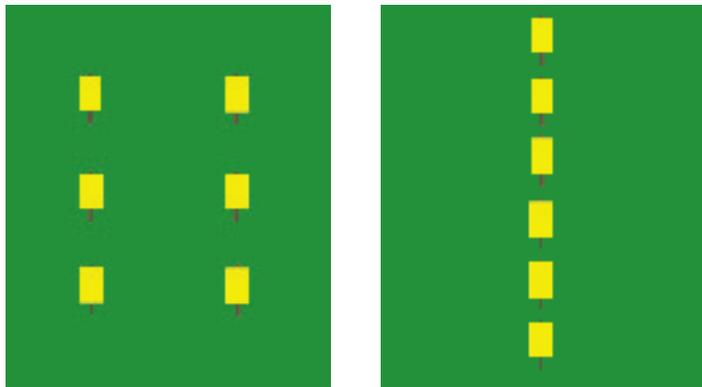
Placing sticky trap on stake

management decisions. Pherocon® AM yellow sticky traps placed on stakes in a soybean field is a passive method for sampling WCR beetles. There are no lures (pheromone or food) on these traps. WCR beetles are attracted to the bright yellow traps and become entangled in the sticky surface.

How Should Traps Be Used to Monitor WCR Beetles in Soybean?

Beginning no later than July 24, place 6 Pherocon® AM (unbaited) yellow sticky traps (sticky surface out) on stakes slightly above canopy level and distributed throughout a soybean field, keeping at least 100 feet away (and preferably farther) from field edges and/or waterways. Consider that large fields (>60 acres) with variable soil types, weed control, etc., will need more traps to improve estimates of rootworm abundance. Divide the field into representative units if necessary. Remove all soybean plants around the stakes to prevent leaves from sticking to the traps. For ease of collecting traps in drilled soybean, consider placement along wheel tracks, skipped rows, etc.

Each week for 6 weeks, or until the beetle threshold is reached, remove the traps, and place new ones just above the soybean canopy. Count and record the number of rootworm beetles on each trap. To determine the average number of beetles/trap/day, add the total numbers for the 6 traps in each field, divide that number by 6, and then divide by the number of days the traps have been in the field. Although a 7-day sampling period is preferred, be sure to divide by the actual number of days the traps were in the field to determine the average.



Suggested whole field trapping schemes



Producer counting WCR beetles on trap

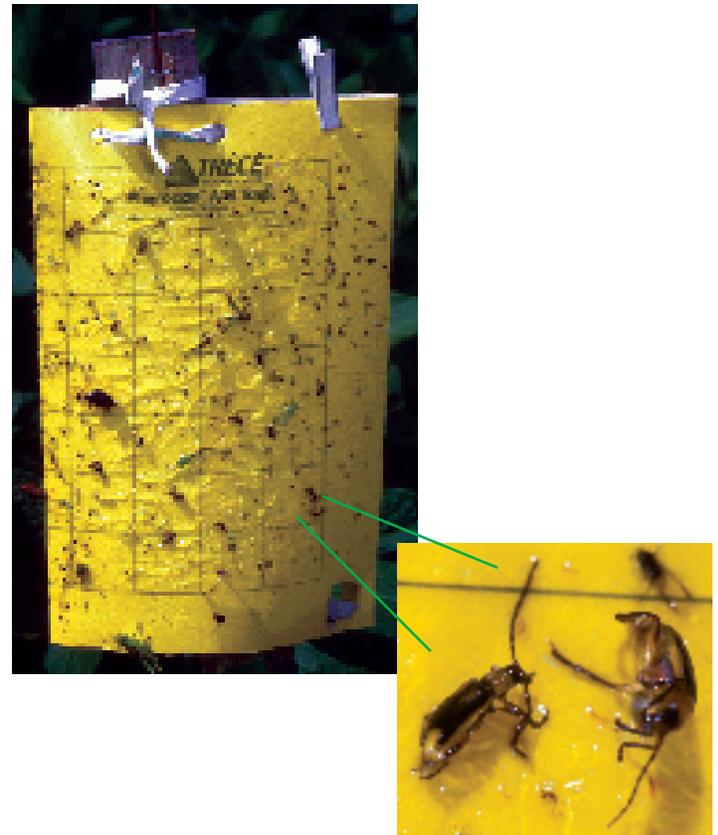
When Do Trap Counts Indicate the Need for a Management Tactic?

If the Pherocon® AM traps in soybean fields average 5 or more beetles/trap/day during any trapping week, some management tactic should be implemented for WCR larval control in next year’s corn. Management options include: 1) rotation to a crop other than corn or 2) using a rootworm insecticide. In research fields where at least 5 WCR beetles/trap/day in soybean were observed, >95% of the cornfields reached economic root damage the following year. Do not use a single trapped field to estimate rootworm abundance in surrounding fields.

Economic Threshold:
Average Of 5 Or More Western Corn Rootworm Beetles Per Trap Per Day

Where Can I Get the Traps?

Pherocon®AM yellow sticky traps can be purchased from several distributors. Two possible sources are: Gempler’s (800-382-8473) and Great Lakes IPM (800-235-0285). This listing is not all inclusive, nor an endorsement by Purdue University. The manufacturer of the Pherocon® AM yellow sticky trap is Trécé Inc. (831-758-0204).



(Top photo) A week's catch, which will include many other insects and debris; (bottom photo) two captured WCR beetles

Where Can I Get More WCR Information?

WCR life history, damage, sampling methods, and management guidelines are available in the Field Crops Pest Management Manual (IPM-1). Updates of Indiana's risk areas and control products for this pest are presented in the publication E-49 Managing Corn Rootworms located at: <http://extension.entm.purdue.edu/publications/E-49.pdf>. For these and other publications, call Purdue Extension at 888-EXT-INFO (398-4636)

Western Corn Rootworm: *Diabrotica virgifera virgifera* LeConte
Northern Corn Rootworm: *Diabrotica barberi* Smith & Lawrence
Southern Corn Rootworm: *Diabrotica undecimpunctata howardi* Barber

READ AND FOLLOW ALL LABEL INSTRUCTIONS. THIS INCLUDES DIRECTIONS FOR USE, PRECAUTIONARY STATEMENTS (HAZARDS TO HUMANS, DOMESTIC ANIMALS, AND ENDANGERED SPECIES), ENVIRONMENTAL HAZARDS, RATES OF APPLICATION, NUMBER OF APPLICATIONS, REENTRY INTERVALS, HARVEST RESTRICTIONS, STORAGE AND DISPOSAL, AND ANY SPECIFIC WARNINGS AND/OR PRECAUTIONS FOR SAFE HANDLING OF THE PESTICIDES.

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