Rotation-Resistant Western Corn Rootworm (WCR): A Problem for Wisconsin?

Introduction

- **WCR Life Cycle**
  - **1 generation/year**
  - **Eggs (*usually*) deposited in corn**
    - **Begins early to mid-August**
    - **Ends early- September**

Introduction

- Overwinter as eggs
- Eggs hatch early June
- Larval Hosts:
  - Feed exclusively on Corn

Introduction

- **Management Options:**
  - **Insecticides use on continuous corn**

    Or
  - **Crop rotation**

New Biotype of Western Corn Rootworm

- **First-Year Western Corn Rootworm (FYWCR)**
- **Rotation-Resistant Western Corn Rootworm**
- **Eastern Variant of the Western Corn Rootworm**

What has changed?

- WCR adults are feeding in soybean fields
- Female WCR are laying eggs in soybeans
- C/S Rotation no long viable for WCR control in ***certain areas*** of the corn belt

Why Has it Changed?

- Selection Pressure
- Crop Phenology
- Combination of events

History of FYWCR

- First Detected in East Central Illinois/ West Central Indiana Mid 1980's
  - Seed Corn/Soybean Rotation
  - Synthetic Pyrethroid Use
  - Problem Area Expanded in IL and IN
    - Ohio, Michigan-1998
    - Wisconsin-2002

Observations
Illinois-2002

- Beetle numbers lower in 2002
- Affected area expanded to the north in 2002
- New counties on alert for problems in 2003

Observations
Wisconsin-2002

- Higher corn rootworm beetle numbers in continuous corn for 2002
- Increased larval activity in continuous corn
- Damage (confirmed and anecdotal) to first-year corn
  - Walworth
  - Kenosha
  - Rock
  - Racine

Wisconsin FYWCR Outlook 2003

- Historically, movement has been slow
- Extended rotation potentially could slow movement
- Majority of first-year WI corn unaffected
- Treatment may be necessary if damage was ***documented*** on first year corn in 2002

Remember !

Corn Rootworms Do Cause Lodging.

BUT!!

Not All Lodging is a Result of Corn Rootworm Feeding!

Other Causes of Lodging

- Environmental
  - Wet soils
  - High winds
- Shallow Rooting
  - Shallow Planting depth
  - Soil Compaction
- Hybrid differences
- Diseases
- Insects
  - ECB
  - White grubs

Other Reason for Damage to First Year Corn

- Volunteer corn in soybean
- Weed escapes
- Pumpkin/Corn rotation
- Extended Diapause (NCR)
  - Egg deposited in corn
  - Require two winters to hatch
  - MN, IA, SD,
- ????????

Monitoring

- Monitoring soybeans to predict potential for damage in first year corn
- Use only Pherocon AM unbaited yellow sticky traps (Trece)

  (Pepper Weevil, yellow sticky traps, sticky strips, IPM Yellow Corn Rootworm Traps)

  – Visual attractant

  – Sticky surface on two sides

  – Place at canopy level during oviposition

Trapping Protocol

- 12 traps/field
- 1 inch furring strips, fiberglass fence posts
- 3-4 week trapping period
- Space traps evenly w/in field
- Suggested patterns
  - 2 rows of 6 traps each
  - 4 rows of 3 traps each
- Count beetles on a weekly schedule
- Replace traps as needed


TRÉCÉ
Pheroprax® AM Trap

Trap Sources

- Gempler's
  - Belleville, WI
- Great Lakes IPM
  - Vestaburg, MI

Economic Thresholds

- Based on University of Illinois Research
- Count # WCR (male & female) caught/trap/day
- Season average of 5/trap/day
  - 0.25 corn root rating (Iowa State node-injury scale)
- Season average of 10/trap/day
  - 1.0 corn root rating (Iowa State node-injury scale)

Summary

- **Most of WI's first year corn will not be affected**
- **Suspect areas include parts of**
  - **Walworth County**
  - **Rock County**
  - **Racine County**
  - **Kenosha County**

Summary

- **Base treatment decision on confirmed 2002 FYCRW damage**
- **Monitor w/ traps for 2004 treatment decision**