



Vegetable Crop Update

A newsletter for commercial potato and vegetable growers prepared by the University of Wisconsin-Madison vegetable research and extension specialists

No. 1 – May 19, 2024

In This Issue:

- 2024 Commercial Vegetable Production in Wisconsin Guide (A3422)
- Potato and veg disease forecasting in 2024
- UW Entomology, Pathology, Vegetable Disease and Insect Forecasting Network, Wisconet and other weather-based vegetable management tools
- Seedcorn maggot, Colorado potato beetle, aphids

Calendar of Events:

July 11, 2024 – UW Agricultural Research Station Potato Field Day, Hancock, WI

July 18, 2024 – UW Langlade County Extension & WI Seed Potato Certification Program – Ag Research Station Field Day, Antigo, WI

July 31, 2024 – WI Seed Potato Certification Program & WI Potato Coalition Early Generation Seed Potato Field Day, Lelah Starks Seed Potato Farm, Rhinelander, WI

December 3-5, 2024 – Midwest Food Producers Assoc. Processing Crops Conference, Kalahari Convention Center

January 13-14, 2025 – Wisconsin Agribusiness Classic, Alliant Energy Center, Madison, WI

February 4-6, 2025 – UW-Madison Div. of Extension & WPVGA Grower Education Conference & Industry Show, Stevens Point, WI

Amanda Gevens, Chair, Professor & Extension Vegetable Pathologist, UW-Madison, Dept. of Plant Pathology, 608-575-3029, Email: gevens@wisc.edu, Lab Website: <https://vegpath.plantpath.wisc.edu/>

Please note that we have our **2024 Commercial Vegetable Production in Wisconsin Guide (A3422)** available at the link below as a free searchable, downloadable pdf. This provides information to help you select inputs (conventional and organic) to support healthy vegetable and specialty crop production in Wisconsin. <https://learningstore.extension.wisc.edu/products/commercial-vegetable-production-in-wisconsin> We no longer have an online purchasing feature through the UW Madison Division of Extension. However, I had hard copies printed for distribution at our winter conferences and still have some to share. Please contact me (gevens@wisc.edu) with your needs.

Current P-Day (Early Blight) and Disease Severity Value (Late Blight) Accumulations will be posted at our website and available in the weekly newsletters. Thanks to Ben Bradford, UW-Madison Entomology for supporting this effort. A Potato Physiological Day or P-Day value of ≥ 300 indicates the threshold for early blight risk and triggers preventative fungicide application. A Disease Severity Value or DSV of ≥ 18 indicates the threshold for late blight risk and triggers preventative fungicide application. Data from the modeling source: <https://agweather.cals.wisc.edu/vdifn> are used to generate these risk values in the table below. I've estimated early, mid-, and late planting dates by region based on communications with stakeholders. If any of these estimates seem too far off, please advise and I can adjust. These are intended to be most helpful to growers in determining optimum times for preventative fungicide applications to limit early and late blight in Wisconsin.

	Planting Date		50% Emergence Date	Disease Severity Values (DSVs) <i>through 5/18/2024</i>	Potato Physiological Days (P-Days) <i>through 5/18/2024</i>
Spring Green	Early	Apr 3	May 9	0	69
	Mid	Apr 17	May 12	0	51
	Late	May 10	TBD	TBD	TBD
Arlington	Early	Apr 5	May 10	0	59
	Mid	Apr 20	May 15	0	28
	Late	May 12	TBD	TBD	TBD
Grand Marsh	Early	Apr 5	May 10	0	55
	Mid	Apr 20	May 15	0	26
	Late	May 12	TBD	TBD	TBD
Hancock	Early	Apr 10	May 17	0	TBD
	Mid	Apr 22	TBD	TBD	TBD
	Late	May 14	TBD	TBD	TBD
Plover	Early	Apr 14	TBD	TBD	TBD
	Mid	Apr 24	TBD	TBD	TBD
	Late	May 19	TBD	TBD	TBD
Antigo	Early	May 1	TBD	TBD	TBD
	Mid	May 15	TBD	TBD	TBD
	Late	TBD	TBD	TBD	TBD
Rhineland	Early	May 7	TBD	TBD	TBD
	Mid	May 18	TBD	TBD	TBD
	Late	TBD	TBD	TBD	TBD

Late blight of potato/tomato. The usablight.org website (<https://usablight.org/map/>) indicates no reports of late blight in potato or tomato from the US so far in 2024. This website continues to provide a very useful mechanism for tracking this potentially destructive crop disease, but it's not comprehensive. A few potato late blight samples from Florida have been processed in my program over the past month with the confirmed genotype of US-23. This genotype/clonal lineage is generally still responsive to phenylamide fungicides meaning that Ridomil and Metastar fungicides (mefenoxam and metalaxyl) can still effectively control late blight caused by these strain types. We're working to get the pathogen from the potato plant tissues into culture and will follow up with a phenotypic test to see how sensitive the US-23 isolates may be.

For custom values, please explore the UW Vegetable Disease and Insect Forecasting Network tool for P-Days and DSVs across the state (<https://agweather.cals.wisc.edu/vdifn>). This tool utilizes NOAA weather data. In using this tool, be sure to enter your model selections and parameters, then hit the blue submit button at the bottom of the parameter boxes. Once thresholds are met for risk of early blight and/or late blight, fungicides are recommended for optimum disease control. Fungicide details can be found in the 2024 Commercial Vegetable Production in Wisconsin Guide, Extension Document A3422, linked here: <https://learningstore.extension.wisc.edu/products/commercial-vegetable-production-in-wisconsin>

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Email: bbradford@wisc.edu. Lab website: <https://vegento.russell.wisc.edu/>

Selected web resources for growers and the public

UW Vegetable Entomology – <https://vegento.russell.wisc.edu>

Homepage of Dr. Russ Groves' program, which features informational pages about vegetable crops and pest insects as well as summary reports for pest management field trials. These reports often illustrate the efficacy of a variety of currently-registered pesticides against first and second generation Colorado potato beetle.

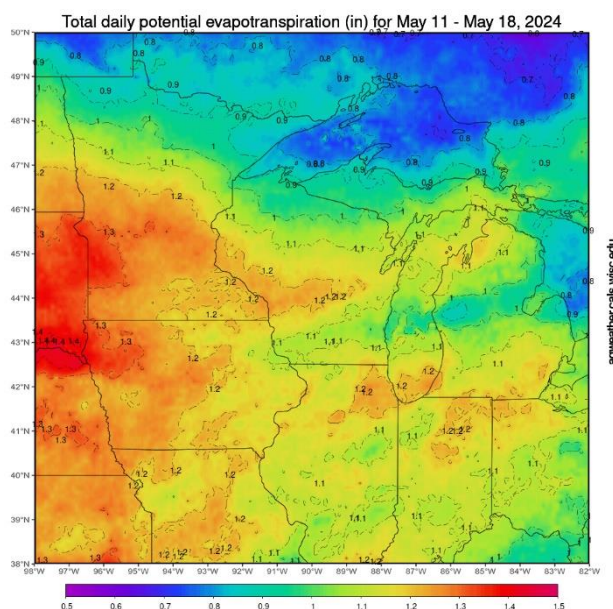
UW Vegetable Pathology – <https://vegpath.plantpath.wisc.edu>

Homepage of Dr. Amanda Gevens' program, where you can find past issues of the Vegetable Crop Update newsletter, fact sheets on many common vegetable diseases, interactive weather and disease risk model charts for select locations, and field trial results from past years.

UW Extension AgWeather – <https://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.

AgWeather homepage



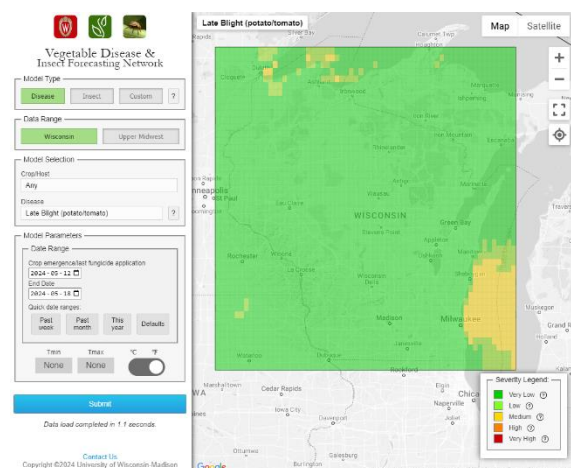
Total evapotranspiration, past week

- **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.

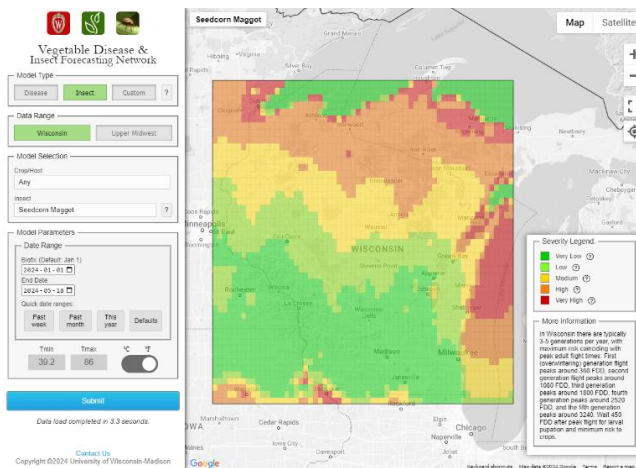
- **Evapotranspiration:** Useful in irrigation scheduling, these daily values are calculated from air temperature, solar insolation, latitude, and day of year.
- **Thermal models:** View/calculate degree day models and some disease risk models. Also available is an oak wilt risk model, essential if pruning oaks.
- **Email subscriptions:** Add sites of your choosing (home, field, etc.) and get optional daily weather updates, forecasts, and degree day models.
- **Free weather data API:** All weather data accessible on AgWeather via the website can also be accessed using an API for integration into custom software or services.

Vegetable Disease and Insect Forecasting Network (VDIFN) – <https://agweather.cals.wisc.edu/vdifn>

VDIFN uses daily gridded weather data which are fed into disease risk and insect developmental models and converted into daily disease severity values 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 or the abundance of the most damaging or relevant life stage(s) of insect pests.



Current late blight risk



Current Seedcorn maggot risk

The VDIFN interface has the navigation and settings panel 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 (generic degree-day) 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).

Wisconsin Irrigation Scheduling Program – <https://wisp.cals.wisc.edu>

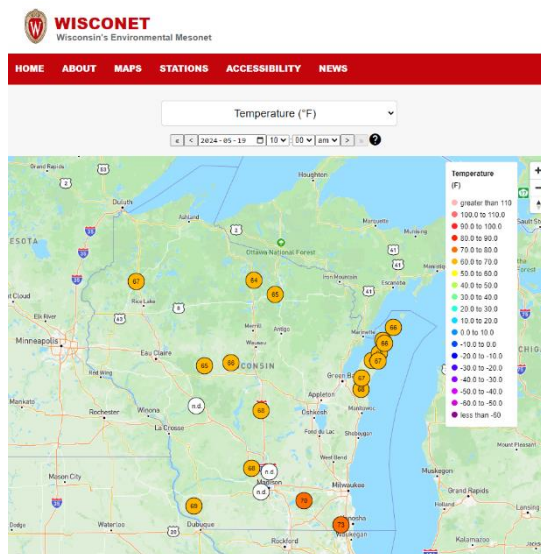
A complete irrigation scheduling program for your farm, it uses a few simple initial and periodically updated conditions (soil moisture, crop, canopy cover) as well as weather and potential evapotranspiration values (automatically imported but can be manually adjusted). Create a farm, add pivot(s), each 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 to excess water. Input your irrigation actions to update the model.

Wisconsin Environmental Mesonet –

<https://wisconet.wisc.edu>

The Wisconsin Environmental Mesonet (Wisconet) 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 expand to around 90 by 2026. Each Wisconet station provides more than one dozen measurements every 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 but a few interfaces are currently available including maps and charts, with examples below.



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QR code links to each website:



Vegetable
Entomology



Vegetable
Pathology



AgWeather



VDIEN



WISP



Wisconet

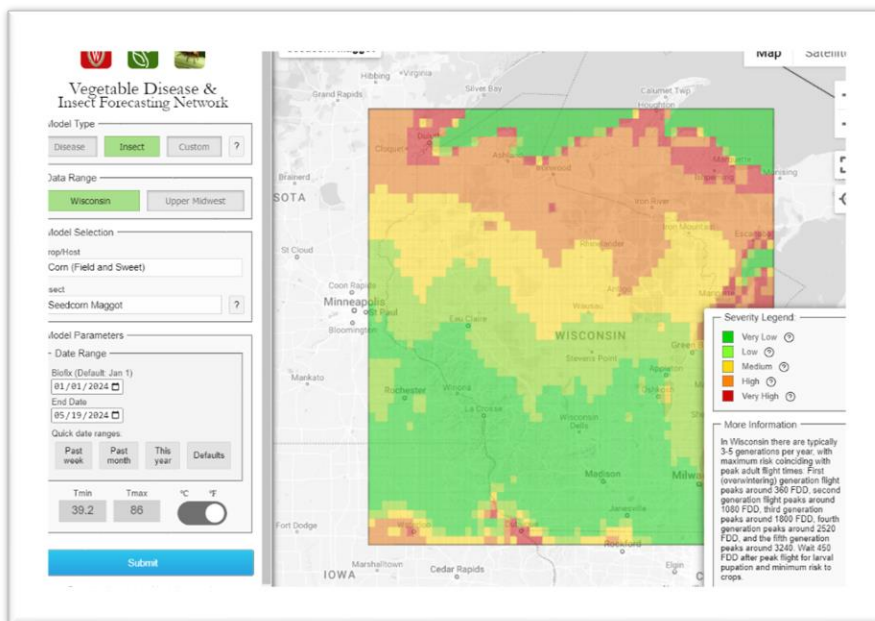
Vegetable Insect Update – Russell L. Groves, Professor and Department Chairperson, UW-Madison, Department of Entomology, 608-262-3229 (office), (608) 698-2434 (cell), e-mail: rgroves@wisc.edu

Vegetable Entomology Webpage: <https://vegento.russell.wisc.edu/>

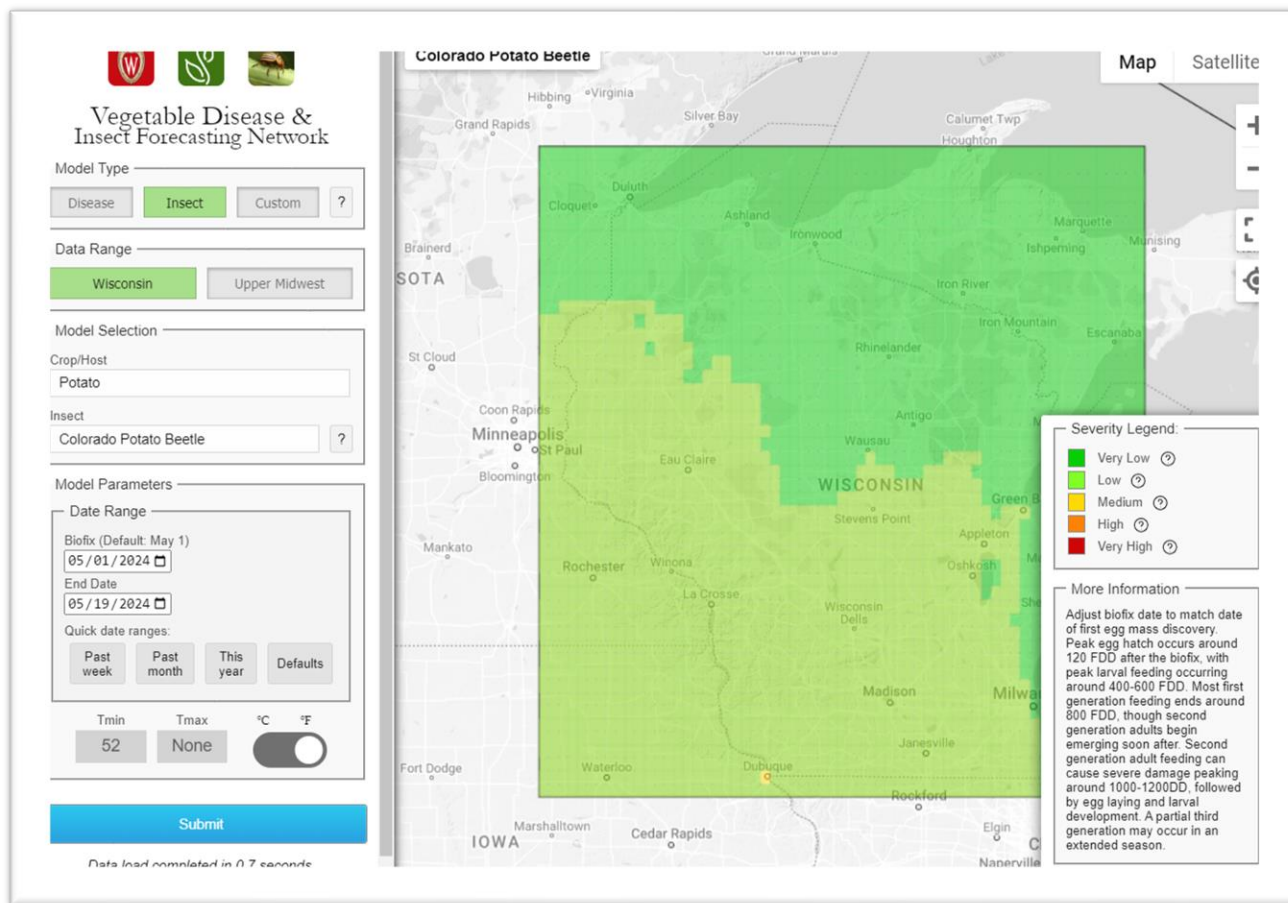
Seedcorn maggot– (<https://vegento.russell.wisc.edu/pests/seedcorn-maggot/>). Populations of the seedcorn maggot are between generations in central Wisconsin. First generation went through central Wisconsin in early May, and the second generation risk is just to the south of Wisconsin at the current time. The larvae damage the germinating seeds and young seedlings of a wide range of vegetable and agronomic crops. In addition to sweet corn, seedcorn maggots (SCM) have a large host range including numerous common vegetable crops. SCM can cause economic damage to the seed of artichoke, beet, Brussels sprouts, cabbage, cantaloupe, carrot, cauliflower, cucumber, kale, lettuce, bean (lima, snap, red), onion, pea, pumpkin, tomato, and turnip. Management for SCM is only effective when used in a preventative manner. Once direct larval damage is detected there is no control option for the pest. Therefore, there are no economic thresholds for this insect pest. SCM forecasting models predict peak

flight windows and are very useful for growers. Documenting peak flights can help to forecast subsequent generations of SCM.

Peak flight activity for 1st and 2nd generation of seedcorn maggot in the upper Midwest. First generation peak (and subsequent risk) is illustrated across very northern Wisconsin and surrounding Lake Superior, and the risk of infestation is illustrated by the warm colors (reds, oranges, yellows) on the map. Second generation peaks are currently across northern Illinois and this risk interval will be entering Wisconsin this week with increasing daytime and night-time temperatures. (Source: <https://agweather.cals.wisc.edu/vdifn/>).



Colorado potato beetle (CPB) – (<https://vegpath.russell.wisc.edu/pests/colorado-potato-beetle/>). The first adult CPB adults have just emerged and can be apparent while we are finishing hilling operations. Emerging adults are just beginning to colonize fields in southern Wisconsin, and many of the first adults will focus upon volunteer potatoes that we are observing in many locations. Appearance of the very first egg masses is predicted in the coming week in the southern third of the state. Producers in these areas should wait on initial perimeter spray applications until they are observing adult mating and egg laying on the outermost (<50 rows) sections of fields. Treatments in select fields could be initiated in the next 7-10 days, especially with predicted warm temperatures into the upcoming weekend and into 1st week of June.



Aphids – (<https://vegento.russell.wisc.edu/pests/aphids/>). Several species of aphids have been observed infesting crops in early-season greenhouses and hoopouses. These insects likely experienced very mild winter conditions in these environments and are rapidly increasing in number with warming spring temperatures. Aphids, also known as plant lice are soft-bodied, sucking insects. They feed on plant sap and excrete a sugary honeydew that attracts ants and creates the conditions for sooty mold, a type of fungus (saprophytic) that feeds on decaying organic matter. There are several aphid species, all belonging to the insect family Aphididae, that are capable of attacking any type of vegetation. Aphids that pose the most serious problem to Wisconsin vegetable production include the green peach, melon, and potato aphids.

It is difficult to generalize the life cycle of all aphids because of the diversity of their life habits, which can range from single to multiple hosts. One of the unique characteristics of aphids that sets them apart from all other insects is their ability to bear live young. Aphids overwinter as eggs on a perennial host. In spring, the eggs hatch and the aphids migrate onto their summer host when it becomes available. The female aphids can then reproduce without mating and will hold the eggs in their bodies to give birth to live young. By eliminating mating and egg laying, aphids have successfully shortened their life cycle and thereby increased their reproductive capability. Throughout the summer, wingless females predominate. However, winged forms may arise when populations become too large for the available food source. In late summer, in response to the shortened daylight hours, wingless females and males are produced for the purpose of mating and laying fertilized eggs that will survive adverse winter conditions.

Predators such as lady-bird beetle adults and larvae, green lacewing larvae, syrphid fly larvae and several parasitic wasps all help reduce aphid numbers. Heavy rains help dislodge aphids from the plant and, during periods of high humidity, fungal diseases may greatly reduce populations. The remarkable reproductive capacity of the aphid normally overcomes the effects of natural controls in spring when cool temperatures hinder the development of natural enemies. These natural controls most often catch up in the warmer weather of summer and fall. Examples of common aphids are included in the following gallery:

Asparagus aphid (*Brachycorynella asparagi*)



Photo: Oklahoma State Univ.

Appearance: Small, bluish-gray in color, powdery, with small cornicles

Host plant: Asparagus

Description: The asparagus aphid is a recent import from Europe that causes a brooming distorted growth of the ferns of asparagus. It is bluish gray in color, and the cornicles aren't readily apparent. Normally only isolated plants are affected and can be spot treated.

Bean aphid (*Aphis fabae*)

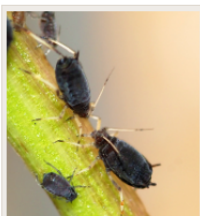


Photo: Joaquim Gaspar

Appearance: Dark green to sooty black

Host plants: Artichoke, asparagus, bean carrot, corn, lettuce, parsnip, rhubarb, spinach, squash

Winter hosts: *Euonymus* & *Viburnum* spp.

Cabbage aphid (*Brevicoryne brassicae*)

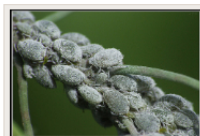


Photo: Eran Finkle

Appearance: Gray-green with a powdery, waxy covering

Host plants: Broccoli, Brussels sprouts, cabbage, collards, kale, kohlrabi, radish

Overwinters as eggs on host plants

Cabbage aphids are gray in color and live in closely packed groups. Heavy infestations cause leaves to curl and may prevent head formation. Aphid damage is most serious on young cabbage and in the seedbed. Once cabbage heads form, this insect is difficult to control.

Corn leaf aphid (*Rhopalosiphum maidis*)



Photo: NBAR

Appearance: Bluish green

Host plant: Corn

No winter host. Migrates from the south annually

Resources:

- <http://entoweb.okstate.edu/ddd/insects/cornleafaphid.htm>
- Wikipedia

Green peach aphid (*Myzus persicae*)



Photo: Scott Bauer

Appearance: Yellowish-green with 3 dark lines on their backs

Host plants: Beet, celery, cole crops, cucurbits, lettuce, pepper, potato, spinach, tomato

Winter hosts: Cherry and peach

Description: The green peach aphid is the most destructive and insecticide-resistant aphid in Wisconsin. Many crops are attacked including greenhouse transplants of pepper, tomato, and cabbage, along with beet, carrot, broccoli, Brussels sprouts, lettuce, eggplant, and potato. Green peach aphids are 1/8 inch long, yellowish green, peach, or dirty red in color, and can be found on the undersides of leaves. This aphid is a very efficient vector of many virus diseases. Scouting is usually done by examining the undersides of leaves and looking for aphid activity.

In potatoes, remove 25 leaves per sample from the lower half of 25 different plants, with at least 10 sample sites per field. Treat if more than 10 aphids are found per 100 leaves in seed fields or more than 30 per 100 leaves in table stock or processing potatoes.