Management of Caterpillar Pests in Soybean

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Corn Earworm (*Helicoverpa zea*)

- Primary pest of soybean in Arkansas and the Midsouth.
- The corn earworm overwinters in its pupal stage, emerges as an adult (moth) in April and May, and progresses through multiple generations by the end of the September.
- Corn earworm spends the first generation in field corn where they develop in ears before moving into soybeans and other crops.
- Moths deposit eggs on soybean leaves and stems, eggs hatch into caterpillars in two to three days and develop through six stages (instars).
- Reaching full size in about two weeks.
27 Days with South winds
Feeding and Damage

- Corn earworm feed on flowers and leaves through all instars

- Most damage occurs during the last two instars (5th and 6th) by feeding on the developing pods

- “Hey Gus I got a bunch of worms but they’re all big so I think I’ll let ‘em cycle out....”
Factors Affecting Insecticide Choice

• In 2018, many growers experienced multiple flights of corn earworm in soybean which can result in being re-infested and additional yield loss.

• Insecticides that provide residual control of succeeding populations can become a very important factor in the selection of an insecticide.
Avoiding Bollworms

• Plant part of your crop as early as possible:
  - Late March - Early April in SE AR
  - Early-Mid April in NE AR

• Narrow the row width...avoid wide rows particularly on late-planted beans

• The goal is to achieve canopy closure before bloom

• Avoid unnecessary applications (particularly pyrethroids)
# New Dynamic Threshold for Bollworm in Soybean for Arkansas and Midsouth

Assumes 90% control with application and basement threshold of 5/25

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Objective

Determine the efficacy of selected insecticides for control of corn earworm in soybeans and evaluate residual control.
Treatment List

- Untreated Check
- Diamond 9 oz
- Diamond 9 oz + Acephate 1 lb
- Intrepid Edge 4.5 oz
- Prevathon 14 oz
- Besiege 8 oz
- Comoran 9 oz
- Diamond 6.5 oz + Fanfare 6 oz
- Diamond 12 oz + Fanfare 5 oz
- Diamond 9.5 oz + Fanfare 6 oz

- Diamond is an Insect Growth Regulator (IGR)
- Acephate is an Organophosphate
- Intrepid Edge is a premix of Methoxyfenozide (IGR) and Spinetoram a spinosyn (similar to Tracer)
- Prevathon is an anthranilic diamide
- Besiege is Prevathon + lambda cyhalothrin a pyrethroid (Karate)
- Cormoran is a premix of acetamiprid a neonicotinoid insecticide and diamond
- Fanfare is bifenthrin a pyrethroid
Treatment List

• Untreated Check
• Besiege 7 oz
• Besiege 9 oz
• Prevathon 14 oz
• Prevathon 18 oz
• Intrepid Edge 3.5 oz
• Intrepid Edge 5 oz
• Steward 12 oz
• Denim 8 oz
• Denim 12 oz
• Lambda 1.82 oz
• Lambda 1.82 oz + Acephate .5 Lb

• Steward is indoxicarb, a novel insecticide group

• Denim is emamectin benzoate an avermectin (sister compound to abamectin)
Soybean Lep Efficacy 2018-2

- Bollworms/25 sweeps

- Untaxed check: 3 DA-A
- Besiege 7 oz: 6 DA-A
- Besiege 9 oz: 16 DA-A
- Prevathon 14 oz: 3 DA-A
- Prevathon 18 oz: 6 DA-A
- Intrepid Edge 3.5 oz: 16 DA-A
- Intrepid Edge 5 oz: 3 DA-A
- Steward 12 oz: 6 DA-A
- Denim 8 oz: 16 DA-A
- Denim 12 oz: 3 DA-A
- Lambda 1.82 oz: 6 DA-A
- Lambda 1.82 oz + Acephate .5 lb: 16 DA-A
• These studies indicated only Prevathon (chlorantraniliprole) and Besiege (chlorantraniliprole + lambda cyhalothrin) provided residual control of a second infestation of corn earworm.
NucleoPolyhedrovirus
HearNPV

- *HearNPV* is a virus that kills the host while making more virus
- Costs $3-6/acre
- Only kills budworm and bollworm
- **IDENTIFICATION IS KEY!**
Scouting and Target Populations

• Current threshold for Reproductive Soybeans:
  • Averages ~9 larvae per 25 sweeps

• *Hec*arNPV threshold:
  • 3-5 SMALL larvae per 25 sweeps

• **Remember**: ONLY KILLS BUDWORM AND BOLLWORM!
HearNPV Efficacy

• Most effective against larvae smaller than 0.5 inches

• Death occurs 4-6 days after infection
Confidence in an Application

• Prior to 4-6 days post application look for:
  • Reduced damage and feeding
  • Larvae moving to the top of the canopy
  • Decreased larval defense response

• After 4-6 days post application **ALSO** look for:
  • Sweating larvae
  • Liquefied larvae
Horizontal Transmission of *HearNPV*

- Abiotic conditions
- Larva-to-larva
  - Cannibalism
  - Frass consumption
  - Surface contamination
- Parasitoid-to-larva
- Predator-to-larva
Keys to Success with *HearNPV*

- *HearNPV* is a live virus – KEEP IT COOL!
- *HearNPV* ONLY kills budworm and bollworm
- Target population: 3-5 SMALL larvae per 25 sweeps
- Target larvae that are less than 0.5 inch long
- It takes *HearNPV* 4-6 days to kill the host larvae
- *HearNPV* can be spread by other insects
Soybean Loopers

What’s working?
**10 trt Soybean Lep @ Pine Bluff, 2015**

**Loopers/25 sweeps**

8 Days After Application
Sprayed August 17th, 2015

- **Karate 2.56oz/a + COC 12.8oz/a**
- **UTC**
- **Besiege 7oz/a + COC 12.8oz/a**
- **Belt 3oz/a + COC 12.8oz/a**
- **Prevathon 14oz/a + COC 12.8oz/a**
- **Steward 4.6oz/a + COC 12.8oz/a**
- **Belt 2oz/a + COC 12.8oz/a**
- **Belt 2.5oz/a + COC 12.8oz/a**
- **Intrepid Edge 4oz/a + COC 12.8oz/a**
- **Intrepid Edge 5oz/a + COC 12.8oz/a**
Soybean Looper Trial #4, 2017

Looppers/10 row feet

3 DA-A Sprayed August 25

- Warrior II 1.8 oz
- UTC
- Besiege 9 oz
- Besiege 7 oz
- Prevathon 14 oz
- Intrepid 2F 5 oz
- Steward 6.4 oz
- Intrepid Edge 3 oz
- Steward 8 oz
- Intrepid Edge 5 oz

Legend:

- "a" indicates the highest value
- "bc" indicates a lower value than "a" but higher than others
- "bcd" indicates a value lower than "bc"
- "cde" indicates a value lower than "bcd"
- "de" indicates a value lower than "cde"
- "e" indicates the lowest value
Soybean Looper Trial #2, 2017

Sprayed August 25

- Bifenthrin & Imidacloprid 6.1 oz
- UTC
- Diamond 6 oz
- Brigadier 6.1 oz
- Besiege 6 oz
- Troubador 4 oz
- Troubador 8 oz
- Troubador 12 oz
- Intrepid 4 oz
- Intrepid 3 oz
- Intrepid Edge 3 oz
- Intrepid Edge 3.5 oz
Worms not the only issue...
Did not appear to affect Caterpillar feeding
Drop me a pin...
Methoxy Looper Trial, 2018

Loopers/25 sweeps

4 DA-A  7 DA-A

Untreated: a
Methoxy 2 oz: b
Methoxy 4 oz: c
Methoxy 8 oz: def
Intrepid 2F 2 oz: bc
Intrepid 2F 4 oz: bc
Intrepid 2F 8 oz: c
tntrepid Edge 3...
tntrepid Edge 4...
Prevathon 14 oz: bc
Besiege 7.5 oz: bc
Warrior II 3.65...

Legend:
- a
- b
- c
- def
- bc
- c
tef
- c
- cd
- bc
- bc
- bc
- bc
- bc
- bc
- bc
- ab
Soybean Looper Virus – Chrysogen coming soon to a field near you!
Entomology Crew - 2018
Hardest Working Crew in Arkansas
arkansascrops.com
Twitter: @guslor77
Pest Patrol Hotline: To: 97063 Text: Pestpat6