Field Scouting for Corn Rootworm: An Integrated Pest Management (IPM) practice

Scouting for corn rootworm (CRW) beetles can help determine the need for rootworm control in continuous corn.

If beetle numbers are below thresholds, no field treatment for CRW is needed. *(See the back of this card.)*

Lodged corn is not a good indicator of CRW presence.

Using accurate field information can help delay CRW resistance to the Bt CRW hybrids by matching appropriate corn rootworm management practices with actual beetle populations.

Western corn rootworm resistance to Bt CRW hybrids is known to occur in areas of the Midwest and is suspected in areas of Wisconsin. Collecting field scouting information can fine-tune management strategies to reduce reliance on Bt CRW hybrids and adopt an IPM program for corn production.

A well balanced IPM program includes scouting for CRW beetles, crop rotations, use of soil applied insecticides on conventional hybrids, seed treatments (low to moderate CRW populations only), and Bt CRW Hybrids.

What is a corn rootworm's life cycle?

Northern and Western corn rootworms have similar life cycles. They overwinter as eggs laid in the upper soil profile and hatch in early June. First instar larvae feed on the smaller branching corn roots. Second and third instars feed on larger roots at the base of the corn plant.

Adult beetles emerge late June through August and lay eggs almost exclusively in corn fields from early August through early September. There is one complete generation/year. In the southeast part of Wisconsin, Western corn rootworm adults may lay eggs in soybean fields.

How to scout: Count the number of CRW beetles on 50 corn plants. **Visit 5 random areas of the field and count beetles on 10 plants in each area**. Do not pick plants directly adjacent to each other. Count the beetles found on the tassel, silk, top and bottom of leaves, and feeding on the ear tip.

First, trap beetles in the silk by firmly grabbing the silk end of the ear. Count beetles on the rest of the plant before slowly opening your hand to count beetles feeding on the silk and ear tip.

For pollination protection, scout fields before 70% of the field has silked.

For root protection, scout fields during the egg-laying period from early August to early September. Repeat this scouting procedure on 7-10 day intervals one or two more times during the egg-laying period.

Western CRW beetle

Northern CRW beetle

Silk clipping

Pollination Protection: Treat corn fields if silks are clipped to 1/2-inch or less from the ear and pollination is less than 50% complete. This usually requires approximately 5 beetles per plant.

Root Protection following corn: Treat if scouting counts from the previous year's egg-laying period reached a field average of 0.75 beetles per plant.

Root Protection following soybean: Treat corn if yellow sticky trap catches average more than 5 Western corn rootworm beetles/trap/day during the egg-laying period from early August to early September.

Scan the QR code to see a video:
How to scout for corn rootworm beetles

This card and video produced by
Integrated Pest Management (IPM) program
University of Wisconsin-Madison

UW-Madison IPM program, **http://ipcm.wisc.edu**

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Evaluating Corn Roots for Corn Rootworm Damage

Corn rootworms (CRW) are an important economic pest in Wisconsin. CRW larvae feed on corn roots. By evaluating the extent of root injury you can determine:

- the effectiveness of your rootworm management practice(s)
- if resistance to the Bt Corn Rootworm hybrids is occurring
- if rootworms are a problem on first year corn

Evaluate corn roots in **mid-July to early August.**

Dig several roots per field. Wash off all soil with a power washer.

Roots grow from nodes that are often called whorls.

A root is considered pruned if chewed back to within 1½" of the stalk.

Estimate extent of root injury using the Nodal Injury Scale (NIS).

The **NIS rating system**, developed by Iowa State University, is a based on a decimal system.

1.20

The number to the **left** of the decimal equals the **number of root nodes completely pruned.**

The number to the **right** equals the **percentage of the next node of roots pruned.**

In the example above, a NIS rating of **1.20** would mean that **1** complete node (or equivalent) of roots is pruned + **20%** of the next node is pruned.

Economic threshold guidelines:

- **If NIS rating <0.25**, no economic loss
- **If NIS rating is between 0.25 and 0.75,** economic loss is dependent on plant stresses (compaction, fertility, disease, etc.)
- **If NIS rating is > 0.75,** economic loss is likely

Resistance to BT CRW should be considered:

- **If NIS rating is 1.0 and** at least two consecutive years use of a **single Bt toxin**
- **If NIS > 0.5 or** with at least two consecutive years use of **pyramid Bt CRW toxins**

CRW damage and root node injury scoring
Scan the QR code to watch this video.

How to validate your management decision
Scan the QR code to watch this video.

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