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
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