Insect Management in Conventional Hybrids

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Considerable interest is using conventional corn hybrids

- Managing CRW resistance
- Reduce input costs

Why high adoption rate of conventional corn hybrids?

Convenience?

Is your grower ready to “go conventional”?

Will have to provide some assistance during the transition

Using conventional hybrids to maximize economic potential

- Requires advanced preparation
  - Training/experience
    - Scouting protocol
    - Use of Economic Threshold
    - Knowledge of management recommendations
  - Understand it will increase labor

Below Ground (CRW) traits fit into an IPM Program

- Assuming you are making that decision based on beetle scouting information
  - Beetle counts in August
  - Purchase hybrids needed in fall/winter

- Going w/o GMO corn & w/o beetle counts
  - Some savings the first year (2017)
    - Probably decide to treat
  - Full savings the second year (2018)

Switching from Below Ground Traits?

Points to consider

Alternative methods of CRW control

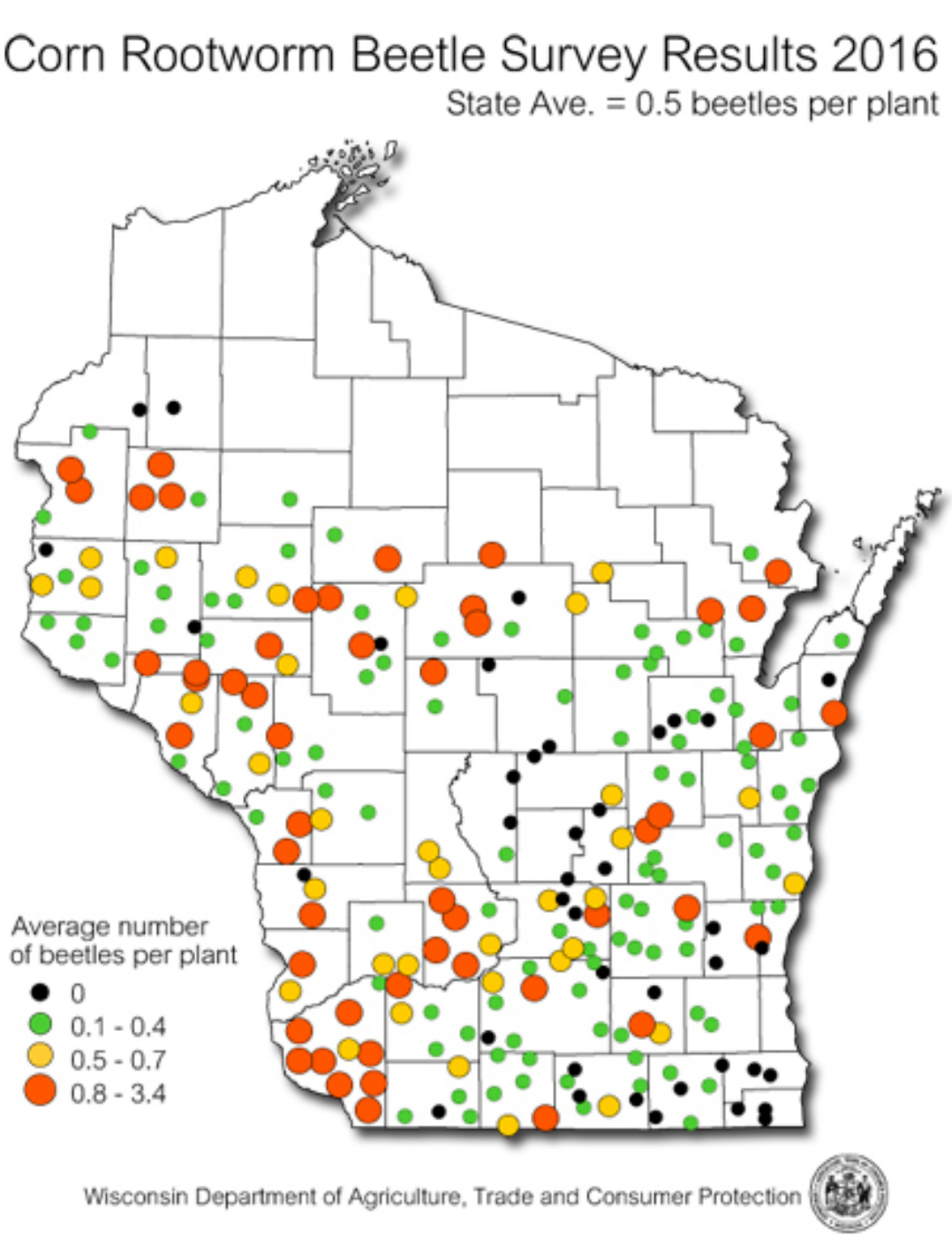
- Rotation
- At-Plant, Soil-applied insecticides
  - T-Banded or Furrow
    - Granules
    - Liquids
  - Applied with liquid fertilizer
- Seed treatments

Field Monitoring

- Dig/rate roots for larval damage
  - Gain confidence w/ management decision

- implementing beetle scouting
  - 2016 DATCP Beetle Survey

2016 DATCP CRW SURVEY Data



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- Assume grower will have to treat continuous corn (?)
- Is the planter equipped w/ insecticide boxes or plumbed for liquid insecticides/liquid fertilizer
- If not, what are the costs?

Costs of application equipment

- Insecticide Boxes
  - Used: $75- $250/box
  - New: $400-$500/row
  - New Smart boxes: W/O mounting brackets
    - $400/row (48 row)- $500/row (12 row)
  - 3Rive3D system
    - $27K (24 row) $20K (12 row)
    - Rebates include on product purchase ($60/gal?)

Remember !!

Most at plant insecticide treatment options for corn rootworms are Restricted Use Pesticides.

Exceptions:

Lorsban 15 G

Seed treatments

Efficacy of Soil Applied insecticides

UW CRW Efficacy Trials

- Iowa State Nodal Injury Scale (NIS)
  - 0-3 scale
- Consistency Data from 2001 to 2013
  - Acceptable control=NIS 0.50

    &
  - UTC ≥ 1.0

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UW CRW Efficacy Trials

- Plots conducted at UW Arlington ARS
- Plots planted following late planted corn (trap crop
  - Guarantee damage
  - Guarantee high pressure
- only used data from treatments applied at current CRW label rate
- Data from experimental formulations not used
- All placements used (furrow and T-band) and applications methods combined (open or closed delivery system)

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Insecticide	type	Consistency of Performance
Aztec 2.1G **Aztec 4.67G**	Granule, soil applied	21/30 2/3
Capture LFR	Liquid, soil applied	3/8
Counter 15G **Counter 20G**	Granule, soil applied	4/5
Force 3G	Granule, soil applied	18/29
Force CS	Liquid, soil applied	9/9
Lorsban 15G	Granule, soil applied	6/18

Efficacy of seed treatments*

Insecticide	type	Consistency of Performance
Cruiser	Seed treatment	2/6
Poncho	Seed treatment	3/9

*Corn planter after trap crop

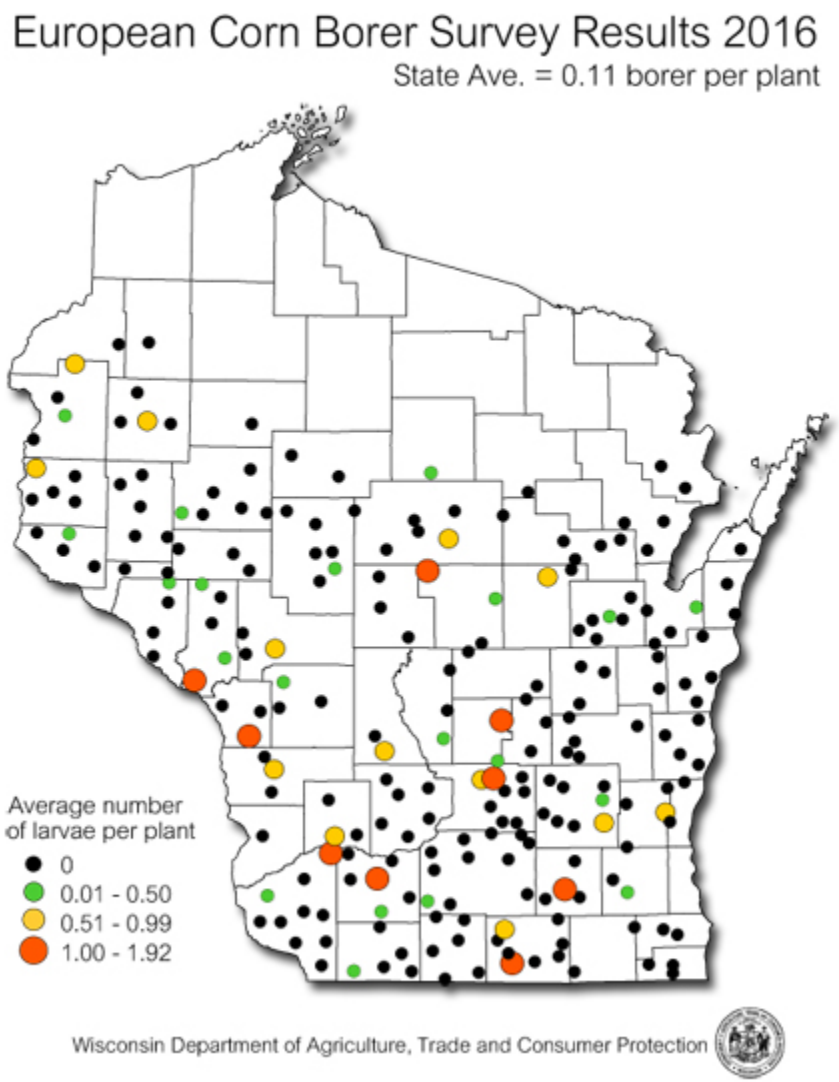
Managing above ground insects w/ conventional hybrids

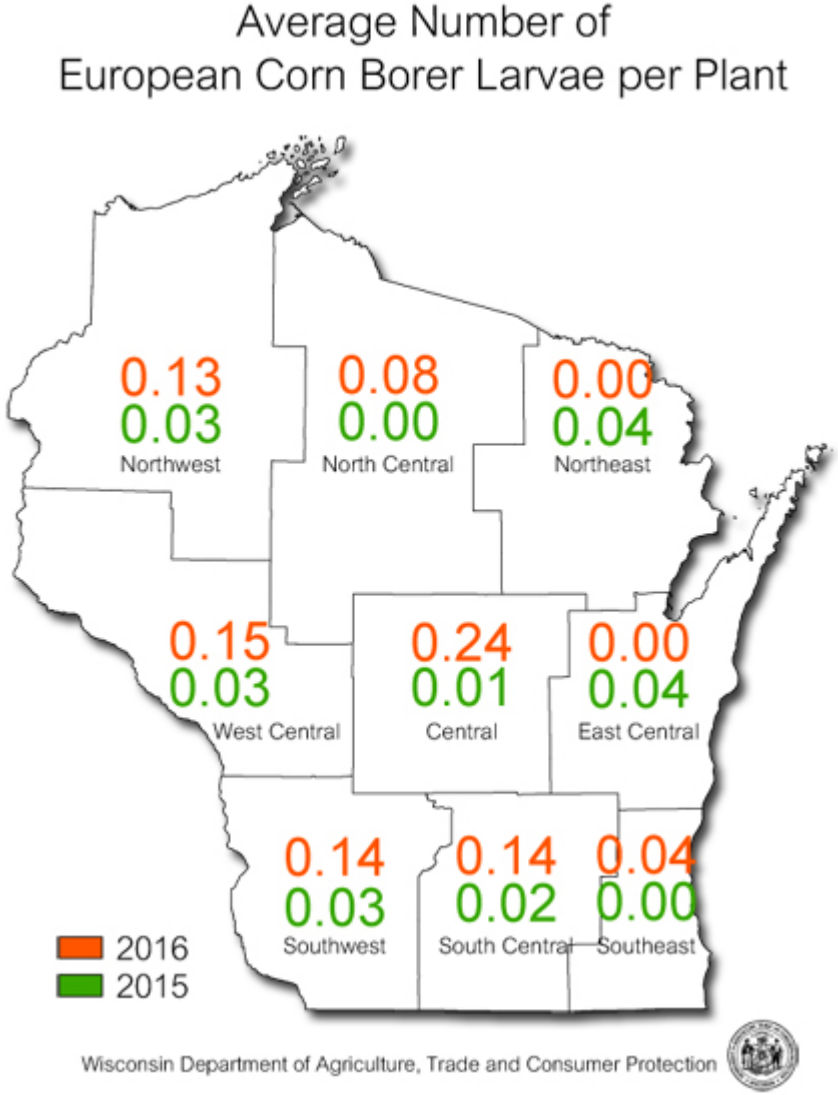
Above ground traits do not fit into an IPM Program

- Make the decision to buy a GMO hybrid prior to knowing insect population

  - Will there be $ value in that decision??

DATCP ECB Survey





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ECB populations

- 2015 ECB populations was low on record in the 74 year history of the DATCP Survey
- Populations up slightly in 2016
  - locally heavy ECB populations
- Difficult to predict future potential, but…….

First Generation ECB control w/ conventional hybrids

- DATCP Blacklight reports
- Start spot checking at 600 DD (base 50)
  - -Earliest planted corn
- Scouting protocol/ET established
  - % plants infested, # larvae/plant, yield, selling price
  - A3646, Pest Management in WI Field Crops
- Treatment Period 800-1000 DD
- Management is straightforward

Second Generation ECB Control w/ conventional hybrids

- Initiate Scouting: 1550 DD
- DATCP Blacklight trap reports
- Late planted corn most attractive
- Scouting Protocol and ET developed
- Management is more difficult than 1st Generation
  - Long flight period
  - Requires high clearance sprayer, aircraft

Black Cutworm Biology

- Migrates to WI each spring
- Occasional problem on seedling corn
- Nocturnal feeding
- Each larvae can cut several plants
- Damage symptoms
  - Leaf feeding
  - Cut plants
  - Burrow into seedling plants below ground
- Damage usually completed by V5

Black Cutworm Scouting

- Follow DATCP's BCW pheromone trapping results
- Spotcheck fields
  - Corn after soybean
  - Spring broadleaf weed growth (especially winter and cool season annuals)
  - Low/wet area
- Count damaged plants,
- Threshold 5% cut plants

Black Cutworm Damage

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Managing Black Cutworm in conventional hybrids

- Threshold 5% cut plants
- Insecticides
  - At plant, soil applied insecticides
  - Foliar applied insecticides
    - Bt's
    - Carbmates
    - Diamides
    - Neonic seed treatments
    - Organophosphates (insecticide/herbicide interactions)
    - Synthetic pyrethroids (do not cultivate after treatment)

Western Bean Cutworm