Controlling Pests in Vegetable Production

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"Uncle Earl’s Focus on Problem’s Symptom"

EARS
DAMAGE

Today’s Objectives:
- Unfreeze your mind set.
- Develop an awareness to insect dynamics.
- Provide benchmarks and thresholds.
- Develop a systems approach.
- Talk about your insects in your area.
- HOPE is not a control option.
- Develop the global experience factor.

Pest Management 101
- We have a winter.
- Must understand your losses.
- Population = Birth-Death + Disp.
- Larvae grow 1 mm/day.
- Benchmarks:
- Dispersal only measures dispersal.
- Dead adults do not lay eggs.
- Females lay eggs.
- Small plot research data is only that.

Corn Root Worm Complex

- How did we get this pest complex?
- Root ratings—Too much to do about nothing!
- Sample & Data methods - real life issues.
- Data in hand but not in use.

Develop a comprehensive root worm management system with what you have experienced.

Corn Root Worm Complex
A Management System
- Recap your "problem fields"
  - Variety, rotation, pit dates, and losses
  - Evaluate varieties / pit data under root worm pressures
  - July - pre-dispersal adult counts then get yields
- Determine economic value of soil Vs. adult
  - You know the cost, the yields
- Survey corn & soybeans by variety and pit data over weeks. Monitor vol. corn & soybean variety trials.
- Develop your crop history profile & benchmarks.
Global Warming??

Monitoring Dispersal
- Blacklight
- Pheromone

European Corn Borer
First Generation Flight Initiation

European Corn Borer
Second Generation Flight Initiation

European Corn Borer
Blacklight Summary

Dispersal Benchmarks

- **European Corn Borer**: Blacklight per night
  - Monitor sex ratio, reproductive status, & age
  - Flight: +5
  - Significant flight: +25
  - Reinfection: +100
  - Note: Females will remain in fields unless killed (2 wks).

- **Corn Earworm**: Blacklight Pheromone(males)
  - Flight: +2 +10
  - Significant flight: +5 +50
  - Reinfection: +10 +100
  - Note: Only need 25 females/acre to infest every ear!!!
"Grassy Action Sites"

Figure 5: Predicted number of ECB egg masses per corn plant, based on number of ECB larvae per 10 rows of different grass (M. E. Dengle & W. S. Stinehart).

ECB Population Trends

1997 ECB Wisconsin FALL SURVEY

2000 ECB Wisconsin FALL SURVEY

"Treatment Window"

Figure 4: The relative value of insecticide applications from 0 to 12 days before harvest (DAH) when pest pressures are present. Row width is at 20 DAH.

European Corn Borer Management Program

✓ Understand the pest dynamics.
✓ Monitor & Keep Records for Benchmarks:
  - Overwintering: (inval # / 20 Ft.)
  - Blacklight trap (See Dispersal Benchmarks)
  - Action sites (adult # / 100 sq. ft.)
  - Harvest losses (program, variety, and plt. date)
✓ Treat and evaluate control Vs. ap dates.
  - ECB grow 1mm/day (100 HU50 / Instac)
Corn Earworm
The Mother of All Pest

✓ Understand the pest dynamics & damage.
✓ Monitor & Keep Records:
  - Over wintering (Y/N):
  - Blacklight & Pheromone trap (See Benchmarks)
  - Track weather patterns & Heat Units (2,100H/U):
    - Highs =eggs / Lows = dispersal
    - Harvest losses (program, variety, and plnt data)
✓ Treat and evaluate control.
  - CEW grow 2 mm / day (100 HU/50 / Instar)

Control Dynamics

✓ Do not rely on small plot data.
✓ How to pest - crop - insecticide interact?
✓ Application - Aerial
  - Timing, gpa, RH, temp. dew point
  - droplet size, height, aircraft
✓ Define treatment window