

Corn Rootworm Management in Canada

Summary

- Corn rootworm (CRW) can be found across Ontario and Quebec.
- Corn rootworms can evolve and overcome management tactics. Controlling this pest is difficult.
- Crop rotation, avoiding corn on corn, is key to reducing CRW populations.
- Corn growers should develop a scouting program that monitors larvae and adult numbers, which predicts potential egg laying and future problems.



Figure 1. Northern (left) and western (right) corn rootworm beetles.

Pest Facts

- **Northern corn rootworm** - Adults are yellowish to pale green beetles about ¼" or 6mm long.
- **Western corn rootworm** - Adults are yellow with black stripes on the wings.
- Mature rootworm larvae are white and tender about ½" or 1.25cm long. They have brown heads and a dark plate on the top side of the terminal segment.
- Adults begin emerging in early to mid-July with male beetles emerging before females.

Crop Injury

- Both larvae and adults feed on corn.
- Larvae feed on and within roots from mid-June to mid-July.
- Adults feed on pollen, silks and leaves leaving 'window panes' between the veins on the leaves.

Injury Symptoms

Corn Lodging or Goosenecking

- Corn rootworm larvae feed on corn roots which can cause lodging and reduced nutrient and water uptake.
- Damage can be seen when roots are dug up and washed (Figure 2).



Figure 2. Severe corn rootworm feeding damage.

Silk Clipping

- Adults can clip silks at pollination, reducing pollination success.

Management Strategies

Crop Rotation

- Crop rotation is critical for managing CRW populations. Since corn is the primary host, avoid planting corn on corn.

Scouting

- Monitor larvae and adult beetle numbers to predict potential egg laying and future problems. The level of rootworm feeding, and beetle activity will determine the best management options.
- Adult beetles can be trapped using sticky traps (see Figure 3). Traps are collected and replaced weekly.



Figure 3. A new Pherocon® AM/NB sticky trap set at ear height.

Results from an Ontario 2020 Trapping Trial

- Sampling of CRW populations in 2020 revealed the variable geographic nature of CRW pressure and effects of crop rotation.
- All locations with moderate to very high pressure were continuous corn locations, lending support for the use of rotation out of corn as a critical management tool to keep CRW populations low.
- One location with very high pressure was in the center of a geography that has now been confirmed by the Canadian Corn Pest Coalition to be showing CRW resistance to Bt traits associated with a long-term history of continuous corn.
- Similar investigations into possible CRW Bt resistance observed under continuous corn are underway in other fields across the geography tested.
- Continuous corn practices have been shown by university and Pioneer research to increase CRW pressure and can result in the development of resistance to Bt traits. Improved rotational practices are the best way to keep these valuable Bt traits effective going forward.
- Results indicate that WCRW is the predominant species present in SW Ontario. NCRW populations were present at some locations but at low rates relative to the WCRW. Discovery of only a single NCRW beetle in soybean fields is likely incidental but worth further investigation given the extended diapause shown by some NCRW populations.

Considerations / Action Thresholds

- If traps average <20 beetles per week:
 - **Low/Moderate** CRW populations are anticipated next year.
 - Select a control option for each field:
 - Rotate acres to another crop.
 - Plant a corn rootworm Bt corn product. (If a Bt-rootworm product has already been planted 3 years in a row or you are in a geography where CRW Bt resistance is already confirmed/suspected, rotate out of corn.)
- If traps average >20 beetles per week:
 - **High** rootworm populations are anticipated next year
 - Select a control option for high populations:
 - Rotate acres to another crop.
 - If corn must be grown, apply foliar insecticide in the current year to control beetles prior to egg-laying. If CRW Bt resistance is suspected in your geography, consider using a non CRW Bt product with application of in furrow insecticide.
- To maintain efficacy of Bt corn rootworm products, it is essential to develop a rootworm management plan that:
 - Breaks the cycle
 - Manages populations
 - Protects the Bt trait
- Please contact your Pioneer Sales Professional or local Extension professionals to assist you in developing field-specific best management practices for your operation.

Author: Laura Sharpe