Insect Development and Current Risks – Culprits to be Watching For

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Topics

- Alfalfa
  - Alfalfa Weevil: Current situation
  - Potato leafhopper
- Diagnosing early season insect pests on corn
  - Seed corn maggot
  - White grubs
  - Wireworms
  - Black cutworm (sandhill cutworm)
  - Stalk borer
  - Hop vine borer
  - True Armyworm

- Excellent first alert bulletin
- Wisconsin Department of Ag., Trade and Consumer Protection (DATCP)
- Weekly report of Wisconsin's pest conditions
- Free electronic subscription
  - https://datcpservices.wisconsin.gov/pb/subscribe.jsp
  - Google: Wisconsin Pest Bulletin

Wisconsin Crop Manager

- Free weekly newsletter

  send blank email, no subject line to:

  wisconsincropmanager@lists.wisc.edu
- Written by UW Division of Extension Staff
- Weekly Topics include (but not limited to)

  Crop Management

  Pest Management

  Nutrient Management

  -etc, etc,

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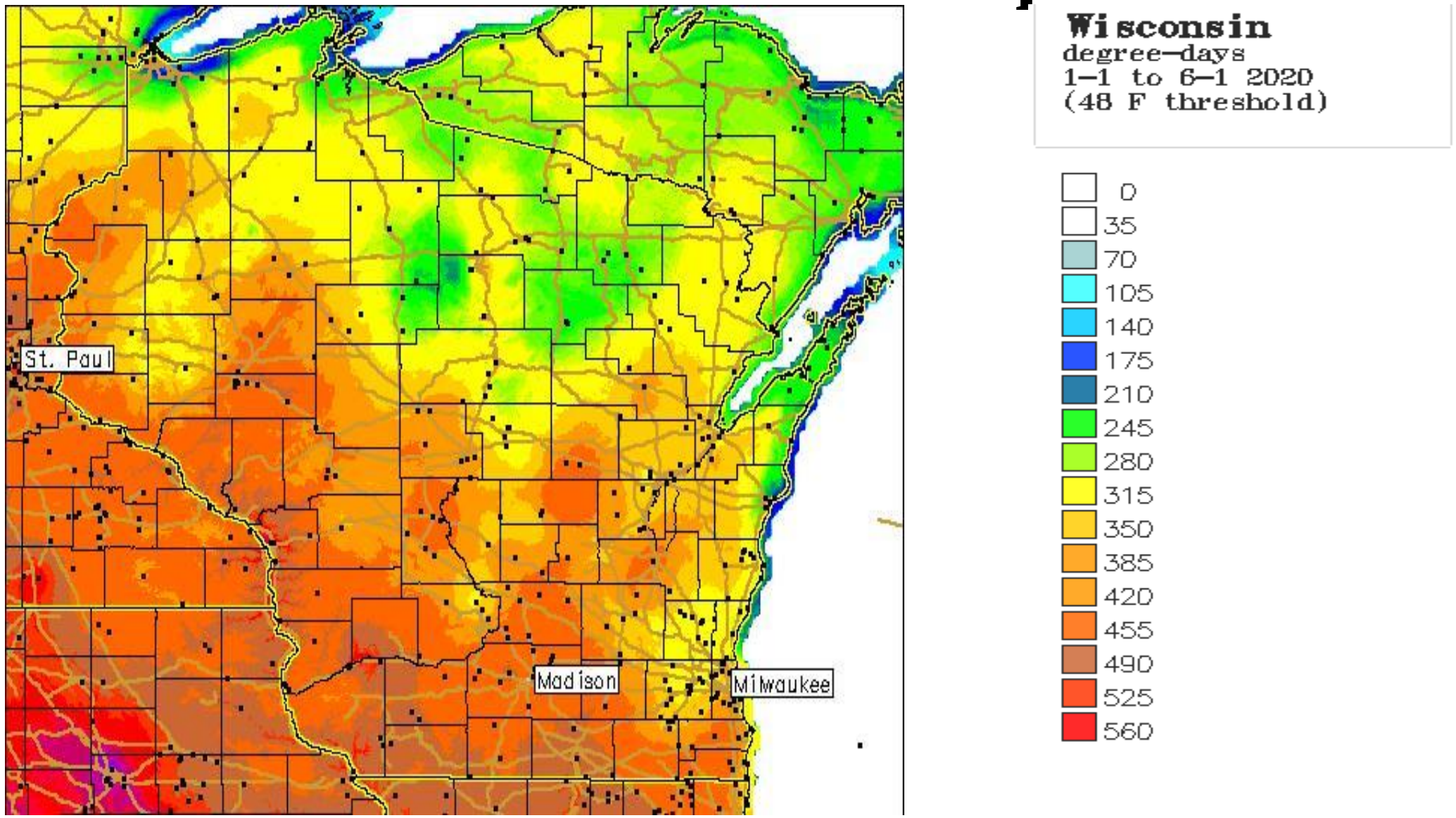
Current Alfalfa Weevil Development



Alfalfa Weevil DD

Stage	Accumulated DD (base 48^0F)
Egg Hatch/Scouting	300
1st instar	371
2nd instar	438
3rd instar	504
4th instar	595
Pupae	814

2020 Weevil Considerations

- Alfalfa development ahead of typical weevil development
- Typically, weevil damage peaks at first crop harvest
- Harvest (usually) kills larvae

- 2020 we may see a peak of larval feeding in early second crop?
  - Harvest may not be a control option
  - Second crop threshold 50% stems with leaf feeding
    - ✓Recent feeding
    - ✓Watch for pupae

Potato leafhopper Watch

- They are here!
- Damage potential for 2020?
- Hot/Dry weather drives populations
- 4-5 generations/summer
- Damage
  - First crop, NO
  - 2nd crop,??
  - 3rd and later cuttings
  - New seedings!!!
    - Young plants
    - Longer time between cuts

Potato Leafhopper Management

- Scout!!
- Don't automatically spray stubble
  - May be wasted
  - May be poorly timed
  - Nymphs die
  - Adults leave
  - Adults may recolonize
- Scouting will better time an application, if needed
  - 5 sets of 20 sweeps
- New seeding considerations
  - Longer time between cuttings>>higher populations
  - Nymphs may survive cutting
  - Adults may not leave field

Economic Threshold	
Alfalfa Ht	# plh/sweep
3 inch	0.2
6 inch	0.5
8-11 inch	1.0
12 +	2.0

Diagnosing Early Season Insect Damage to Corn

- Several insect species with common symptoms
  - Seed feeding (Skips in row)
  - Holes in leaves
  - Wilted whorl
  - Wilted/stunted plants
  - Cut plants

Keys for Troubleshooting

- Respond quickly
  - More available clues
  - More rescue options
- Insects are only one possible problem for poor stands
- Find the insect…… if possible
- Consider the full range of signs and symptoms.
- Use field history to narrow down list of potential insects.
- Symptoms found in other fields of corn w/ the same planting dates.

Keys for Troubleshooting

- Are holes found in the leaf?
  - From above ground feeding?
  - From below ground feeding
- Entrance hole above/below ground
- Which leaves are affected
  - First leaf only (cotyledon)
  - Leaves emerging from whorl
- Field distribution (random/clumped)
- May have mixed populations of 2 or more species

Seed Corn Maggot

- Adult fly, larvae is headless/legless maggot
- Below ground feeding (only)
- Range of Symptoms
  - Skips in row
    - Dig up look for damaged seed and perhaps maggot
  - Small holes in cotyledons
    - Emerged plants will be OK
    - use this symptoms to confirm SCM
    - Do other corn/soybean fields with similar planting dates have similar injury?
  - Damage tends to be random w/in a field

True White Grubs

- 3-year life cycle
  - 2 years as grub
    - Easy to find
    - small and large grubs possibly in same field
  - 1 year as adult
- May have mixed generation in a field
- Feed on roots
- May burrow into seedling <u>below</u> ground
- Field History: Corn after pasture, sod, alfalfa
- Symptoms
  - Stunted plant
  - Wilted plants
  - Perhaps dead heart

Wireworms

- Several species
- Long lifecycle
- Feed on
  - Seeds
  - burrow into seedling below ground
  - at or above growing point
- Field History:
  - Corn after pasture, sod, alfalfa
  - May be specific to soil type
- Symptoms
  - Poor emergence
  - Holes in leaves
  - Wilted plants
  - Perhaps dead heart
  - Clumped distribution w/in field
- Move deep w/in soil profile in summer

Black cutworm

- Migrate to WI
- We are at or near the “cutting” period in corn
- Damage symptoms vary by larval size and corn size
  - Small larvae: leaf feeding
  - Large larvae/small corn (V1-V2): cut plants
  - Large larvae/large corn (V3-V4): wilted whorl/dead heart/wilted plants
    - Larvae burrow into corn <u>below</u> ground

Black cutworm

- Start scouting now.
- Spot check corn planted
  - after soybean
  - After broadleaf cover crop
  - broadleaf weed problems
  - Low/wet areas

Sandhill cutworm

- Overwinter in WI as larvae
- Commonly found in sandy soils
- Translucent coloration
- Damage is completely below ground
  - No rescue treatments
  - Wilted whorl/dead plants

Stalk Borer

Hop Vine Borer

Stalk Borer

Hop Vine Borer

Stalk Borer

- Field Edge (clumped)
- Easily found
- Entrance hole above ground
  - Holes in leaves
  - Dead heart/wilted whorl

Hop Vine Borer

- Field Edge (clumped)
- Easily found
- Entrance hole below ground
  - Only wilted plant
  - No holes in leaves

True Armyworm

- Migrate to WI
- Start Scouting now
  - (summer generation approx. late June through July)
- Where?
  - Wheat fields
  - Corn
    - After grass cover crop
    - Fields with grassy weed problems
    - Fields next to marshes, pastures, and other grassy non-crop areas

Early corn insect damage	Seed corn maggot	White grub	Wireworm	Black cutworm	Stalk borer	Hop vine borer	Sandhill cutworm	True armyworm
What crop stage(s) is damage occuring?	Seed to VE	VE to V4+	Seed to V5+	VE-V5	V1/V2+	V1/V2+	VE-V4+	V4-V10+
Is there poor emergence and/or seed feeding?	Yes	No	Yes	No	No	No	No	No
Is the leaf feeding from the leaf margin in?	No	No	No	Yes, early instars	No	No	No	Yes
Are there holes in the leaf?	Cotyledon only	No	Yes	Possible, early instars	Yes	Yes	No	Possible, but edges ragged
Do plants have a wilted whorl (dead heart)?	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Are plants wilted or stunted?	No	No	No	Yes	No	No	Yes	No
Are plants cut at soil surface?	No	No	No	Yes	No	No	No	No
How is the damage distributed in the field?	Random	Clumped	Clumped	Clumped (usually)	Clumped	Clumped	Clumped	Random (usually)

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Looking to the future

- Japanese Beetle
  - Above average populations??
- European corn borer
  - Lowest populations on record
  - Spot check corn > 18 inches extended leaf stage
- Western Bean Cutworm
  - 1350 DD
  - Watch WI Pest Bulletin
- Soybean aphid
  - Very Low 2019 populations
  - Opportunist