2020 Pest Management Updates: Insects

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Topics

Insecticide updates
EPA reregistration/review of neonics
Season in review:
  flea beetles in corn, potato leafhoppers, soybean aphids, BMSB, grasshoppers, corn lodging,
WI Soybean Gall Midge Survey
CRW Bt Resistance news and discussion
Insecticide Updates

Index
- AMVAC
- liquid at-plant insecticide for use on corn only
- chlorethoxyfos + bifenthrin (IRAC 1B, 3)
  sold as SmartChoice in granular formulation
- low rate (Cutworm, SCM, WW, WG)
- high rate (corn rootworms)
- in-furrow placement only
Insecticide Updates

Sefina
-BASF
-active ingredient: afidopyropen (IRAC code 9D)
-Piercing/sucking insects
  soybean aphid
Insecticide Updates

Intrepid Edge
- Corteva
- active ingredients: methoxyfenozide + spinetoram (IRAC 5, 18)
- Soybean & corn
  specific to lepidopterous larvae
  e.g. soybean looper, green cloverworm, ECB, WBC, true armyworm
Insecticide Updates

Lorsban

- Corteva will cease production
- legally available to purchase/use
- Reason: other insecticides available to fill niche
- Manufacture/formulation of chlorpyrifos containing products (generics) is up to those registrants
Insecticide Updates

Neonicotinoid Reregistration Update

- Process started 2011
- proposed interim decision January 2020
- EPA acknowledges:
  ✓ important management tool for growers
  ✓ Significant ecological risks remain
    ▪ Pollinators
    ▪ Aquatic invertebrates
Neonicotinoid Reregistration Update

➢ No significant changes for poncho, cruiser use as seed treatment in corn and soybean*

*However, to mitigate dietary risks to mammals/birds consuming treated seed
  • Cover or collect treated seeds spilled during loading and planting
  • Dispose of all excess treated seed by burying seed away from bodies of water.
  • Do not contaminate bodies of water when disposing of planting equipment wash water
Proposed label changes to reduce off site movement from ground applications

✓ Includes products such as Alias, Belay, Justice, Endigo, Leverage
✓ Windspeed and droplet size restrictions
✓ Do not spray during an air inversion
✓ Do not apply by ground within 25 feet of lakes, reservoirs, rivers, permanent streams, marshes or natural ponds, estuaries and commercial fish farm ponds.
2020 in review

Flea beetles in corn
✓ Increased number of calls, 2020
✓ Defoliation concern in seedling corn (only)
✓ Vector of Stewart’s Disease
  • Bacteria
  • OW in adult flea beetle
  • Greatest concern in seed and sweet corn production
✓ OW index to estimate Stewart’s Disease severity
Potato Leafhopper

- High 2020 populations
  - Usual migration timing
  - Hot/dry weather
- New seeding need timely scouting
  - Longer time period between cutting
  - Allows for higher population densities
  - Younger, more susceptible plant
Potato Leafhopper

Established stands

- Later cuttings had significant problems
- Some cuttings had 2 applications----Watch PHIs!
- 2020 showcased need for scouting
  - Insect “desert” after cutting established stands
  - Adult PLH will recolonize when ………………..?
- 5-7 day + residual from foliar applications.
- Timely applications is important
- Timely field scouting:
  - Predicts IF application needed
  - Predicts WHEN application is needed
  - Reduce/increase insecticide use/higher ROI
Soybean Aphid

- 2020 uptick in populations
- Calls started early, ended late
- Aggravated by TSSM (NW, NC)
- Always monitor populations of SBA and TSSM at same time
  - Practice the “Spirit” of SBA Economic Threshold by understand the relationship of Economic Threshold w/ Economic Injury Level

✓ Multiple visits help!
Soybean Aphid/TSSM MGMT.

➢ Jensen’s Management Preference?

SBA decisions; adventurous
  ▪ Low risk of catastrophic “no spray” decision
TSSM decisions; conservative
  ▪ Hard to play “catch up”

➢ Choose insecticide/miticide wisely
  ▪ Control scenarios
    1. SBA alone
    2. SBA + low level of TSSM
    3. SBA + TSSM
    4. TSSM + low level of SBA
    5. TSSM alone
Miticide choices

- Mite activity only
- Mite and SBA activity w/ no known SBA resistance
- Mite and SBA activity w/ known SBA resistance

<table>
<thead>
<tr>
<th>Product (AI, IRAC Code)</th>
<th>SBA Activity (know resistance +/-)</th>
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<tbody>
<tr>
<td>Agri-Mek (abamectin, 6)</td>
<td>No</td>
</tr>
<tr>
<td>Zeal (etoxazole, 10B)</td>
<td>No</td>
</tr>
<tr>
<td>Dimethoate (3)</td>
<td>Yes (-)</td>
</tr>
<tr>
<td>Brigade, Fanfare (bifenthrin, 4)</td>
<td>Yes (+)</td>
</tr>
<tr>
<td>Cobalt (chlorpyrifos 3, gamma-cyhalothrin 4)</td>
<td>Yes (+ chlorpyrifos)</td>
</tr>
<tr>
<td>Cobalt Advanced (chlorpyrifos 3, lambda-cyhalothrin 4)</td>
<td>Yes, (+, both AIs)</td>
</tr>
<tr>
<td>Hero (zeta-cypermethrin 4, bifenthrin 4)</td>
<td>Yes (+ bifenthrin)</td>
</tr>
<tr>
<td>Lorsban (chlorpyrifos 3)</td>
<td>Yes (+)</td>
</tr>
<tr>
<td>Skyrider (bifenthrin 3, imidacloprid 4)</td>
<td>Yes (+ bifenthrin)</td>
</tr>
<tr>
<td>Tundra supreme (chlorpyrifos 3, bifenthrin 4)</td>
<td>Yes (+ both active ingredients)</td>
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Insect Update

Brown Marmorated Stink Bug
- populations building in urban settings
- field crops soon

Grasshoppers
- pest during drought years
- **AND** the following year
WI Soybean Gall Midge Update

ID/Symptoms/research update/management

Agribusiness Classic talk by Justin McMechan, Univ. of NE-Lincoln
WI Soybean Gall Midge Survey Update

Grant from North Central Soybean Research Program
-Principal Investigator: Justin McMechan, UNL
-survey $ to all MW universities

DATCP conducted survey
WI Soybean Gall Midge Survey Results

- 50 WI Counties
- 180 sites
- R2-R6
- *No detects!!*
Corn Lodging; 2020

- Intense wind and rain events early/mid July when corn was at/near tassel
- “Rootworms do cause lodging. Not all lodging is a result of rootworm feeding”
- Dig, don’t assume
Corn Rootworm Resistance to Bt hybrids

- 2020 EPA confirmed western corn rootworm resistance to Cry34/35Ab1 protein
- 1 field in SW Wisconsin
- Only protein that has confirmed resistance in WI according to EPA definition of resistance (10X rate to kill resistant vs susceptible population)
However!

➢ As crop advisors, our bar for resistance is much lower

➢ “field resistance” more practical terminology

   • When product doesn’t control an insect as expected

   and/or

   • Economic loss
State of Bt Field Resistance in WI

- Western CRW 4/4 Bt proteins has field resistance concerns in WI
  - Cry34/35 Ab1 (herculex)
  - Cry 3Bb1 (yieldgard)
  - mCry 3 Ab (agrisure)
  - eCry 3.1 Ab (durcade + mCry3Ab)

- Northern CRW 2/4 proteins (ND 2018)

- Approx. 20 trait families (source: Handy Bt Trait Table, DiFonzo, Porter)
  - Single gene
  - Pyramids
    - Unique combinations offered by companies
    - Similar combination across companies
Widespread Field Resistance in WI???

- Certainly, local issues
  - Areas of continuous corn
  - Fields w/ history of continuous use of the same (or similar) Bt protein
- Not always talked about
- Rarely reported
Concerns

Damage is below ground and hidden until too late

Path to resistance
   Not a +/- situation
   gradual shift

Dig roots to determine efficacy
Practice corn rootworm IPM

➢ DATCP indicates CRW populations are up
➢ Don’t assume a silver bullet is (will be) available
➢ Scout for adults during egg laying
  • Scouting allows for all options to be on the table
➢ Dig roots late-July/August
CRW IPM (continued)

- Rotate Bt protein every two years
  - Annual rotation is better
  - Cross resistance known for Agrisure, YieldGard and Duracade

- Diversify management practices
  - Rotation
  - Seed Treatments
  - Soil applied insecticides
  - Bt CRW Hybrids
    - on non-Bt CRW hybrids
Future of Bt Resistance

➢ Not going away

➢ Likely will get worse

➢ Can’t set the clock back
  ✓ Doesn’t appear to be a fitness cost to Bt resistance
Debatable Management Practices for WI

➢ Adult control
  ✓ For control of very high populations that would overwhelm any 1 viable management practice
  ✓ If needed (?) for normal population densities: consider why needed and determine the cause?
  ✓ Consider rotation instead
  ✓ Foliar insecticides are short lived
  ✓ Increases costs
  ✓ Timing must be right
  ✓ Is a Resistance Mitigation tool for resistance
  ✓ Not a stand alone
Debatable Management Practices for WI

- Bt hybrids + soil applied insecticides
  - ✓ For (verified by scouting) very high CRW populations
  - ✓ If needed (?) for normal population densities, consider why?
  - ✓ Don’t use insecticide as a cover up for a compromised Bt protein
  - ✓ Not a resistance management practice
  - ✓ Increases cost of production