

# 2023 Hancock Agricultural Research Station Field Day

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### 1<sup>st</sup> Gen. CPB Foliar Trial (E-29)

This experiment includes a variety of 2- and 3-application weekly foliar protocols for managing 1<sup>st</sup> generation Colorado potato beetle. The field is divided into two blocks of 12 treatment plots in four replicates. Each block includes one untreated control and 11 treated plots. Snowden B-size tubers were machine planted on Apr 27 with a fertilizer granule mix NOT containing any insecticide. 3-application treatments were initiated at 10% egg hatch (Jun 7) and 2-application treatments were initiated the following week (Jun 14).

Trt	Product	Rate	Timing	Jul 5 Defol.
1	Untreated Check Block A			85%
2	Torac	21 fl oz/a	2x7-day	8%
	Exponent	8 fl oz/a		
	Dyne-Amic	0.25 % v/v		
3	Torac	21 fl oz/a	2x7-day	5%
	Exponent	8 fl oz/a		
	Hydrovent	0.1 % v/v		
4	Torac	21 fl oz/a	2x7-day	26%
	Hydrovent	0.1 % v/v		
	Dyne-Amic	0.25 % v/v		
5	Plemax	3 fl oz/a	3x7-day	26%
	Exponent	6.5 fl oz/a		
6	Plemax	7 fl oz/a	3x7-day	7%
	Exponent	6.5 fl oz/a		
7	Exp-1	3.5 fl oz/a	3x7-day	6%
8	Blackhawk	3.3 oz wt/a	2x7-day	17%
9	Delegate	4 oz wt/a	2x7-day	10%
10	Harvanta	9 fl oz/a	2x7-day	5%
11	Harvanta	10.9 fl oz/a	2x7-day	3%
12	Rimon	8 fl oz/a	3x7-day	28%
13	Untreated Check Block B			100%
14	Rimon	12 fl oz/a	2x7-day	12%
15	Avant eVo	6 oz wt/a	3x7-day	7%
	Exponent	6.5 fl oz/a		
16	Rimon	12 fl oz/a	3x7-day	4%
	Avant eVo	6 oz wt/a		
	Exponent	6.5 fl oz/a		
17	Elevest	7.5 fl oz/a	2x7-day	6%
18	Elevest	9.6 fl oz/a	2x7-day	3%
19	Vantacor	2 fl oz/a	2x7-day	6%
20	Vantacor	2.5 fl oz/a	2x7-day	3%
21	Coragen	5 fl oz/a	2x7-day	10%
22	Coragen	7.5 fl oz/a	2x7-day	6%
23	Calantha	16 fl oz/a	3x7-day	24%
24	Calantha	16 fl oz/a	2x7-day	18%

### 1<sup>st</sup> Gen. CPB Systemic Trial (E-31)

None of the treatments described in the CPB foliar trial included an at-plant or seed treatment of an insecticide. Instead, this separate trial seeks to evaluate several different at-plant or side-dress treatments for efficacy against first generation Colorado potato beetle in the absence of any follow-on foliar treatments. Snowden B-size tubers were machine planted on Apr 27 with a fertilizer granule mix NOT containing any insecticide. In-furrow applications were completed at this time. Side-dress applications were performed on Jun 8.

Trt	Product	Rate	Delivery	Jun 26 defol.	Jul 5 defol.
1	Untreated Check			23%	67%
2	Experimental	low	in-furrow	24%	56%
3	Experimental	mid	in-furrow	19%	48%
4	Experimental	high	in-furrow	18%	38%
5	Experimental	high	side-dress	13%	12%
6	Verimark	13.5 fl oz/a	in-furrow	1%	2%
7	Admire Pro	8.7 fl oz/a	in-furrow	10%	50%
8	Platinum	2.67 oz wt/a	in-furrow	6%	14%
9	Belay	12 fl oz/a	in-furrow	5%	29%

### Full-Season CPB Management Trial (K-17)

This trial was sponsored by GreenLight Biosciences to showcase several full-season CPB programs that include their new RNAi-based insecticide product called Calantha as either a first-generation or second-generation material. Snowden B-size tubers were machine planted on Apr 27 with a fertilizer granule mix NOT containing any insecticide. In-furrow applications were completed at this time.

Trt	1st Generation	2nd Generation	Jul 5 Defol.
1	Untreated Check		100%
2	Calantha (4x)	Minecto Pro (2x) » Delegate (1x)	5%
3	Minecto Pro (2x) » Delegate (2x)	Calantha (3x)	1%
4	Verimark (AP) » Calantha (3x)	Agri-Mek (2x) » Delegate (1x)	3%
5	Verimark (AP) » Delegate (2x)	Calantha (3x)	1%
6	Rimon (2x) » Calantha (3x)	Minecto Pro (2x) » Delegate (1x)	8%
7	Calantha (3x) » Torac (1x)	Minecto Pro (2x) » Delegate (1x)	3%
8	Calantha (3x) » Delegate (1x)	Minecto Pro (2x) » ArVida (1x)	2%
9	Platinum (AP) » Calantha (3x)	Agri-Mek (2x) » Delegate (1x)	4%
10	Rimon (2x) » Torac (2x)	Agri-Mek (2x) » Delegate (1x)	16%
11	Rimon (2x) » Delegate (2x)	Minecto Pro (2x)	5%
12	Warrior II (3x)	Agri-Mek (2x) » Delegate (1-2x)	61%
13	ArVida (3x)	Agri-Mek (2x) » Delegate (1-2x)	41%
14	Actara (3x)	Agri-Mek (2x) » Delegate (1-2x)	20%

Based on defoliation ratings taken on Jul 5, several 1<sup>st</sup> generation products were not holding up in this trial. Warrior II (lambda-cyhalothrin), ArVida (acetamiprid), Actara (thiamethoxam), and to a lesser extent Rimon (novaluron) all had relatively poor efficacy due to some resistance to these compounds by beetles at the Hancock station. Insecticide resistance in Colorado potato beetle varies by geographic location and local population but caution is advised unless local CPB populations are known to be susceptible to them.

# Web resources from UW Madison Entomology & Plant Pathology

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## UW Extension AgWeather – [agweather.cals.wisc.edu](http://agweather.cals.wisc.edu)

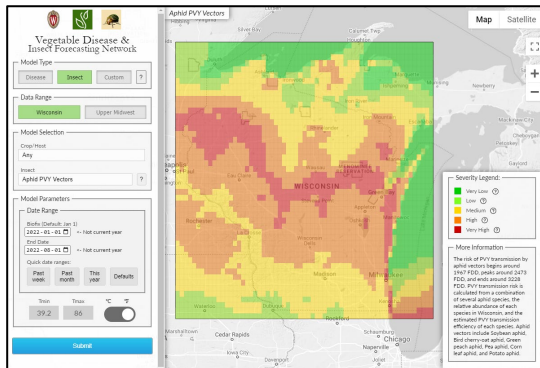
This site provides easy access to several different types of weather data from our database. Data coverage extends across the upper Midwest, see map right.

- **Weather:** Min/max daily air temp, precipitation, dew point, vapor pressure, hours of high humidity, and mean temperature during periods of high humidity. Data sourced from NOAA.
- **Solar insolation:** A measure of the amount of solar radiation striking the surface of the earth, this data is sourced from the UW Space Science and Engineering Center and is used to compute potential evapotranspiration.
- **Evapotranspiration:** Useful in irrigation scheduling, these daily values are calculated from air temperature, solar insolation, latitude, and day of year.
- **Thermal models:** View/calculate degree day models and some disease risk models. Also available is an oak wilt risk model, essential if pruning oaks.
- **Email subscriptions:** Add sites of your choosing (home, field, etc.) and get optional daily weather updates, forecasts, and degree day models.

## Vegetable Disease and Insect Forecasting Network (VDIFN) – [agweather.cals.wisc.edu/vdifn](http://agweather.cals.wisc.edu/vdifn)

VDIFN uses daily gridded weather data which are fed into various disease risk and insect developmental models and converted into daily disease severity values (or equivalents) or degree-days. These disease severity value and degree-day accumulations are then displayed on the map as color-coded risk scores based on the estimated risk to susceptible crops. Clicking on an individual grid cell brings up the daily history of weather data and disease severity values or degree-days for that location.

When you visit VDIFN you will see the navigation and settings pane on the left, the map and pest severity display in the center, and a legend on the lower right. You can switch between disease, insect, and custom model modes with the buttons across the top of the left panel. Pick a model using the Model Selection section and use the question mark box to get more information on the disease or insect. After selecting a model, note that the date range boxes populate with defaults for each model, but can be adjusted if desired. Click on an individual grid point to bring up more details for that specific location, including a detailed history of weather readings and daily and cumulative disease severity value or degree-days (depending on the model selected).



VDIFN showing estimated PVY transmission risk score based on an aphid abundance degree day model, Aug 1, 2022. Last year, PVY risk began increasing in late July in Antigo, and weekly oil applications should have been initiated at that time to deter aphid feeding.

## Irrigation Scheduling Program – [wisp.cals.wisc.edu](http://wisp.cals.wisc.edu)

A complete irrigation scheduling program for your farm, it uses a few simple initial and periodically updated conditions (soil moisture, crop, canopy cover) as well as weather and potential evapotranspiration values (automatically imported but can be manually adjusted). Create a farm, add pivot(s), each pivot can serve one or more fields, and each field can have one crop. Once set up it tracks water balance in the field and predicts soil water levels. It warns when a field crosses below the allowable depletion or experiences deep drainage due to excess water. Input your irrigation actions to update the model.

## NEW! Wisconsin Environmental Mesonet – [wisconet.wisc.edu](http://wisconet.wisc.edu)

The Wisconsin Environmental Mesonet (Wisconet) is a growing network of weather and soil monitoring stations across Wisconsin, designed to provide high quality data at high spatial and temporal resolutions. There are currently 14 Wisconet stations with plans to expand to around 90 by 2026. Each Wisconet station provides more than one dozen measurements every 5 minutes. From 2017-2023 several of these weather stations were administered by Michigan State EnviroWeather; with the launch of Wisconet these stations will be back under UW management. The web services associated with these stations are still being developed and we hope to tie in these weather stations with our other insect and disease modeling and forecasting products in the coming months.



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AgWeather



VDIFN



WISP



Wisconet