Vegetable Crop Updates

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

Extension
UNIVERSITY OF WISCONSIN-MADISON

April 26, 2025

***In This Issue*:**

- Seedcorn maggot and Asparagus beetle descriptions and management
- Round up of pest, disease, and agronomic tools to support decision-making
- Deep frost this winter limits potato volunteers and late blight risk in 2025

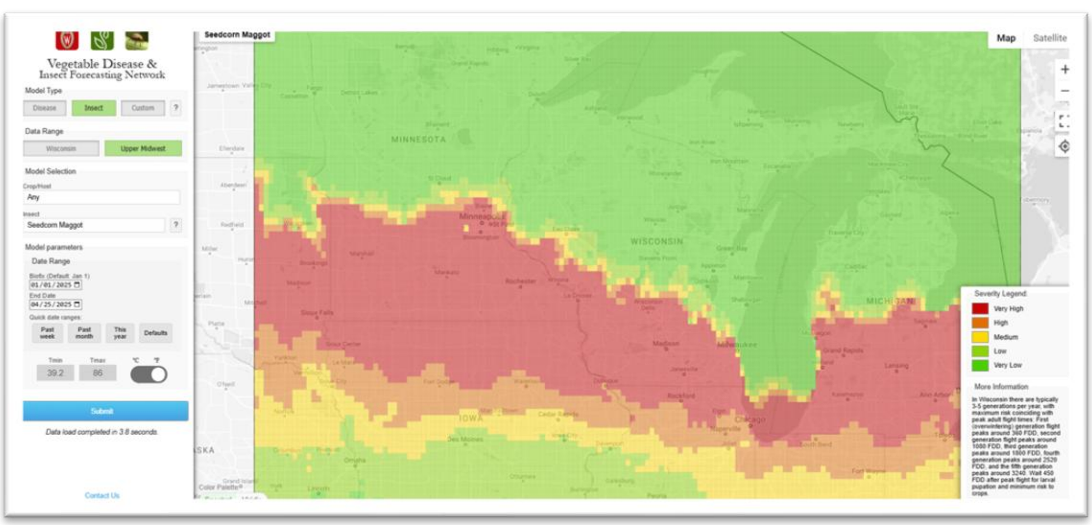
Calendar of Events:

July 10, 2025 – UW Hancock Agricultural Research Station Field Day
December 2-4, 2025 – Midwest Food Producers Assoc. Processing Crops Conference, Kalahari Convention Center
January 12-13, 2026 – Wisconsin Agribusiness Classic, Kalahari Convention Center
February 3-5, 2026 – UW-Madison Div. of Extension & WPVGA Grower Education Conference & Industry Show, Stevens Point, WI

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

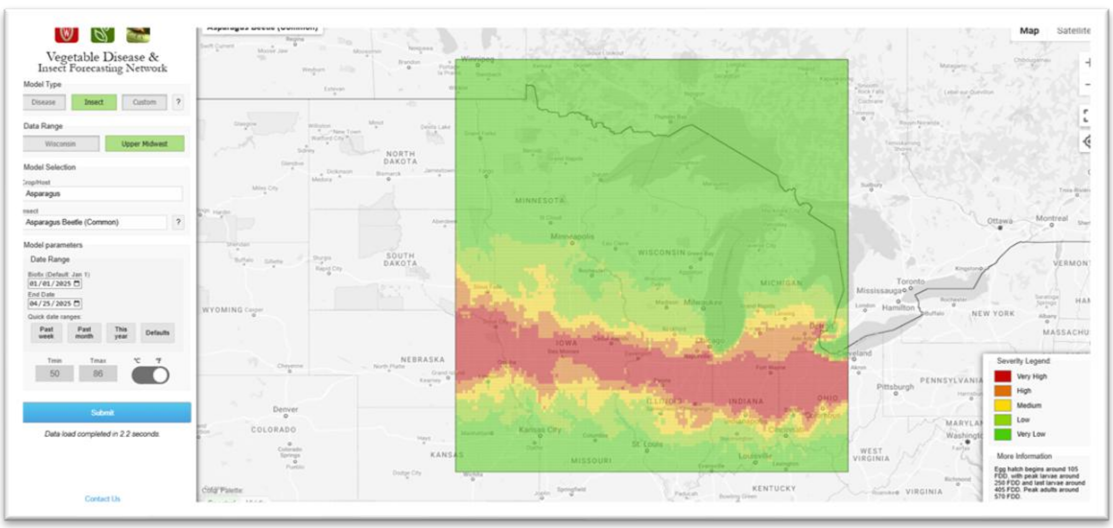
Vegetable Entomology Webpage: https://vegento.russell.wisc.edu/

Seedcorn maggot – (**https://vegento.russell.wisc.edu/pests/seedcorn-maggot/**). Populations of adult seedcorn maggot (SCM) have emerged across southern Wisconsin and will rapidly progress across the state over the next 7-10 days. Seed corn maggots overwinter as pupae in the soil. Adult flies have begun emerging and the peak emergence for the first generation occurs across southern Wisconsin. You can find adult SCM near recently tilled soil and adults often swarm over brightly colored objects. Adults will mate and lay eggs in these risk areas and preferred egg deposition sites are locations with germinating or decaying seeds, plant residue, incorporated green manures or where organic fertilizers have been recently applied. Adults often mate and lay eggs within 2-3 days of emergence. Eggs hatch 2-4 days later depending on soil temperature. The larval portion of the SCM life cycle occurs below ground over the course of a few weeks. Once hatched larvae burrow into the soil 6-8 cm to locate food resources. A complete life cycle for is typically 16-21 days and these are 3-5 generations per year in most portions of the state.



Once eggs are laid, the larvae hatch and begin to damage germinating seeds and young seedlings of a wide range of vegetable and agronomic crops. In addition to sweet corn, seedcorn maggots have a large host range including 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. (Source: **https://agweather.cals.wisc.edu/vdifn**). Two common chemical delivery techniques are available for SCM management: seed treatment or an at-plant soil application. Numerous combinations of insecticidal compound and fungicide are available as pre-plant seed treatments directly from seed vendors. Many active ingredients are reduced risk insecticides which have lower non-target impacts and these include spinosad (Entrust, Regard, Lumiverd), cyantraniliprole (Fortenza and Lumiposa) and chlorantraniliprole (Lumivia). Refer to the UW-Extension publication Commercial Vegetable Production in Wisconsin (A3422) for a list of registered insecticides and management recommendations.

Asparagus beetle – (https://vegento.russell.wisc.edu/pests/asparagus-beetle/). The common and spotted asparagus beetles are annual pests of asparagus in Wisconsin. The common asparagus beetle is the most prevalent and the only one that causes economic damage to asparagus. The overwintering emergence of adult asparagus beetles can occur quite early, and emergence of damaging of populations will be happening over the next 2-3 weeks in southern Wisconsin.



Both species of adult beetles have a slim, long shape with hard wing covers. The common beetle is bluish-brown with cream spots, while the spotted beetle is orange with black spots. Both are about ¼-inch in size. Eggs of both species are shiny dark rods 1/8" long. Those of the common asparagus beetle are found in groups and oriented in rows. Eggs of the spotted asparagus beetle are oviposited singly. Larvae are plump, resembling slugs, wrinkled and have visible legs. Those of common asparagus beetles are cream to gray-colored with a dark head and legs, while those of the spotted asparagus beetle are orange.

Adults of the common asparagus beetle feed on the plant's spears and ferns. Disfigured and unmarketable spears can result when the beetles feed or lay eggs on the spears. Spotted asparagus beetle larvae feed more on the berries rather than the ferns of asparagus. Larvae secrete a black fluid onto the plants. Spring spear feeding reduces crop quality (browning, scarring, staining, and bent growth). Summer fern feeding can cause defoliation and reduces yield of subsequent years. Eggs laid on spears are unattractive to consumers, though harmless. Large populations of asparagus beetles, if left unchecked, can defoliate the plants.

Common asparagus beetle adult (Crioceris asparagi)
Photo: Mark Rowland

Asparagus beetle overwinters in plant debris and brush as an adult. Adults become active in spring when new spears emerge. The spotted asparagus beetle becomes active later in spring than the common asparagus beetle. Common asparagus beetles lay eggs on spears while spotted asparagus beetles lay eggs on ferns. About a week later eggs hatch. The larvae feed for about two weeks on asparagus and then pupate in the soil. About one week later the next generation of adults hatch. Two to three generations occur in a growing season. Most larvae and adults are more active in the afternoon when the temperature and sunlight are at their peak.

Spotted Asparagus Beetle (Crioceris duodecimpunctata)
Photo: Tom Murray

Begin sampling for these insects now in early spring and continue throughout the growing season. In spring, sample twenty plants each at five different locations, and in summer, sample ten plants each in five different locations. See scouting thresholds for when to begin treatment. Spring sampling thresholds are designed to reduce spear damage while later-season thresholds are designed to reduce long-term damage caused by defoliation. Scouting should occur in the afternoon when the beetles are most active.

When to control asparagus beetle

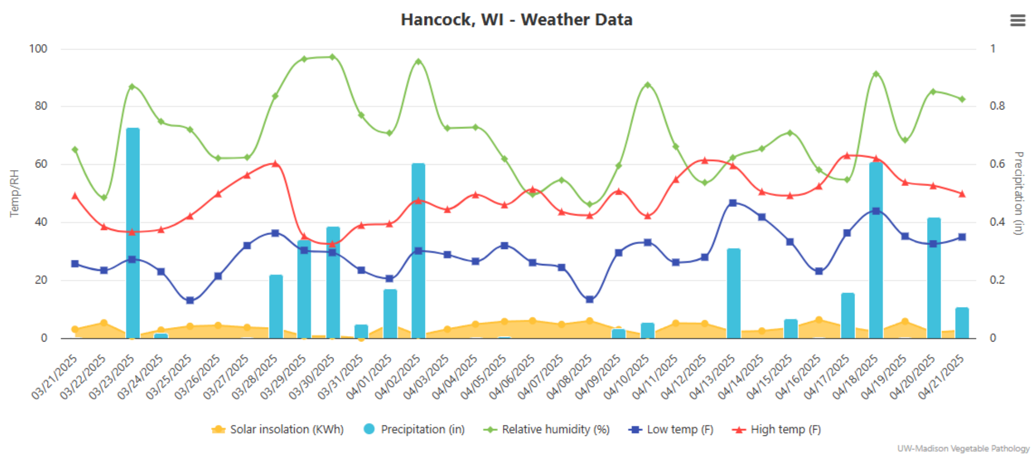
Life stage	Threshold
Adults	5% – 10% of plants infested
Eggs	2% of spears with eggs
Larvae	50% – 75% of plants infested
Defoliation	10% of plants defoliated

Ben Bradford, Researcher, UW-Madison, Dept. of Entomology, bbradford@wisc.edu & Russell Groves, Chair & Professor, UW-Madison, Dept. of Entomology, rgroves@wisc.edu & Amanda Gevens, Chair & Professor, UW-Madison, Dept. of Plant Pathology, gevens@wisc.edu.

Decision support tool roundup – Spring 2025 https://vegpath.plantpath.wisc.edu/2025/04/22/decision-support-tools-2025/

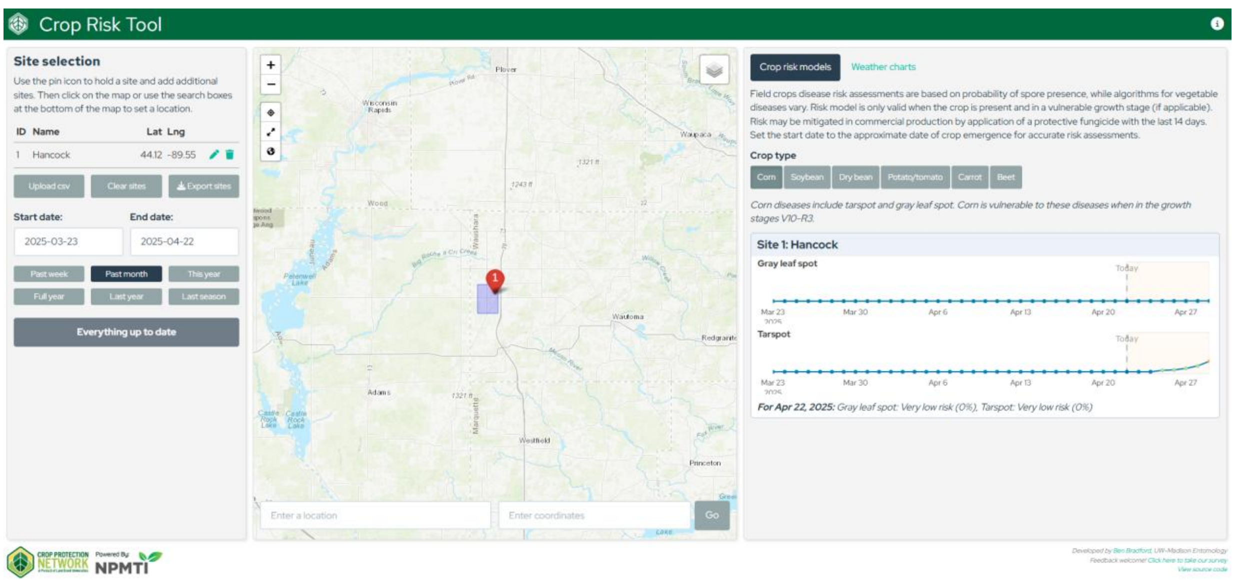
There are many online tools available to growers to aid in decision-making when it comes to weather-based risks. Below are a few that we have developed or recommend:

Vegetable Pathology – Weather and Potato Disease Models – vegpath.plantpath.wisc.edu/weather-models/



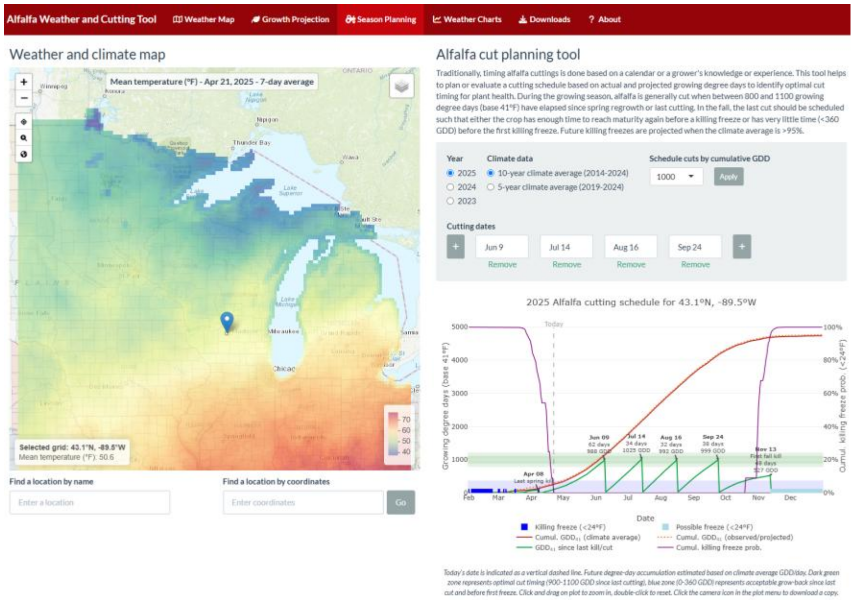
Convenient access to curated weather and disease risk charts here on this website. Pages are available for Spring Green, Arlington, Grand Marsh, Hancock, Plover, Antigo, and Rhinelander. Data is sourced from AgWeather.

Crop Protection Network (CPN) Crop Risk Tool – connect.doit.wisc.edu/cpn-risk-tool/



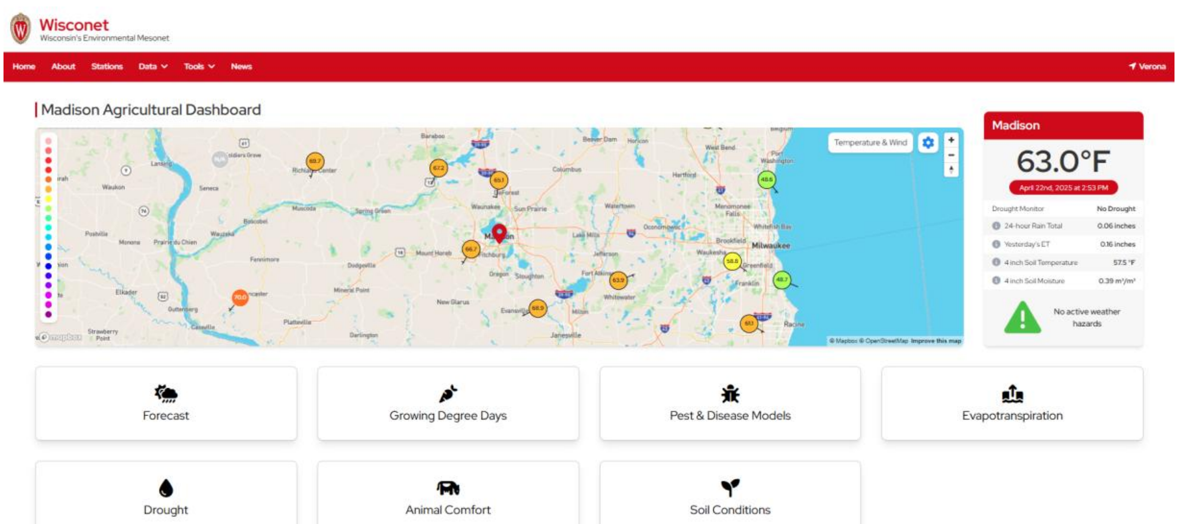
Use this tool to easily download hourly weather data for any point in the United States and Canada (below 60°N latitude) from 2015-present. Weather data is provided by a subscription to IBM's Environmental Intelligence Suite API, and 7-day forecasts are sourced freely from NOAA (where available). Up to 10 locations may be pinned on the map and will be remembered in the browser when returning to the app. Crop risk models are currently available for corn (gray leaf spot, tarspot), bean (white mold, frogeye leaf spot), and vegetable crops (early blight, late blight, Alternaria, Cercospora).

Alfalfa Weather and Cutting Tool – connect.doit.wisc.edu/alfalfa-tool/



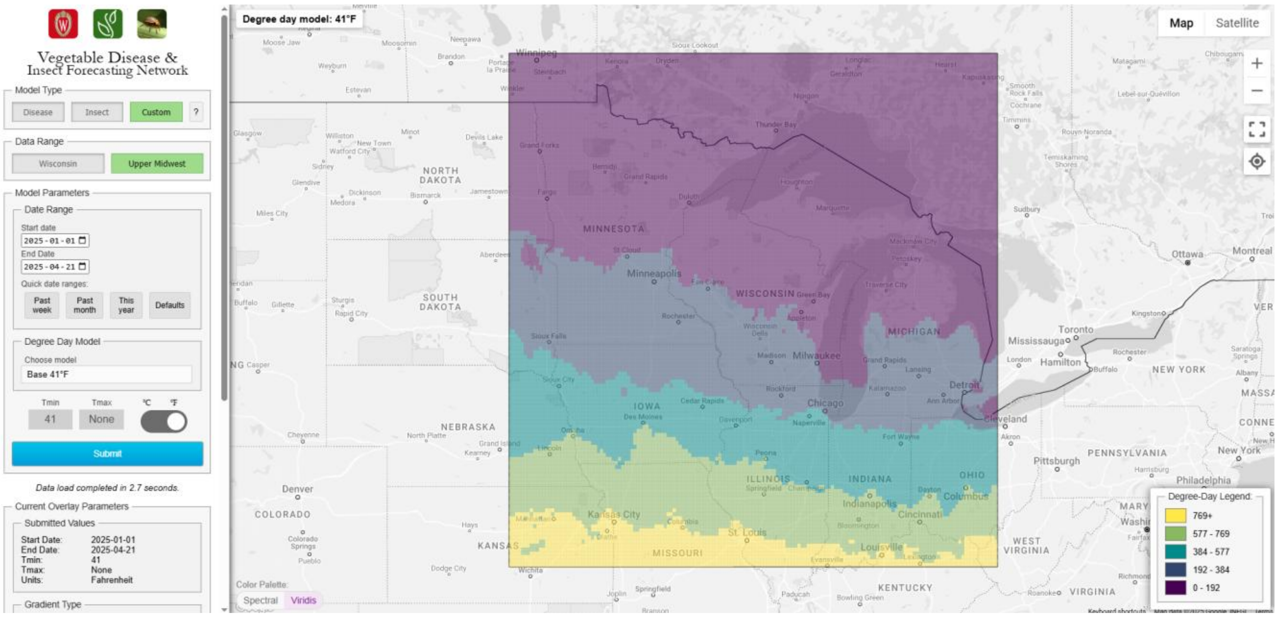
This tool was developed to help alfalfa growers in the upper Midwest plan and schedule their cuttings using location-specific weather-based recommendations, rather than calendar-based estimates. The tool also provides a map overlay with weather data, climate averages, and weather comparison to recent climate, in addition to location-specific weather and climate charts.

Wisconsin Environmental Mesonet – beta.wisconet.wisc.edu



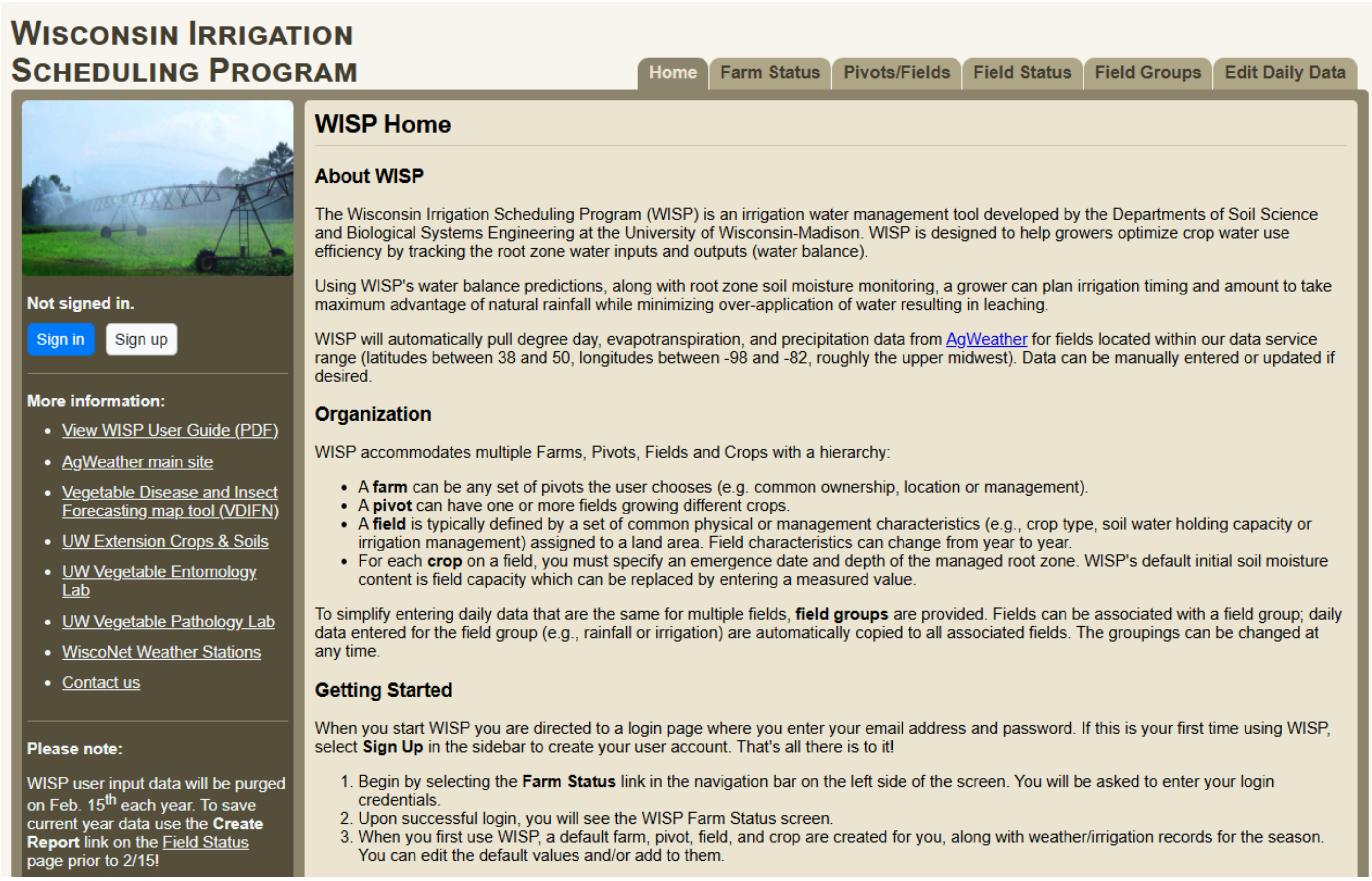
The Wisconsin Environmental Mesonet (WiscoNet) is a growing network of weather and soil monitoring stations across Wisconsin, designed to provide high quality data at high spatial and temporal resolutions. There are currently over 50 stations with plans to expand to around 90 by 2026. Each station provides more than one dozen measurements every 5 minutes. The web services associated with these stations are still being developed but the beta website (linked above) provides many improvements over the prior version of the site.

Vegetable Disease and Insect Forecasting Network (VDIFN) – 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. **Recent updates:** Added option to switch the color palette from Green-Red to Purple-Yellow for those who may be colorblind or prefer a different aesthetic.

Irrigation Scheduling Program – wisp.cals.wisc.edu



WISCONSIN IRRIGATION SCHEDULING PROGRAM

Home | Farm Status | Pivots/Fields | Field Status | Field Groups | Edit Daily Data

Not signed in.

Sign in | Sign up

More information:

- View WISP User Guide (PDF)
- AgWeather main site
- Vegetable Disease and Insect Forecasting map tool (VDIFN)
- UW Extension Crops & Soils
- UW Vegetable Entomology Lab
- UW Vegetable Pathology Lab
- WiscoNet Weather Stations
- Contact us

Please note:

WISP user input data will be purged on Feb. 15th each year. To save current year data use the **Create Report** link on the Field Status page prior to 2/15!

WISP Home

About WISP

The Wisconsin Irrigation Scheduling Program (WISP) is an irrigation water management tool developed by the Departments of Soil Science and Biological Systems Engineering at the University of Wisconsin-Madison. WISP is designed to help growers optimize crop water use efficiency by tracking the root zone water inputs and outputs (water balance).

Using WISP's water balance predictions, along with root zone soil moisture monitoring, a grower can plan irrigation timing and amount to take maximum advantage of natural rainfall while minimizing over-application of water resulting in leaching.

WISP will automatically pull degree day, evapotranspiration, and precipitation data from AgWeather for fields located within our data service range (latitudes between 38 and 50, longitudes between -98 and -82, roughly the upper midwest). Data can be manually entered or updated if desired.

Organization

WISP accommodates multiple Farms, Pivots, Fields and Crops with a hierarchy:

- A **farm** can be any set of pivots the user chooses (e.g. common ownership, location or management).
- A **pivot** can have one or more fields growing different crops.
- A **field** is typically defined by a set of common physical or management characteristics (e.g., crop type, soil water holding capacity or irrigation management) assigned to a land area. Field characteristics can change from year to year.
- For each **crop** on a field, you must specify an emergence date and depth of the managed root zone. WISP's default initial soil moisture content is field capacity which can be replaced by entering a measured value.

To simplify entering daily data that are the same for multiple fields, **field groups** are provided. Fields can be associated with a field group; daily data entered for the field group (e.g., rainfall or irrigation) are automatically copied to all associated fields. The groupings can be changed at any time.

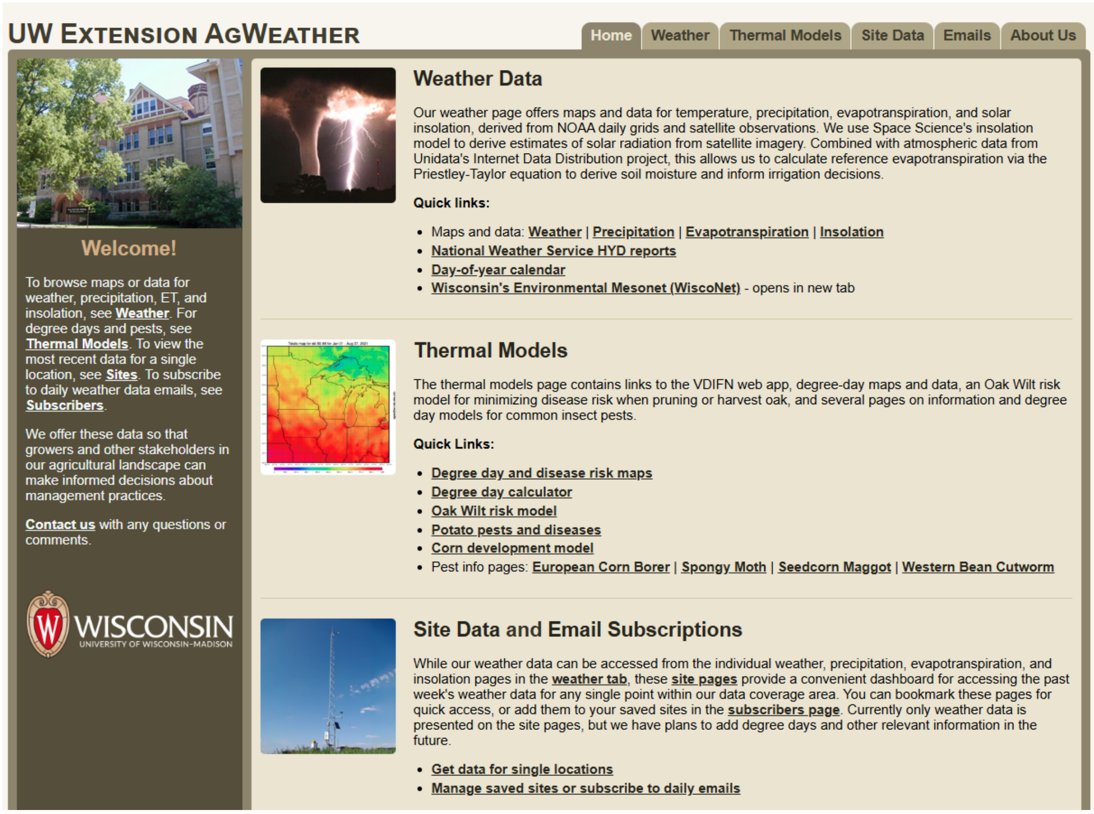
Getting Started

When you start WISP you are directed to a login page where you enter your email address and password. If this is your first time using WISP, select **Sign Up** in the sidebar to create your user account. That's all there is to it!

1. Begin by selecting the **Farm Status** link in the navigation bar on the left side of the screen. You will be asked to enter your login credentials.
2. Upon successful login, you will see the WISP Farm Status screen.
3. When you first use WISP, a default farm, pivot, field, and crop are created for you, along with weather/irrigation records for the season. You can edit the default values and/or add to them.

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.

UW Extension AgWeather – 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.

Features:

- **Weather:** Min/max daily air temp, precipitation, dew point, vapor pressure, hours of high humidity, and mean temperature during periods of high humidity.
- **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 API:** Retrieve weather data via API for integration with custom software.

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

Deep frost this winter limits risk of potato volunteers

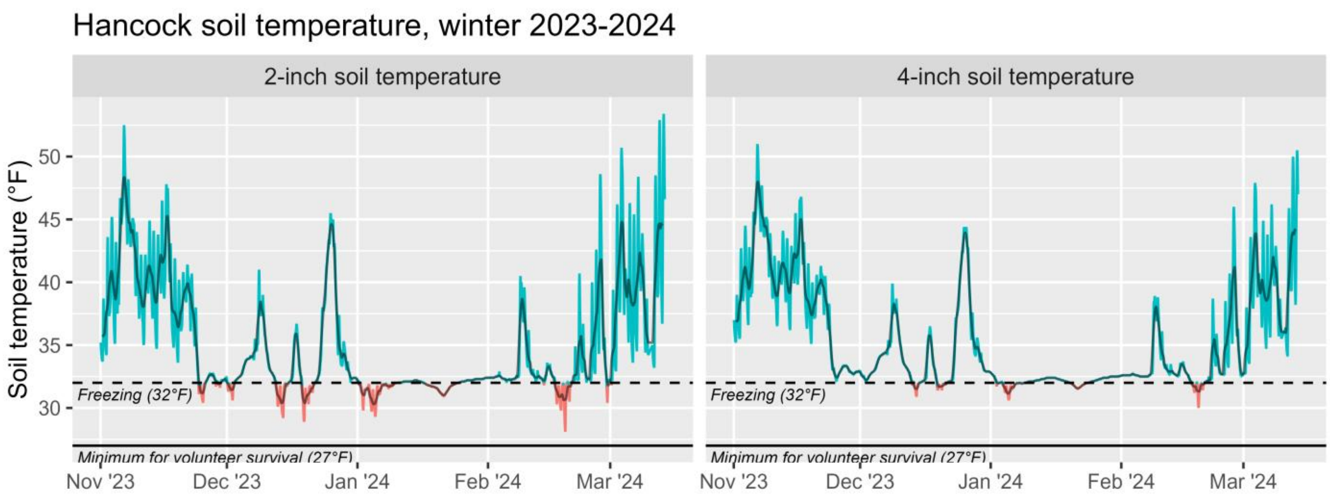
This winter of 2024-2025 was markedly different than the last in terms of air and soil temperature and risk of potato volunteer survival. As per the University of Wisconsin Climatology Office, the winter saw minimal snowpack and sustained subfreezing conditions through early to mid-February, and frost extended deep into the ground until the mid-February snowstorms added insulation. These conditions further slowed frost progression despite subzero temperatures in some areas. By February 20, the statewide frost depths ranged from 10 to 35 inches which is considered normal to below normal (read more: go.wisc.edu/4d4i9x).

Based on 2008 work conducted by Dr. Willie Kirk (Michigan State University) and Dr. Phil Wharton (now at University of Idaho), 4-inch soil depth temperatures below 27°F for 120 hours are sufficient to kill off any volunteer potatoes remaining in the field (learn more: go.wisc.edu/3so332). Volunteer survival can result in sprouts which may be challenging to manage & may serve as potential sources of inoculum in the spring.

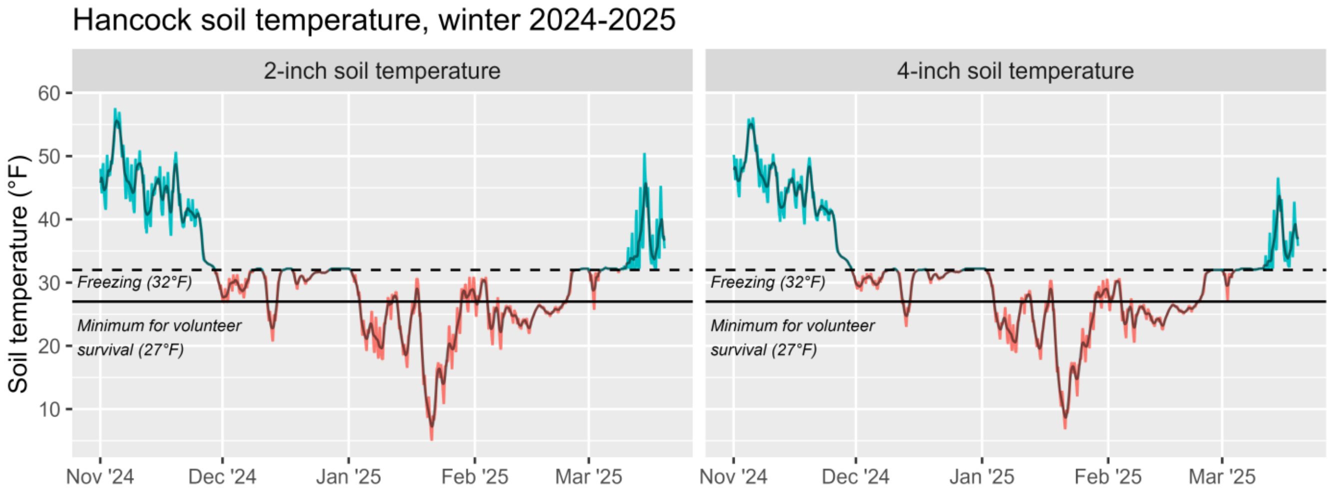
The table below illustrates the model used to determine the likelihood of volunteer survival over winter base on soil temperatures between November 1 and March 31.

Hours below 27°F at:		
2-inch depth	**4-inch depth**	**Risk**
120+	120+	Low
120+	0-120	Moderate
0-120	0-120	High

Based on soil temperature data retrieved from the University of Wisconsin Hancock Agriculture Research Station (HARS) weather station (wisconet.wisc.edu/stations/hancock), these low temperatures were reached this winter for durations greater than 120 hours, so the risk of potato volunteers is low in the coming 2025 growing season. Volunteer potatoes can introduce an increased risk of serious diseases such as late blight since they typically appear in fields and margins that are not being managed for potato in the current growing season so do not receive preventive fungicide applications (More information: vegpath.plantpath.wisc.edu/diseases/potato-late-blight).

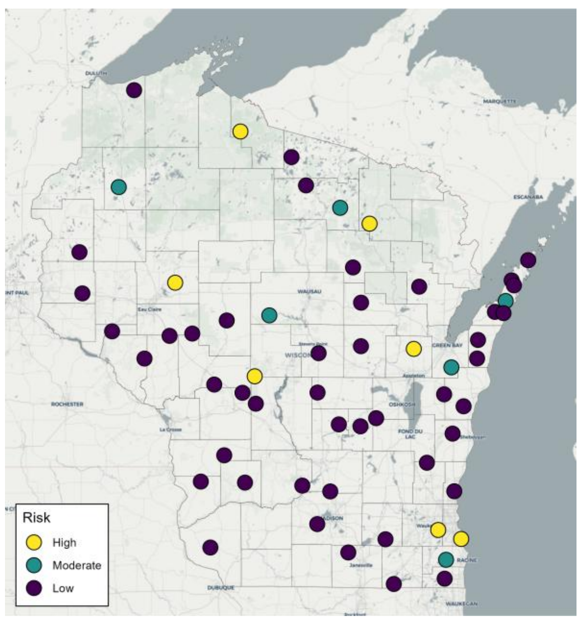


Soil temperature record for Hancock, Winter '23-'24. Data from Wisconet.



Soil temperature record for Hancock, Winter '24-'25. Data from Wisconet.

Above, we share the soil temperature records from the HARS weather station, winter 2024-2025 and 2023-2024, for comparison. Note the differences in sub-freezing soil temperatures and durations of sub-freezing soil temperatures between the years. In 2024-25, the soil froze to below 27°F for Dec-Mar indicating a low risk for potato volunteer survival.



Potato volunteer risk across Wisconsin, winter '24-'25. Data from Wisconet.

A look around the state of Wisconsin reveals that there are 7 weather station locations with high risk of volunteer survival and 5 locations with moderate risk. The figure below shows the Wisconet weather station locations (circles) with the color of circle indicating potato volunteer survival risk. The deep purple circles indicate low risk, teal is moderate risk, and yellow is high risk. These stations are located in grassy and generally open areas outside of agricultural fields and away from tree lines. Explore the data yourself in the online dashboard: connect.doit.wisc.edu/potato-volunteer-risk.

Cooler winters can create conditions less than favorable for the survival and activity of soilborne and debris-borne potato pathogens which challenge growers in Wisconsin and other regions. It's important to note, however, that factors other than temperature alone, like soil moisture and crop residue, can also influence the viability of pathogens. The pathogens that persist in our growing region are hearty and adapted well to overcome inhospitable environmental conditions.

Fundamentally, most soil microbes require temperatures between 50-96°F to sustain life. Soil microbial activities decrease with low soil temperatures and at freezing (32°F), most activities stop, likely killing the microbe if not protected or insulated in some way. The magnitude and duration of the cold, as well as soil moisture content and the presence of protective structures are critical pieces of information in considering the disease risk.

Pathogens of concern in potato which reside in agricultural fields (in and outside of plant debris) over the winter months include **fungi** *Alternaria solani* causing early blight, *Alternaria alternata* causing brown spot, *Colletotrichum coccodes* causing black dot, *Fusarium spp.* causing wilt and dry rot, *Helminthosporium solani* causing silver scurf on tubers, *Rhizoctonia solani* causing black scurf and Rhizoctonia stem canker, *Sclerotinia sclerotiorum* causing white mold, *Verticillium dahliae* causal agent along with **nematode** *Pratylenchus penetrans* in potato early dying**; oomycetes or water molds** *Phytophthora infestans* causing late blight, *Phytophthora erythroseptica* causing pink rot, *Pythium ultimum* causing Pythium leak; **bacteria** *Streptomyces scabies* causing common scab, and *Pectobacterium* and *Dickeya* spp. causing blackleg and tuber rot; and **plasmodiophorid** *Spongospora subterranean* causing powdery scab. While this list is not comprehensive and omits pathogens vectored by insects, it's still imposing to consider the potential pathogen challenges in the production field.

Integrated management is essential in addressing the pathogens that you anticipate based on knowledge of field history and seed quality. Key elements of a best disease management program include host resistance, clean seed, cultivation *especially leading to enhanced biodegradation of plant residues harboring pathogens*, planting timing, crop rotation, irrigation management, fertility, weed management inputs, insect management inputs, and pathogen management including chemical, biological, and biopesticidal inputs. Note the holistic listing of just about every crop production input! A stressed plant is a plant with greater susceptibility to infection.

Late blight. We have been successful in keeping late blight out of potato production in Wisconsin and the northern United States in recent years. This outcome reflects the tight control of seed potato crop health and disease management in production fields. Late blight is initiated from mycelium of the pathogen which survives between growing seasons by overwintering in infected potato tubers intended for seed, or as volunteer tubers that are left in fields at harvest, or within discarded cull and rock piles. Recall that the late blight pathogen that we have in North America is by-and-large asexual and does not produce soil persistent long-term oospores.

As a reminder to Wisconsin growers, as per the Wisconsin Administrative Code ATCP 21.15 Potato Late Blight, cull potato piles must be destroyed by May 20 of each year to prevent late blight spore production and disease initiation in the state. Destruction can be achieved by land spreading the culls with incorporation, feeding culls to livestock, landfill, or other approach which requires DATCP written approval. For more details, visit go.wisc.edu/yk7114.

Wisconet, Wisconsin's Environmental Mesonet (wisconet.wisc.edu), is a growing network of weather and soil monitoring stations across Wisconsin that provides high-quality data at high spatial and temporal resolutions. There are currently 58 weather stations with plans to expand to 80 by 2026. Each station provides more than one dozen measurements every 5 minutes.

For more information about our potato and vegetable disease modeling support, please visit our UW Vegetable Pathology website at vegpath.plantpath.wisc.edu/.