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

June 15, 2025

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- Disease forecasting updates for potato early blight and late blight
- Cucurbit downy mildew updates
- White mold on vegetables
- Seedcorn maggot and Colorado potato beetle risks and management

Calendar of Events:

July 10, 2025 – UW Hancock Agricultural Research Station Field Day
July 17, 2025 – UW Langlade County Airport Station Field Day 1PM
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

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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 and providing a summary reference table: https://agweather.cals.wisc.edu/thermal-models/potato. 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. These are intended to help 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) *through 6/14/2025*	Potato Physiological Days (P-Days) *through 6/14/2025*
Spring Green	**Early**	Apr 5	May 10	3	181 240
	Mid	Apr 18	May 14	3	153 212
	Late	May 12	May 26	0	96 155
Arlington	**Early**	Apr 5	May 10	3	178 235
	Mid	Apr 20	May 15	3	141 198
	Late	May 10	May 24	0	104 162
Grand Marsh	**Early**	Apr 7	May 11	0	162 219
	Mid	Apr 17	May 14	0	142 199
	Late	May 12	May 27	0	88 145
Hancock	**Early**	Apr 10	May 15	0	131 186
	Mid	Apr 22	May 21	0	105 159
	Late	May 14	June 2	0	50 104
Plover	**Early**	Apr 14	May 18	0	109 161

	Mid	Apr 24	May 22	0	102 154
	Late	May 19	June 7	0	9 61
Antigo	**Early**	May 1	May 24	5	87 124
	Mid	May 15	June 1	5	50 86
	Late	June 1	June 15	TBD	TBD
Rhinelander	**Early**	May 7	May 25	5	78 111
	Mid	May 18	June 8	4	36
	Late	June 2	June 16	TBD	TBD

Late blight of potato/tomato. The usablight.org website (https://usablight.org/map/) indicates no new confirmed reports of late blight on tomato or potato in the US this past week. There was a US-23 late blight strain type confirmation in Collier County FL in 2025 (now several weeks old). The site is not comprehensive. 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 saw the accumulation of 5 DSVs in only the Antigo location this past week across the state of Wisconsin; no other accumulations.

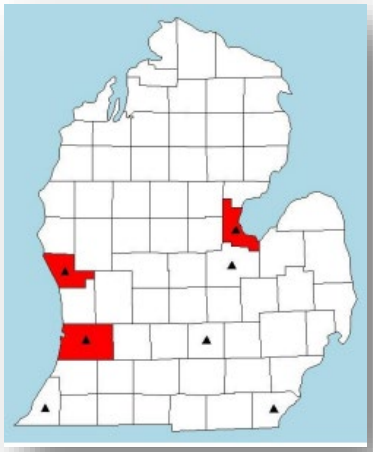
Early blight of potato. We continue to steadily increase P-Days in potatoes. Accumulations were 33-59 or roughly 7/day over the past week. Values will continue to amass and develop conditions optimum for early blight disease caused by *Alternaria solani*. Earliest inoculum typically comes from within a field and from nearby fields. Once established, early blight continues to create new infections due to its polycyclic nature – meaning spores create foliar infection and the resulting lesion on the plant can then produce new spores for ongoing new infections in the field and beyond. Early season management of early blight in potato can mitigate the disease for the rest of the season.
https://vegpath.plantpath.wisc.edu/diseases/potato-early-blight/

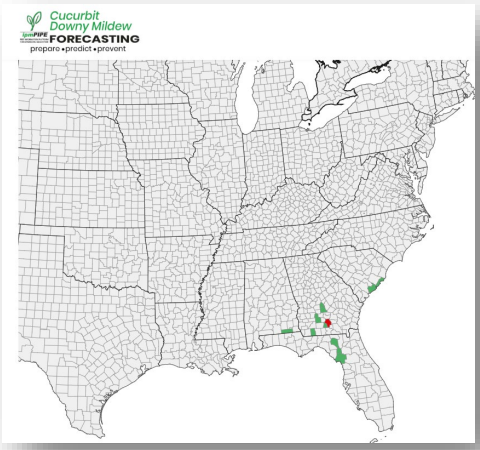
Fungicides can provide good control of early blight in vegetables when applied early on in infection. Multiple applications of fungicide are often necessary to sustain disease management to time of harvest due to the typically high abundance of inoculum and susceptibility of most common cultivars. For Wisconsin-specific fungicide information, refer to the Commercial Vegetable Production in Wisconsin (A3422), a guide available through the UW Extension Learning Store website which is annually updated.

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. 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 2025 Commercial Veg. Production in WI Extension Document A3422:
https://cropsandsoils.extension.wisc.edu/articles/2025-commercial-vegetable-production-in-wisconsin-a3422/

Cucurbit Downy Mildew: This national cucurbit downy mildew information helps us understand the potential timing of arrival of the pathogen, *Pseudoperonospora cubensis*, in our region, as well as the strain type which can give us information about likely cucurbit hosts in WI – as well as best management strategies. Clade 1 downy mildew strains infect watermelon and Clade 2 strains infect

cucumber. I am hosting a cucurbit (and basil) downy mildew sentinel plot at the UW Hancock Agricultural Research Station this summer. This 'sentinel plot' is a non-fungicide-treated collection of cucurbit plants which are observed weekly for disease symptoms. I will report the presence/absence of downy mildew from this plot in this newsletter throughout the growing season. Additionally, I keep an eye on the downy mildew spore trapping work of Dr. Mary Hausbeck at Michigan State University and include this information as relevant to WI https://veggies.msu.edu/downy-mildew-news/. On May 27, Clade 2 downy mildew spores were confirmed in an Allegan Co. During June 2 – 6, Clade 2 spores were also confirmed in Muskegon, Ingham, and Bay Co. traps. **Downy mildew disease was confirmed in Allegan, Muskegon, and Bay County commercial cucumber fields during 5/29-6/3 (map below with red coloration indicating counties with confirmed reports, from Hausbeck, MSU).**





One new cucurbit downy mildew confirmation was made on cucumber in GA over this past week. This is Clade 2. Green counties indicate a former report of the disease greater than 7 days ago. From: https://cdm.ipmpipe.org/

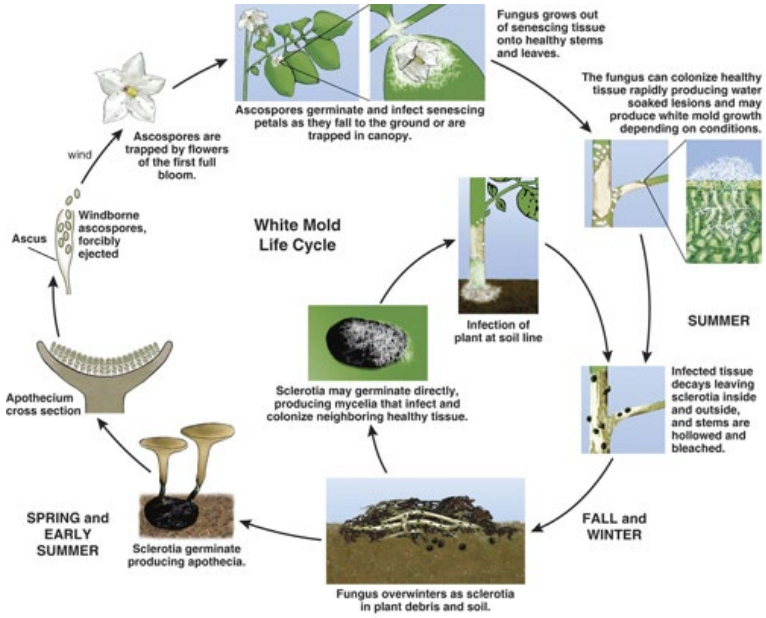
For more information: Cucurbit Downy Mildew – UW Vegetable Pathology – UW–Madison

White Mold, sometimes called *Sclerotinia* stem rot, is a soilborne fungal disease caused by *Sclerotinia sclerotiorum* that impacts potatoes and many other broad-leaved crops (>400 plant species). The severity of the disease, and resulting yield/quality losses, can vary greatly and depend upon the quantity of inoculum in soils, environmental conditions, and planting factors including cultivar, crop rotational history, and plant spacing. Symptoms have been showing up in high tunnels in the past week in Wisconsin vegetables. The pathogen may have been introduced in infested seed or soil prior to establishment of the high tunnel, or could have been introduced while growing specialty crops in the tunnel. The high tunnel/greenhouse status can limit fungicide selections, but we have seen effective management with careful and diligent use of the biological fungicide Contans (included on fungicide list below) when incorporated into soil of high tunnels for high value crop production.

Symptoms on Potato (similar to other vegetable crops). Symptoms develop first in the lower leaves and stems of the plant, typically ~2 weeks after row closure. Water-soaked lesions typically form at the stem branch points or where stems are in contact with the soil. In potato, floral infections can occur and lead to stem infections either from movement through the base of the flower, or through the senescing flower dropping onto other lower plant parts and spreading infected tissues. Based on my field observations over the past few years in Wisconsin, most infections initiate on stem branch points and in stem contact with the soil. Lesions are often covered in white, cottony fungal growth. Lesions can expand and girdle stems resulting in wilting of sections of plants or entire plants leading to plant death. Eventually, lesions turn light brown and nearly white in color once they've dried out. At this time, you can often crack open the stems and find the black, hard fungal structures referred to as

sclerotia. During the progress of infection, any additional contact with other plant parts can result in the spread of infection.

Disease cycle. The pathogen overwinters as sclerotia in the soil or in infested crop residue. Sclerotia can be moved in soil within a field during cultivation, in moving water, soilborne sclerotia form a mushroom structure under plant canopies, can move relatively short distances from where they're discharged (roughly 1 mile). The apothecial cups form earlier in the summer/late spring from the sclerotia in the top 2 inches of soil when we have cool temperatures (50-70°F), high relatively humidity (95-100%) and several days of moist soil. These conditions are typically met after canopies have closed and soil surfaces are shaded (and there is low air circulation). In many potato cultivars this aligns with 70-100% bloom. The movement is typically from the apothecial cup/mushroom to the plants immediately above/surrounding it. The soilborne sclerotia can also be moved to previously non-infested fields in soil and debris on contaminated equipment. There is little or no plant-to-plant spread of white mold during the growing season, with infections initiated from the overwintered sclerotia. The sclerotia can remain viable in the soil for roughly 5 years.



The disease cycle to the left is shared with credit to Dr. Phillip Wharton (Univ. of Idaho) and now retired, Dr. William Kirk of Michigan State Univ.

Management. An integrated program of cultural practices and fungicide applications is necessary to manage white mold in potato and other vegetables. Currently, the application of fungicides is a primary management approach for susceptible potato cultivars. The choice of fungicide, application method, and timing of application are important. Fungicide treatments should be initiated when plants reach the full bloom stage or at row closure, to help prevent the flower petals and stem junctions from becoming infected by ascospores. This timing also enhances coverage in the lower canopy to manage infections caused by limbs touching the soil and sclerotia directly.

A listing of fungicides registered for white mold management in potato in WI is provided below (from Commercial Vegetable Production in Wisconsin, A3422):

White mold *(Sclerotinia sclerotiorum)*	*Bacillus mycoides* isolate J	1.0–4.5 oz LifeGard WG	0	Maximum level of protection is induced within the plant at 3–5 days post application. Protection can last up to 18 days.
	boscalid	5.5–10.0 oz Endura WDG	30	Endura belongs to the Group 7 fungicide category. Do not exceed 2 sequential applications of Endura before alternating to a labeled fungicide with a different mode of action. Do not exceed 2 applications per season for white mold control. Do not exceed 20.5 oz/a Endura per season.
	Coniothyrium minitans	0.75–1.5 oz/1,000 sq ft Contans		Preplant or postharvest soil incorporation to reduce viability of pathogen sclerotia in soil. Can make up to 8 applications/a per season. This is a biological fungicide with specific activity only against white mold.
	fluazinam	5.5–8.0 fl oz Omega 500F	14	Application should begin prior to onset of disease. Do not apply more than 3.5 pt/a per season. Tank mix with other fungicides such as chlorothalonil, maneb, or mancozeb.
	fluopyram	6.5 fl oz Velum Prime		Provides nematode, white mold, and early blight control. Follow resistance management guildelines.
	iprodione	2.0 lb Rovral 50WP 2.0 pt Rovral 4F, Iprodione 4L, Nevado 4F	14 14	Treat when warm, wet weather conditions favor disease development. Up to 4 applications at 7- to 10-day intervals may be made. Note crop rotation information on label. All crops on the Rovral label may be grown after treated potatoes. Root crops, cereal grains, soybeans, and tomatoes may be grown the year following treated potatoes.
	metconazole	4.0 oz Quash	1	Make first application prior to infection at row closure and 14 days later if conditions promote disease. Do not make more than 4 applications per season. Do not make more than 2 sequential applications. Do not apply more than 16.0 oz/a per season.
	picoxystrobin	6.0–12.0 fl oz Aproach	3	Follow label for fungicide resistance management strategies. Also labeled for early blight.
	pydiflumetofen + fludioxonil	11.4 fl oz Miravis Prime	14	Apply at or before row closure followed by a second application 14 days later. Do not apply more than 34.2 fl oz/a per year. Apply in a minimum volume of 10 gal/a for adequate coverage.
	thiophanate-methyl	1.0–1.5 lb Topsin M WSB, 70 WP 20.0–30.0 fl oz Topsin 4.5FL	21 21	Make first application just before row closure. Subsequent applications may be made at 7- to 14-day intervals if conditions warrant. Application at peak bloom provides best control. Do not apply more than 4.0 lb/a Topsin M WSB or 80.0 fl oz/a Topsin 4.5FL per season.

Funcicides that are labeled for potato white mold management. Source: Commercial Vegetable Production in Wisconsin (A3422)

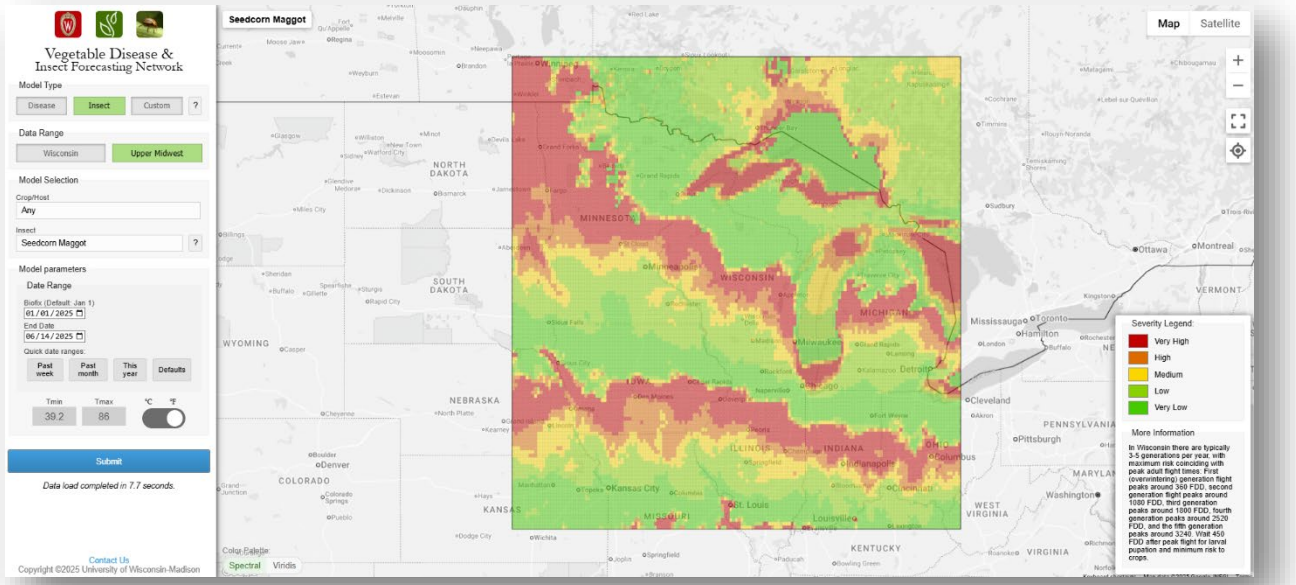
Several fungicides are labeled for the control of white mold on potato. Fluopyram, in the “Luna” fungicide series, is a systemic fungicide to protect buds, blooms, and new tissues. Luna Pro combines fluopyram with prothioconazole (FRAC 3). Luna Tranquility combines fluopyram (FRAC 7) with pyrimethanil (FRAC 9) for preventative and curative activity. Other fungicides recommended for controlling white mold include products containing the active ingredients boscalid (Endura), fludioxonil (ie: Miravis Prime with pydiflumetofen), fluazinam (ie: Omega), iprodione (ie: Rovral), penthiopyrad (Vertisan), and thiophanate-methyl (ie: Topsin).

It is likely that over the next few weeks we will begin to see white mold in open field settings. Awareness of field and disease history as well as susceptibility of your vegetable cultivars will greatly aid in best management of this destructive disease.

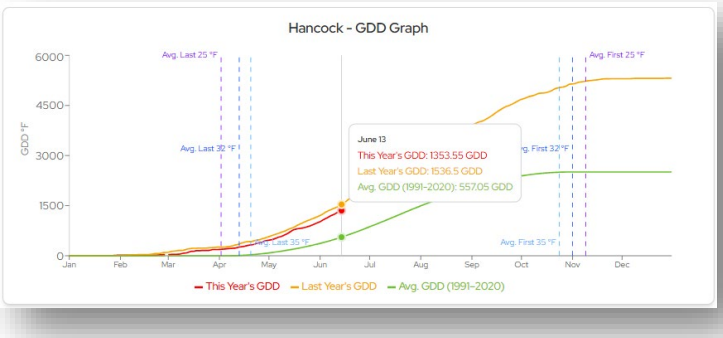
Vegetable Insect Update – Russell L. Groves, Professor and Department Chairperson, UW-Madison, Department of Entomology, 608-262-3229 (office), (608) 698-2434 (cell), e-mail: rgroves@wisc.edu

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

Seed corn maggot - (https://vegento.russell.wisc.edu/pests/ssedcorn-maggot/) – Seedcorn maggot (SCM) second generation is situated squarely over central Wisconsin (inset below). This 2nd generation represents the risk period when eggs have been laid and have hatched into the larval stages that can damage new transplants and recently seeded crops. The developmental minimum temperature for this insect is quite low (39ºF) and thus the risk for infestation differs depending upon how long seeds/transplants remain in vulnerable stages. From Wisconsin's Environmental Weather Mesonet (Wisconet) and the growing degree day dashboard, the accumulated degree days

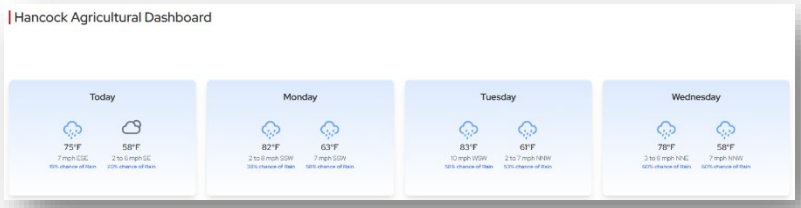


(assuming a development base tempature of 39ºF) are laggin behind last season, but remain considerably ahead of the 30-year average. Cooler daytime and nightime temperatures through the past week have increased the risk for damage due to SCM. Planting of susceptible crops (seeds or transplants) with little or no at-plant protection (eg. insecticide seed treatments) should be delayed by at least 7-10 days to avoid infestation by these damaging larvae (maggots). Documenting peak flights can help to forecast these damaging generations. Remember, adult flies are



attracted to volatiles of decaying organic matter and manure, so it is important to limit incorporation of these materials at the time to planting when adult fly peaks are encroaching.

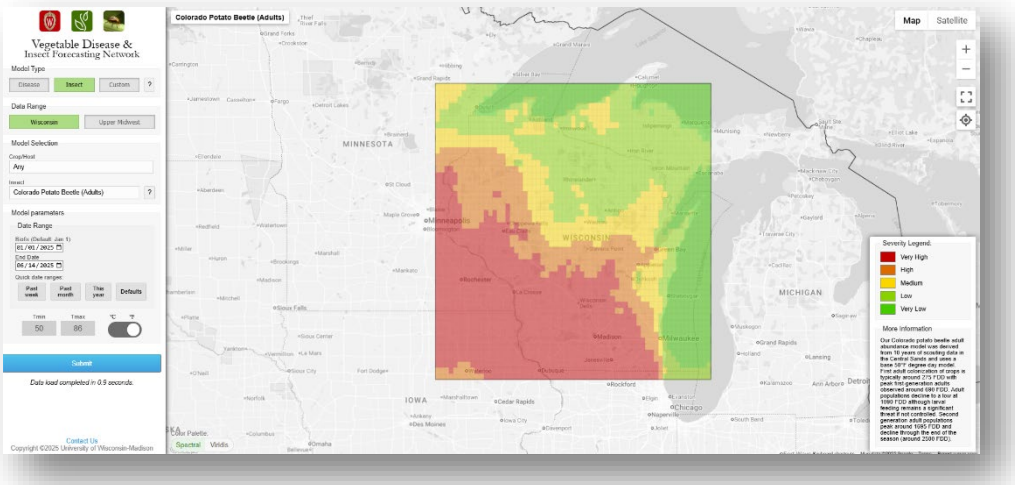
Colorado potato beetle – (**https://vegento.russell.wisc.edu/pests/colorado-potato-beetle/**) – Adult Colorado potato beetle (CPB) continue to colonize fields over central Wisconsin this past week and egg masses are very abundant in this region. Initial egg hatch has already occurred throughout southern Wisconsin and many early larvae are present in field perimeters and into the middle of fields where adults have been active.



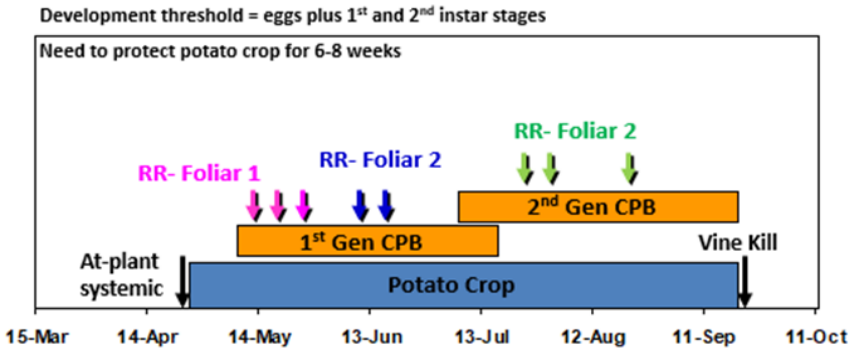
In central portions of Wisconsin, the weather conditions were conducive to slower development of populations. At this same calendar date in 2024, many fields were experiencing an abundance of 1st and 2nd instar larvae. At the present time, we are only just beginning to see 1st instars around field perimeters and still many egg masses have yet to hatch. With forecast daytime temperatures in the low 80's in the coming days, many eggs will hatch and early larvae will become abundant in many central Wisconsin fields by mid-week.

From the website, overwintered adults are abundant in central Wisconsin and they will continue to emerge and colonize potato in the Antigo and Rice Lake areas in the coming 7-10 days. Early perimeter treatments for adults and egg masses should be implemented at this time and with a special focus on areas of the field where initial colonization is underway. Please consult the attached CPB pest management listing for more details on control options.

Populations of the damaging larvae will hatch from these eggs and will begin feeding in approximately one week after the appearance of first eggs. Producers should be planning to implement applications of larvicides this week and 2nd applications of larvicides in the following week. Active ingredients that successfully target these 1st and 2nd instars that are actively feeding include abamectin, chlorantraniliprole, cyantraniliprole, cyclaniliprole, spinosad, spinetoram and tolfenpyrad. Note, there are many generics that can be successfully used that contain similar active ingredients.



Insecticide options for controlling Colorado potato beetle in Wisconsin



For most CPB chemical management tools, timing application occurs with the appearance of first instar larvae in the field. Early instar larvae are the most susceptible life stage for chemical management, and applications should be timed with the midpoint of egg hatch. The first application should be followed up in 7-10 days later with a second application of the same compound depending on the formulation and label restrictions. Refer to the UW-Extension publication Commercial Vegetable Production in Wisconsin (A3422) for a list of registered insecticides and management recommendations.

Applications of ledprona (Calantha), novaluron (Rimon), tolfenpyrad (Torac), spinetoram (Radiant, Delegate), or abamectin (Agri-Mek) should be applied when nearly 50-75% of egg masses have hatched, and a few 2nd instar larvae are present from the earliest hatched egg masses. These 1st generation larvicides often require 2-3 subsequent re-applications spaced on a 7-10 day interval to achieve sufficient control.

Recommended products for the 2024 season are listed below:

At-plant systemic options

Trade name	Active ingredient	IRAC MoA Code	Spray pH<	Adjuvant	PHI	Rate	Adult	Egg Mass	Early Larvae (1st-2nd instar)	Late Larvae (3rd-4th instar)
Belay	clothianadin	4A	pH < 7	none (see notes)	0	12 fl oz	+	-	+++	++
Consider soil surfactant to increase uniform movement in soil profile. Season total maximum is only 0.2 lb a.i./ac for both soil-applied and foliar. Do not apply any Group 4A insecticides over the top of an at-plant application of Belay. Considerable resistance with CPB, very effective for potato leafhopper and colonizing aphids.										
Platinum 75SG	thiamethoxam	4A	pH < 7	none (see notes)	0	2.67 oz	+	-	+++	++
Consider soil surfactant to increase uniform movement in soil profile. Season total maximum varies by use pattern (soil-applied vs foliar). Can apply additional foliar applications of a Group 4A on an at-plant application. Considerable resistance with CPB, very effective for potato leafhopper and colonizing aphids.										
Admire Pro (generics)	imidacloprid	4A	pH < 7	none (see notes)	0	8.7 fl oz	+	-	+++	++
Consider soil surfactant to increase uniform movement in soil profile. Season total maximum varies by use pattern (soil-applied vs foliar). Can apply additional foliar applications of a Group 28 on an at-plant application. Considerable resistance with CPB, very effective for potato leafhopper and colonizing aphids.										
Verimark SC	cyantraniliprole	28	pH < 6.5	none (see notes)	0	13.5 fl oz	+	-	+++	++
Consider soil surfactant to increase uniform movement in soil profile. Season total maximum varies by use pattern (soil-applied vs foliar). Can apply additional foliar applications of a Group 28 on an at-plant application (not advisable!). Will provide only 45-60 days of control of CPB. Ineffective for potato leafhopper and mildly effective for aphids.										
Regent 4SC	fipronil	2B		none (see notes)	90	3.2 fl oz	-	-	-	-
For use as an at-plant, distributed in-furrow application for the control of Asiatic garden beetle, other white grubs and wireworms.										

1st generation Colorado potato beetle materials

Trade name	Active ingredient	IRAC MoA Code	Spray pH<	Adjuvant	PHI	Rate	Adult	Egg Mass	Early Larvae (1st-2nd instar)	Late Larvae (3rd-4th instar)
Rimon 0.83EC	novaluron	15	pH < 6.5	NIS (0.25-0.5% V:V)	14	9,8,7 fl oz 10,8,8 fl oz	-	+++	++	++
Initiate applications when egg deposition first appears in outer rows (0-48rows) of the field. Initial foliar application (9.0 fl oz/ac) can be applied as a 'ring' application, treating only the outer-most rows of the field. Subsequently, apply 2nd foliar application (8.0 fl oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application (7.0 fl oz/ac) 7 days after prior application. Continue to scout the field, if an additional application is necessary, apply a final application (8.0 fl oz) to the interior of the field, not initially treated during the ring application. Must be applied with an adjuvant (NIS), and consider application outside of mid-day hours (10:00 - 16:00 h). Slightly acidify tank mix prior to application (pH < 6.5). Caution when tank-mixing this product with fungicides containing proprietary stickers (e.g., WeatherStik). Both ground and aerial application are appropriate.										
Agri-Mek SC	abamectin	6	pH < 6.5	NIS (0.5% V:V)	14	3.0-3.25 fl oz	+	-	+++	++
Initiate applications when 50-75% egg hatch has occurred, and 1st instar larvae are present on outer-most field rows. Initial foliar application (3.25 fl oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (3.0 fl oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7 days after previous application with another larvicide that is effective on later stage larvae (e.g., Radiant @ 8 fl oz/ac). Must be applied with an adjuvant (NIS), and consider application outside of mid-day hours (10:00 - 16:00 h). Slightly acidify tank mix prior to application (pH < 6.5). Caution when tank-mixing this product with fungicides containing proprietary stickers (e.g., WeatherStik). Both ground and aerial application are appropriate. Only two successive applications of Agri-Mek SC allowed per crop season.										
Torac	tolfenpyrad	21A	pH = 6.5	NIS (0.5% V: V)	14	14-21 fl oz	++	++	+++	++
Initiate applications when 50-75% egg hatch has occurred, and 1st instar larvae are present on outer-most field rows. Initial foliar application (21.0 fl oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (21.0 fl oz/ac) over entire field two weeks later. Continue to scout field and consider a 3rd foliar application with another larvicide that is effective on later stage larvae as needed. Must be applied with an adjuvant (NIS), and consider application outside of mid-day hours (10:00 - 16:00 h). Slightly acidify tank mix prior to application (pH < 6.5). Both ground and aerial application are appropriate. Only two successive applications of Torac allowed per crop season.										
Blackhawk 36WDG	spinosad	5	pH = 7	NIS (0.125 - 0.25% V:V)	7	3.0-3.3 oz	+	-	+++	+++
Initiate applications when 50-75% egg hatch has occurred, and 1st instar larvae are present on outer-most field rows. Initial foliar application (3.3 oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (3.0 oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7 days after previous application with another larvicide that is effective on later stage larvae (e.g., Agri-Mek SC @ 3.25 fl oz/ac). Can be applied with an adjuvant (NIS), and consider application outside of mid-day hours (10:00 - 16:00 h). Neutral tank pH is appropriate for this application (pH = 7.0). Both ground and aerial application are appropriate. Only two successive applications of Blackhawk allowed in succession per crop season.										
Radiant SC / Delegate WG	spinetoram	5	pH = 7	NIS (0.125 - 0.25% V:V)	7	Radiant 6.5-8.0 fl oz/A, Delegate 2.5 – 4.0 oz/A	++	-	+++	+++
Initiate applications when 50-75% egg hatch has occurred, and 1st instar larvae are present on outer-most field rows. Initial foliar application (8.0 oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (6.5 oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7 days after previous application with another larvicide that is effective on later stage larvae (e.g., Agri-Mek SC @ 3.25 fl oz/ac). Can be applied with an adjuvant (NIS) and consider application outside of mid-day hours (10:00 - 16:00 h). Neutral tank pH is appropriate for this application (pH = 7.0). Both ground and aerial application are appropriate. Only two successive applications of Radiant or Delegate allowed in succession per crop season.										
Calantha	ledprona	35	pH < 6.5	NIS (0.125 - 0.25% V:V)	0	16.0 fl oz	++	-	+++	++
Initiate applications when 50-75% egg hatch has occurred, and 1st instar larvae are present on outer-most field rows. Initial foliar application (16.0 fl oz/ac) can be applied to the field perimeter and all subsequent applications (16.0 fl oz/ac) can occur over the entire field one week later. Continue to scout field and consider a 3rd or 4th foliar application 7 days after previous application as needed through only the 1st generation of CPB. Do not use Calantha on 2nd generation if used earlier in the same year. Can be applied with an adjuvant (NIS). Both ground and aerial application are appropriate. No more than four successive applications of Calantha are allowed in succession per crop season.										

2nd generation Colorado potato beetle materials

Trade name	Active ingredient	IRAC MoA Code	Spray pH<	Adjuvant	PHI	Rate	Adult	Egg Mass	Early Larvae (1st-2nd instar)	Late Larvae (3rd-4th instar)
Coragen 1.67SC / Vantacor 5SC	chlorantraniliprole	28	pH < 6.5	MSO (0.25-0.5 % V:V)	14	variable and formulation dependent (fl oz/A)	++	++	+++	+++
Initiate applications after the emergence of the 2nd generation of CPB, and when defoliation estimates have reached or exceeded 5-10%. Initial foliar application (7.5 fl oz/ac, Coragen) can be applied to the entire field. Subsequently, apply 2nd foliar application (5.5 fl oz/ac, Coragen) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7-10 days later only if populations continue to defoliate. Should be applied with an adjuvant (MSO) and acidify tank pH (pH < 6.5). Ground-application advised. Up to 4 successive applications of Coragen allowed in succession per crop season for control of the Colorado potato beetle. Do not apply a Group 28 material if a Group 28 material was applied in 1st generation, or as an at-plant systemic (e.g., Verimark).										
Exirel 0.83SC	cyantraniliprole	28	pH < 6.5	MSO (0.25-0.5 % V:V)	7	5.0-13.5 fl oz	++	++	+++	+++
Initiate applications after the emergence of the 2nd generation of CPB, and when defoliation estimates have reached or exceeded 5-10%. Initial foliar application (13.5 fl oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (10 fl oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7-10 days later only if populations continue to defoliate. Should be applied with an adjuvant (MSO) and acidify tank pH (pH < 6.5). Ground-application advised. Only two successive applications of Exirel allowed in succession per crop season for control of the Colorado potato beetle. Do not apply a Group 28 material if a Group 28 material was applied in 1st generation, or as an at-plant systemic (e.g., Verimark).										
Minecto Pro	abamectin + cyantraniliprole	6 + 28	pH < 6.5	MSO (0.25-0.5 % V:V)	14	5.5-10 fl oz	++	++	+++	+++
Initiate applications after the emergence of the 2nd generation of CPB, and when defoliation estimates have reached or exceeded 5-10%. Initial foliar application (10 fl oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (7.5 fl oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7-10 days later only if populations continue to defoliate. Should be applied with an adjuvant (MSO) and acidify tank pH (pH < 6.5). Ground-application advised. Only two successive applications of Minecto Pro allowed in succession per crop season for control of the Colorado potato beetle. Do not apply a Group 28 material if a Group 28 material was applied in 1st generation, or as an at-plant systemic (e.g., Verimark).										
Besiege	chlorantraniliprole + lambda-cyhalothrin	28 + 3	pH < 6.5	MSO (0.25-0.5 % V:V)	14	6.0-9.0 fl oz	++	++	+++	+++
Initiate applications after the emergence of the 2nd generation of CPB, and when defoliation estimates have reached or exceeded 5-10%. Initial foliar application (9.0 fl oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (7.0 fl oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7-10 days later only if populations continue to defoliate. Should be applied with an adjuvant (MSO) and acidify tank pH (pH < 6.5). Ground-application advised. Three successive applications of Besiege are allowed in succession per crop season for control of the Colorado potato beetle. Do not apply a Group 28 material if a Group 28 material was applied in 1st generation, or as an at-plant systemic (e.g., Verimark).										
Harvanta	cyclaniliprole	28	pH < 6.5	MSO (0.25-0.5% V:V)	7	10.9-16.4 fl oz	++	++	+++	+++
Initiate applications after the emergence of the 2nd generation of CPB, and when defoliation estimates have reached or exceeded 5-10%. Initial foliar application (16.4 fl oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (14.0 fl oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7-14 days later only if populations continue to defoliate. Should be applied with an adjuvant (MSO) and acidify tank pH (pH < 6.5). Three successive applications of Harvanta are allowed in succession per crop season for control of the Colorado potato beetle. Do not apply a Group 28 material if a Group 28 material was applied in 1st generation, or as an at-plant systemic (e.g., Verimark).										
Elevest	chlorantraniliprole + bifenthrin	28 + 3	pH < 6.5	MSO (0.125 – 0.25% V:V)	21	5.6-9.6 fl oz/A	++	++	+++	+++

Trade name	Active ingredient	IRAC MoA Code	Spray pH<	Adjuvant	PHI	Rate	Adult	Egg Mass	Early Larvae (1st-2nd instar)	Late Larvae (3rd-4th instar)
Initiate applications after the emergence of the 2nd generation of CPB, and when defoliation estimates have reached or exceeded 5-10%. Initial foliar application (9.6 fl oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (7.5 fl oz/ac) over entire field one week later. Should be applied with an adjuvant (MSO) and acidify tank pH (pH < 6.5). Ground-application advised. Two successive applications of Elevest are allowed in succession per crop season for control of the Colorado potato beetle. Do not apply a Group 28 material if a Group 28 material was applied in 1st generation, or as an at-plant systemic (e.g., Verimark).										
Voliam Flexi	chlorantranilprole + thiamethoxam	28+4A	pH < 6.5	MSO (0.25-0.5 % V:V)	14	4.0 fl oz	++	++	+++	+++
Initiate applications after the emergence of the 2nd generation of CPB, and when defoliation estimates have reached or exceeded 5-10%. Initial foliar application (4.0 fl oz/ac) can be applied to the entire field. Subsequently, apply 2nd foliar application (3.5 fl oz/ac) over entire field one week later. Continue to scout field and consider a 3rd foliar application 7-10 days later only if populations continue to defoliate. Should be applied with an adjuvant (MSO) and acidify tank pH (pH < 6.5). Ground-application advised. Only two successive applications of Voliam Flexi are allowed in succession per crop season for control of the Colorado potato beetle. Do not apply a Group 28 material if a Group 28 material was applied in 1st generation, or as an at-plant systemic (e.g., Verimark).										

Other options

Trade name	Active ingredient	IRAC MoA Code	Spray pH<	Adjuvant	PHI	Rate	Adult	Egg Mass	Early Larvae (1st-2nd instar	Late Larvae (3rd-4th instar)
Admire Pro (foliar)	imidacloprid	4A	pH < 7	none (see notes)	7	1.3 fl oz	+	-	++	+
Apply Admire Pro as a foliar insecticide for control of late-season potato leafhopper and aphids where no Group 4A insecticide was used as an at-plant insecticide starter.										
Actara 25WG (foliar)	thiamethoxam	4A	pH < 7	none (see notes)	14	1.5-3.0 oz	+	-	++	+
Apply Actara 25WG as a foliar insecticide for control of late-season potato leafhopper and aphids where no Group 4A insecticide was used as an at-plant insecticide starter.										
Assail 30SG (foliar)	acetamiprid	4A	pH < 7	NIS (0.25-0.5 % V:V)	7	1.5-4.0 oz	+	-	++	+
Apply Assail 30SG as a foliar insecticide for control of late-season potato leafhopper and aphids where no Group 4A insecticide was used as an at-plant insecticide starter.										
Venom	dinotefuran	4A	pH < 7	none (see notes)	7	1.0-1.5 oz	+	-	++	+
Apply Venom as a foliar insecticide for control of late-season potato leafhopper and aphids where no Group 4A insecticide was used as an at-plant insecticide starter.										
Avaunt eVo	indoxacarb	22	pH < 7	NIS (0.25% V:V)	7	3.5-6.0 fl oz	+++	-	-	-
Apply Avaunt insecticide targeting only adult Colorado potato beetle. Applications can be tank mixed with Rimon 0.83EC during early season applications to kill adults, alternatively a tank mix application can be applied during later 2nd generations to target adults only. The addition of piperonyl butoxide (PBO) is necessary to increase the efficiency of adult control. Use a formulation of PBO that contains > 90% active ingredient. Apply only two successive applications, spaced 5-7 days apart.										
Brigade 2EC	bifenthrin	3A	N/A	N/A	21	2.1-6.4 fl oz	+	-	-	-
Apply Brigade insecticide targeting only adult Colorado potato beetle. Applications can be applied during later 2nd generations to target adults only. The addition of piperonyl butoxide may increase the efficiency of adult control. Apply only two successive applications, spaced 5-7 days apart.										
Imidan 70W	phosmet	1B	pH < 6.5	N/A	7	1.33	+	-	+	-
DO NOT Re-enter fields within 5 days (5-day REI)! Apply Imidan insecticide targeting only adult Colorado potato beetle. Applications can be applied during later 2nd generations to target adults only. Apply successive applications spaced no less than 10 days apart.										

Definitions:

- PHI: Post-harvest interval (time that must elapse after last application and before any harvesting of the crop, given in hours)
- Activity icons: (-) no activity, (+) very little activity, (++) moderate activity, (+++) excellent activity