Early Season Insect Update

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Topics

- **Introduction to Vegetable Disease and Insect Forecasting Network**
  - DD Calculator
  - Includes common Field Crop Insect
- **Insect Updates:**
  - Alfalfa weevil
  - Black Cutworm
  - True Armyworm
  - Slugs
- **Diagnosing early season insect pests on corn**
  - Seed corn maggot
  - Black cutworms
  - White grubs
  - Wireworms
  - Stalk borer
  - Etc.

Wisconsin Vegetable Disease and Insect Forecasting Network

- **Degree Day Calculator**
  https://agweather.cals.wisc.edu/vdifn

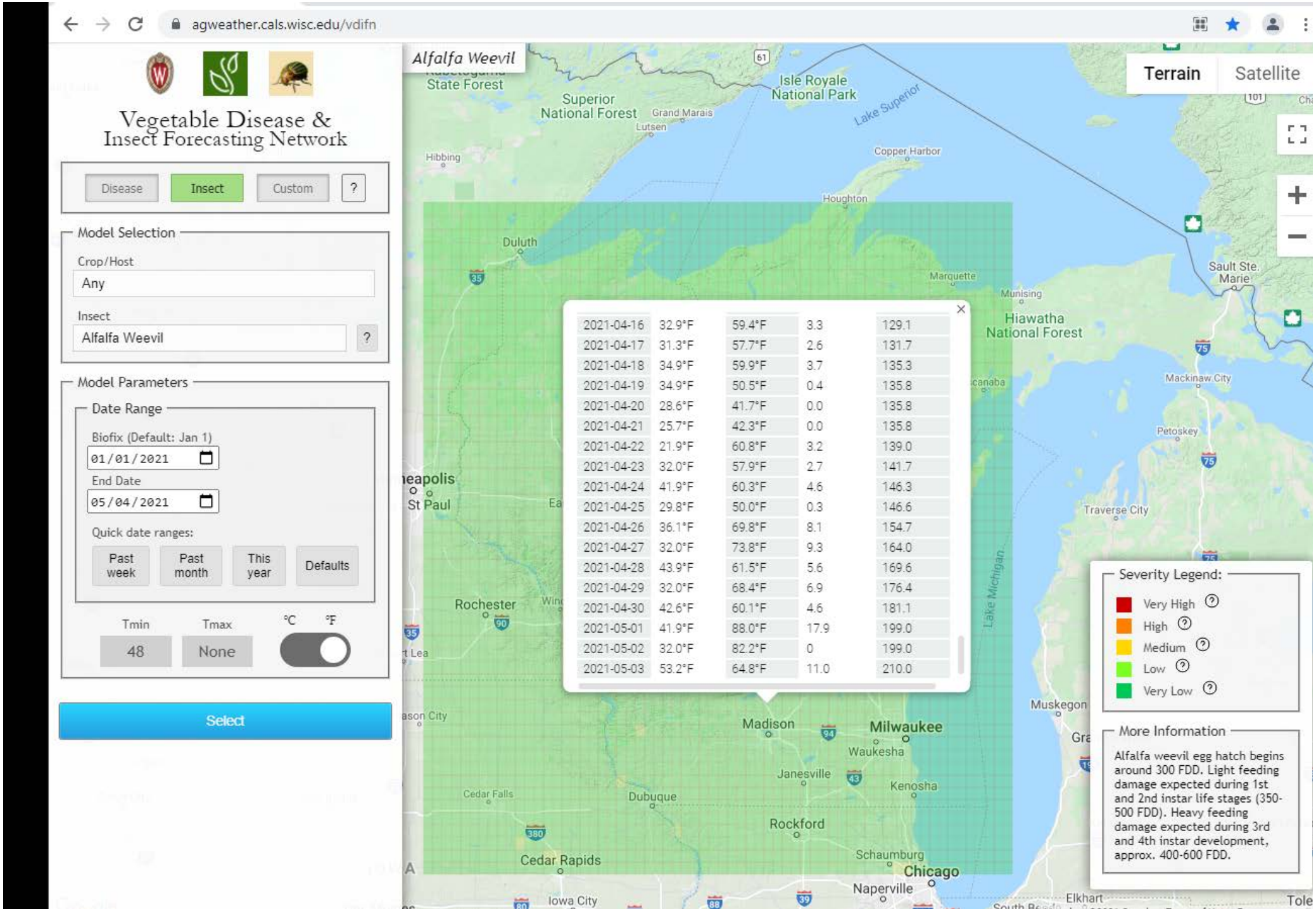
  Search: Wisconsin, Disease, Insect Forecasting
- **Several Field Crop Insect Calculators Available**

  Alfalfa weevil

  Seedcorn Maggot

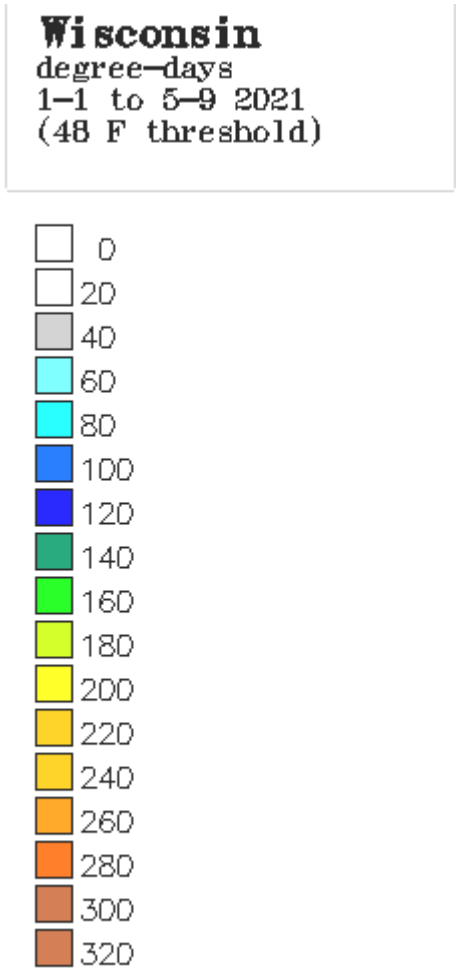
  European Corn Borer

  Western Bean Cutworm
- **Easy to use!!!!!!!!!!!!**


agweather.cals.wisc.edu/vdifn
Vegetable Disease & Insect Forecasting Network
Disease
Insect
Custom
?
Model Selection
Crop/Host
Any
Insect
Alfalfa Weevil
?
Model Parameters
Date Range
Biofix (Default: Jan 1)
01/01/2021
End Date
05/04/2021
Quick date ranges:
Past week
Past month
This year
Defaults
Tmin
Tmax
°C
°F
48
None
Select
Alfalfa Weevil
Terrain
Satellite
Isle Royale National Park
Superior National Forest
Grand Marais
Lutsen
Lake Superior
Copper Harbor
Houghton
Hibbing
Duluth
Marquette
Munising
Hiawatha National Forest
Sault Ste. Marie
Mackinaw City
Petoskey
Traverse City
Lake Michigan
Rochester
Madison
Milwaukee
Waukesha
Janesville
Kenosha
Dubuque
Cedar Falls
Rockford
Cedar Rapids
Schaumburg
Chicago
Naperville
Muskegon
Elkhart
Iowa City
St Paul
2021-04-16 32.9°F 59.4°F 3.3 129.1
2021-04-17 31.3°F 57.7°F 2.6 131.7
2021-04-18 34.9°F 59.9°F 3.7 135.3
2021-04-19 34.9°F 50.5°F 0.4 135.8
2021-04-20 28.6°F 41.7°F 0.0 135.8
2021-04-21 25.7°F 42.3°F 0.0 135.8
2021-04-22 21.9°F 60.8°F 3.2 139.0
2021-04-23 32.0°F 57.9°F 2.7 141.7
2021-04-24 41.9°F 60.3°F 4.6 146.3
2021-04-25 29.8°F 50.0°F 0.3 146.6
2021-04-26 36.1°F 69.8°F 8.1 154.7
2021-04-27 32.0°F 73.8°F 9.3 164.0
2021-04-28 43.9°F 61.5°F 5.6 169.6
2021-04-29 32.0°F 68.4°F 6.9 176.4
2021-04-30 42.6°F 60.1°F 4.6 181.1
2021-05-01 41.9°F 88.0°F 17.9 199.0
2021-05-02 32.0°F 82.2°F 0 199.0
2021-05-03 53.2°F 64.8°F 11.0 210.0
Severity Legend:
Very High
High
Medium
Low
Very Low
More Information
Alfalfa weevil egg hatch begins around 300 FDD. Light feeding damage expected during 1st and 2nd instar life stages (350-500 FDD). Heavy feeding damage expected during 3rd and 4th instar development, approx. 400-600 FDD.

Alfalfa Weevil

- (Mostly) first crop pest
- Start scouting at 300 Weevil Degree Days (WDD)
  - Initial and light damage at 300 WDD
  - Expect heavy feeding at 400-600 + WDD
- Damage can be spotty


Wisconsin
degree-days
1-1 to 5-9 2021
(48 F threshold)
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
320

Alfalfa Weevil Mgmt

- First crop threshold: 40% Tip feeding
  - (4/10 stems have feeding signs)
  - Measure of feeding incidence
- Usually, timely harvest is best control
- ET may be reached if harvest delayed by weather or weevil development is early
- Management checklist
  - Check Pre-Harvest Interval (PHI) of insecticide first
    - Varies by rate, insecticide (1-21 days)
  - Assess harvest ability
  - Possible harvest scheduling techniques
    - Harvest heavy infested/unsprayed fields first
    - Spray heavy infested fields (with appropriate PHI) and harvest low infested fields first
- Warning: for heavily infested fields scout 2nd crop regrowth for injury

Black Cutworms

- Adult Moths are migrating from southern states
- Significant adult catches (9+ moths in 2 consecutive nights)
  - 7 WI counties
  - Dane, Dodge, Fond du Lac, Green, Iowa, Lafayette, Pepin
- Counties in SC and SW Minnesota
- 8 Counties in Iowa
- Indiana (27 locations)

What does this mean for WI?

Consider this an early warning

But:

- False Positives
- False Negatives
  - Nights have been cool

BCW Scouting

- Initially target fields with:
  - Soybean residue
  - Low growing broadleaf weeds
  - Low lying areas of fields
- Provides information on potential severity
- Use that information to determine scouting intensity

Black Cutworm Mgmt.

- Avoid prophylactic treatment (Pre-emerge + insecticide)
  - Maybe unnecessary
  - Poorly timed

- Scouting will provide early warning

- Field symptoms:

BCW Symptoms

- Small cutworms
- Holes in leaves
- Consider an early warning for economic damage
- **NOT** diagnostic of only BCW
  - Wireworms
  - White grubs
  - Stalk borer
  - Billbug
  - Seedcorn maggot
  - Dingy cutworm

BCW Symptoms

- Large larvae on Small Plants
- Cut plants @ ground level
- May cut several plants
  - 4th instar (7 total) may cut up to 3, V2 plants
  - 7th instar only cut 1 more plant

BCW Damage

- Large larvae on V3/V4 plants
- Deadheart/wilted whorl
- NOT diagnostic of only BCW
  - Wireworm
  - White grub
  - Sandhill cutworm
  - Etc.
- Reduced control can be expected at this point in time

BCW Management

- Control compromised IF soil is dry
- Most above ground traits will offer some control
- Threshold:
  - ✓If larvae < ¾ inch: 3% damaged plants
  - ✓If larvae > ¾ inch: 5% damaged plants

  - ✓IF larvae greater than ~ 1 inch……ROI reduced

True Armyworm

- DATCP pheromone traps picking up some migrants
  - 40-50/week late April/early May
  - Dane and Fond du Lac Co,
- Purdue University has had some intense catches
- Relatively cool nights
- Fields of interest:
  - Small grains
  - Corn
    - Planted in grass cover crop
    - Early grassy-weed problem
    - Corn no-tilled into alfalfa
    - Not always predictable

-Tan head with prominent veins in compound eyes

-Longitudinal strips (dark/light)

-Overall body coloration: light to dark

-Yellow/light colored abdomen

True Armyworm

Wheat and other small grains

- ✓ ET >3/sq ft.
- ✓ infestations typically higher in lodged area
- ✓ Head clipping/flag leaf protection is greatest concern
- ✓ PHI can be a “deal breaker” 14-30 days

True Armyworm

Corn

- Spring Generation ET: 50% of plants with feeding
- If > 1 ¼ inch don't spray

Control using above ground traits: VIP 3A

Soybean ??

Slugs

2021??

Expect problems if:

✓history of slug injury

✓reduced till

✓weeds

Is there a threshold for slugs?

Slug Control

- Control recommendations can’t be one dimensional
- Habitat Management
  - ➢ Residue
  - ➢ Weed control
- Plant Early
- Plant corn (vs soybean) in known hot spots
- Don’t use neonic seed treatments if slug damage is expected
- Traditional insecticides won’t work as a rescue
- Spraying liquid fertilizer ?????
  - ✓ Contact only
- Baits?

Controlling slugs with baits

- NOT a consistent standalone, effective, economic control method
- Last resort
- Products
  - Ferroxx AQ,
    - Iron Phosphate (corn and soybean)
  - Ferroxx Slug and Snail Bait,
    - Sodium Ferric EDTA (corn and soybean)
  - Deadline Bullets/Mini Pellets/GT,
    - Metaldehyde (corn only)

Troubleshooting early season corn insect damage

Symptoms:

Poor emergence

Holes in leaf

Wilted whorl

Leaf feeding

Cut plants

Keys for Troubleshooting

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

Keys for troubleshooting

- May have mixed populations of insects
- Symptoms are not always “Classical”
- “New” Insects may be causing damage

Troubleshooting early season corn insect damage

The simple symptoms!!!

Cut Plants- Black cutworms……but they have other injury symptoms

Feeding from leaf margin in (no holes)…….Armyworm

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Poor Emergence

- Insects are only one possible problem for poor stands

Seedcorn Maggot

- Also can have holes in leaves …….but usually only on cotyledon
- Damage may be isolated to a short planting window
- Randomly distribution within field
- Heavily manured/green manure may have elevated damage

Wireworms

- Additional symptoms:
  - ✓ Also holes in leaves, usually not cotyledons
  - ✓ deadheart
- Usually, clumped distribution (by soil type)
- 2+ year life cycle

Wilted Whorl/Deadheart

Wireworm

- Also feed on seed
- Also may have holes in leaves
- Entry hole always below ground
- Larvae move down into soil profile (respond quickly)

Black cutworm

- Also cut plants and chew holes in leaves
- Found in soil at base of most damaged plants

Continued

Wilted Whorl/Deadheart

Hop Vine Borers

- Found in association with grass waterways, fence rows, grassy weed escapes
- Usually found along field edges
- Enter plant below ground

Stalk Borer

- Same field location as hop vine borer
- Also holes in leaves
- Enter plant above ground

Continued

Corn plants with wilted whorl

White grub

- Also feed on roots (stunted/yellow plants)
- Easily found during early season
- 3 year life cycle

Sandhill cutworm

- Easily found around damaged plants
- Found in sandy areas
- Overwinter
- Reoccurring if not expanding problem

Holes in corn leaves

Seedcorn maggot

- usually cotyledon only, newly emerging leaves are OK

Wireworm

- multiple symptoms
- Entry hole below ground

Stalk Borer

- Entry hole above ground
- Found on field edges or perennial grass patches
- Easily found during early season

continued

Holes in leaves

Billbugs

- Non-pest
- Damage associated with YNS and perennial grasses
- Very hard to find
- Feeding site above ground
- Plants grow out of it

Black Cutworms

- Variable symptoms

Slugs

- Longitudinal “scarring”
- Cuticle may/may not be intact
- Found in association with residue/weed growth
- Nocturnal feeding

Questions?

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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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