

# 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



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# Insecticide Updates

## Index

- AMVAC

- liquid at-plant insecticide for use on corn only

- chlorothoxyfos + bifenthrin (IRAC 1B, 3)

  - sold as SmartChoice in granular formulation

- low rate (Cutworm, SCM, WW, WG)

- high rate (corn rootworms)

- in-furrow placement only



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# Insecticide Updates

## Sefina

-BASF

-active ingredient: afidopyropen (IRAC code 9D)

-Piercing/sucking insects  
soybean aphid



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# 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



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# 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



[University of Illinois at Urbana-Champaign](https://www.illinois.edu),  
[Bugwood.org](https://bugwood.org)



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# 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

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

# Insect Update

## Brown Marmorated Stink Bug

- populations building in urban settings
- field crops soon

## Grasshoppers

- pest during drought years
- AND the following year



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# WI Soybean Gall Midge Update

ID/Symptoms/research  
update/management

Agribusiness Classic talk by Justin  
McMechan, Univ. of NE-Lincoln



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# 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



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# WI Soybean Gall Midge Survey Results

- 50 WI Counties
- 180 sites
- R2-R6
- *No detects!!*



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# 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 know for Agrisure, YieldGard and Duracade

- Diversify management practices

  - Rotation

  - Seed Treatments

  - Soil applied insecticides  
on non-Bt CRW hybrids

  - 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

