



# Vegetable Crop Update

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

No. 5 – May 22, 2017

## In This Issue

National Late Blight Updates  
National Cucurbit Downy Mildew Updates  
Updated list of fungicides for potato late blight management, 2017

## Calendar of Events

**July 20, 2017** – UW-Hancock ARS Field Day, Hancock, WI  
**July 27, 2017** – UWEX Langlade County Airport Research Station Field Day, Antigo, WI  
**August 4, 2017** – UW-Lelah Starks Elite Foundation Seed Potato Farm Field Day, Rhinelander, WI (10AM to Noon Lunch to Follow)  
**January 21-23, 2018** – Wisconsin Fresh Fruit & Vegetable Conference, Wisconsin Dells, WI  
**February 6-8, 2018** – UWEX & WPVGA Grower Education Conference, Stevens Point, WI

**Amanda J. Gevens, Associate Professor & Extension Vegetable Plant Pathologist, Interim Co-Director of Wisconsin Seed Potato Certification Program, UW-Madison, Dept. of Plant Pathology, 608-890-3072 (office), Email: [gevens@wisc.edu](mailto:gevens@wisc.edu). Webpage: [www.plantpath.wisc.edu/wivegdis/](http://www.plantpath.wisc.edu/wivegdis/)**

**National Late Blight Updates:** <http://usablight.org> is again up and running for 2017 in effort to support the detection and characterization of late blight on tomato and potato crops from the U.S. No new reports of late blight in the US during recent weeks. Already this year, late blight has been confirmed on potato and tomato in southwestern Florida. In all reported cases, the pathogen genotype was US-23. This has been the predominant genotype in Wisconsin, and across the U.S., in recent years. US-23 can still generally be managed well with use of phenylamide fungicides such as mefenoxam and metalaxyl (ie: Ridomil).

**National Cucurbit Downy Mildew Updates:** <http://cdm.ipmpipe.org/> remains a valuable online resource for 2017. The site offers information on the detection and characterization of the cucurbit downy mildew pathogen from the U.S. (and often Canada). On May 15, 2017 downy mildew was confirmed on cucumber from Echols Co. Georgia. Other recent reports of the disease have come from western Florida on cantaloupe, watermelon, and cucumber.

**The 2017 A3422 Commercial Vegetable Production in Wisconsin Guide is now available** for 2017. As in past years, the guide can be downloaded for free (link below) or a hard copy can be purchased from UWEX Learning Store for \$10. <https://learningstore.uwex.edu/Assets/pdfs/A3422.pdf>

**Updated list of fungicides for potato late blight management in Wisconsin (22 May 2017) is provided as a separated pdf attachment in the UWEX Veg Crop Updates newsletter.** Lower resolution copy of the list is provided on the pages to follow.

**Potato Late Blight Fungicides Registered for WI, 2017.**

In-furrow and seed treatment registrations are omitted. This is not a comprehensive list. Most fungicides listed are for use in conventional production systems. List compiled 22 May 2017.

**Amanda J. Gevens, Extension Plant Pathologist, UW-Madison**

Cell Phone: 608-575-3029; E-mail: [gevens@wisc.edu](mailto:gevens@wisc.edu)

Trade Name (rate/A)	Active Ingredient(s)	PHI	REI	FRAC #	Comments
<u>Agri Tin, Super Tin 4L, Super Tin 80WP</u> (4-6 fl oz)	triphenyltin hydroxide	7 days	48 hours	30	Restricted use pesticide. 3 fl oz rate can be used if material is tank-mixed with another fungicide.
<u>Alude</u> (1.25 qt in 90 gal water)  <u>Confine Extra</u> (3-5 qt in 20 gal water/acre)  <u>K-Phite 7LP</u> (1-3 qt in 10 gal water/acre)	mono and dipotassium salts of phosphorous acid	0 days	4 hours	33	Foliar application. Use higher rate when disease pressure is severe. Do not apply at less than 3 day intervals. Do not apply to plants that are dormant or that are heat or moisture stressed.
<u>Ariston</u> (2 pt)	chlorothalonil+cymoxanil	14 day	12 hours	M5+27	Additional chlorothalonil may be tank-mixed with this formulation to enhance % active ingredient applied (be sure to include the Ariston component in overall season total). Cymoxanil is same active ingredient in Curzate.
<u>Elixir</u> (1.2-2.0 lb)	mancozeb+chlorothalonil	7 days	24 hours	M3+ M5	Newly registered fungicide for potato only. Use higher rate as vines increase in size.
<u>Fosphite, Rampart</u> (1-4 qt)	potassium phosphite	0 days	4 hours	33	Foliar post-emergence spray and post harvest spray for control in storage. Apply in at least 20 gal water/acre solution.
<u>Fungi-Phite</u> (Foliar: 2 qt/A Seed trt: 15% vol to vol-2 ton in 1 gal solution)  <u>Helena Prophyt</u> (4 pt/acre)	potassium phosphite	0 days	4 hours	33	Seed piece spray and foliar post-emergence spray. Tank-mix with another effective fungicide is recommended and use high label rate for late blight control.
<u>Badge SC</u> (1-3 pt)	copper hydroxide, copper oxychloride	0 days	24 hours	M1	Protectant activity only. Apply at 7 to 10 day interval.
<u>Bravo Ultrex</u> (.7 then .9 to 1.36 lb)  <u>Bravo WeatherStik, Echo 720, Equus 720 SST, Initiate 720, Chlorothalonil 720 SC, Chloronil 720, Praiz</u> (.75 then 1-1.5 pt)  <u>Bravo Zn, Equus 500 Zn, Initiate Zn</u> (1 1/8 then 1.5 to 2.25 pt)	chlorothalonil	7 days	12 hours	M5	11.25 lb a.i./acre maximum on standard label. However, WI has a special 24(c) registration for long season potatoes extending the max a.i. from 11.25 to 16 lb a.i./acre with Bravo (Syngenta) and Echo (Sipcam Advan) formulations.

**Potato Late Blight Fungicides Registered for WI, 2017.**

Trade Name (rate/A)	Active Ingredient(s)	PHI	REI	FRAC #	Comments
<u>Echo Zn</u> (1 to 2.125 pt)  <u>Equus DF</u> (.7 then .9 to 1.36 lb)  Echo 90DF (5/8 then 7/8 to 1.25 lb)	chlorothalonil	7 days	12 hours	M5	11.25 lb a.i./acre maximum on standard label. However, WI has a special 24(c) registration for long season potatoes extending the max a.i. from 11.25 to 16 lb a.i./acre with Bravo (Syngenta) and Echo (Sipcam Advan) formulations.
<u>Cabrio Plus</u> (2.9 lb)	pyraclostrobin+ metiram	3 days	24 hours	11+M3	17.4 lb/acre maximum per season. Do not apply more than 2 sequential applications.
<u>Champ WG</u> (1 to 1.5 lb 3 to 4 lb in severe areas)  <u>Champ Formula 2</u> Flowable (2/3 to 2 2/3 pt)  <u>Champ DP Dry Prill</u> (2/3 to 1 lb 2 to 2 2/3 lb when disease is severe)  <u>Kentan DF</u> (1-2.5 lb 4 lb when severe)  <u>Kocide 2000, Kocide</u> <u>3000</u> (.73- 3 lb .5-1.75 lb)  <u>Nu-Cop 3L</u> (2/3 to 2 pt 2 to 4 pt if severe)  <u>Nu-Cop 50DF</u> (1-1.5 lb 3-4 lb if severe)  <u>Previsto</u> (1-3 qt)	copper hydroxide	0 days	24 hours	M1	Use high label rates for foliar late blight protection.
<u>C-O-C-S WDG</u> (1.5- 4 lb)  <u>Cuprofix-Ultra 40</u> <u>Disperss</u> (0.75-3.0 lb)	copper oxychloride, basic copper sulfate	0 days	24 hours	M1	Use high label rates for foliar late blight protection.
<u>Mastercop</u> (0.5-1.5 pt)	copper sulfate pentahydrate	0 days	24 hours	M1	Use high label rates for foliar late blight protection.

**Potato Late Blight Fungicides Registered for WI, 2017.**

Trade Name (rate/A)	Active Ingredient(s)	PHI	REI	FRAC #	Comments
<u>Cueva</u> (2 gal in 50-100 gal water/acre)	copper octanoate	0 days	24 hours	M1	Use high label rates for foliar late blight protection.
<u>Curzate 60DF</u> (3.2 oz foliar)	cymoxanil	14 days	12 hours	27	Locally-systemic fungicide. Must be tank-mixed with a protectant fungicide. Rainfast within 2 hours.
<u>Dithane F45 Rainshield</u> (.4 to 1.6 qt)	mancozeb	24 hours	3 days	M3	Max rate per acre/season is 11.2 lb a.i. Begin use at lower rate and increase as vines increase in size.
<u>Dithane M45</u> (.5 to 2 lb)					
<u>Koverall, Roper DF Rainshield, Fortuna 75WDG</u> (1-2.0 lb)					
<u>Evito 480SC, Aftershock</u> (3.8 fl oz)	fluoxastrobin	7 days	12 hours	11	Follow label for resistance management.
<u>Forum</u> (Foliar and tuber control: 6 oz)	dimethomorph	4 days	12 hours	40	May be tank-mixed with another effective fungicide for enhanced management – but not required by label. Addition of an adjuvant may enhance management. Can be applied after vine kill.
<u>Gavel 75DF</u> (1.5 to 2 lb)	zoxamide+ mancozeb	3 days	48 hours	22+M3	Do not make >6 applications/crop. Contact fungicide.
<u>Gem 500SC</u> (3.8 fl oz)	trifloxystrobin	7 days	12 hours	11	Follow label for resistance management.
<u>Headline</u> (6 to 12 fl oz)	pyraclostrobin	3 days	12 hours	11	Follow label for resistance management.
<u>ManKocide</u> (1.5 to 2 then 4-5 lb)	mancozeb+ copper hydroxide	3 days	24 hours	M3+ M1	Not labeled as a seed trt for potatoes.
<u>Omega 500F</u> (5.5 fl oz)	fluazinam	14 days	48 hours	29	REI is 4 days for high exposure activities. New special local need label 24c in April 2011.
<u>Omega Top MP</u> (5.5 fl oz) – individual label for Omega sold in co- pack with Top MP (difenoconazole)	fluazinam	14 days	48 hours	29	Can be applied aerially. REI is 4 days for high exposure activities.
<u>Orondis</u> (1.4-4.8 fl oz)	oxathiapiprolin (OXTP)	5 days	4 hours	U15	Do not exceed 27.2 fl oz/acre/season. Labels can be confusing due to co-packs. Soon products will be released as pre-mixes. Orondis Ultra A is oxathiapiprolin (OXTP) at 10.2% active ingredient; co-pack partner is Orondis Ultra B which is mandipropamid. Orondis Opti A is also OXTP at 10.2%; co-pack partner is Orondis Opti B which is chlorothalonil. Currently there is a potato supplemental label for the pre-mix Orontis Opti (OXTP+chlorothalonil). Orondis Gold 200 is OXTP; Orondis Gold B is co-pack partner mefenoxam.
<u>Oxidate</u> (40 to 120 fl oz to 100 gal water, 30- 100 gal solution per acre)	hydrogen dioxide	0 days	1 hour	NC	Foliar spray for late blight. Frequent applications (5-day intervals) can limit sporulation.

**Potato Late Blight Fungicides Registered for WI, 2017.**

Trade Name (rate/A)	Active Ingredient(s)	PHI	REI	FRAC #	Comments
Penncozeb 80WP, Penncozeb 75DF (.5 to 2 lb)  Penncozeb 4FL, Manzate flowable (.4 to 1.6 qt)  <u>Manzate Pro-Stick</u> (1 to 2 lb, seed trt: 1.25 lb/50 gal water)	mancozeb	3 days	24 hours	M3	Do not exceed 11.2 lb a.i./acre/year.
<u>Phostrol</u> (2.5 to 10 pt) (Post harvest trt: 1 gal/ton in .5 gal water)	mono- and di-basic sodium, potassium, and ammonium phosphites	0 days	4 hours	33	Can be applied as a foliar for late blight, pink rot, and Pythium leak. Can be applied post-harvest for storage disease control.
<u>Polyram 80DF</u> (1.5 to 2 lb in 15 gal water/acre minimum)	metiram	3 days	24 hours	M3	Metiram is an EBDC, like mancozeb (M3). Total amount of a.i. per year/acre must include all EBDCs.
<u>Previcur Flex</u> (.7 to 1.2 pt)	propamocarb hydrochloride	14 days	12 hours	F	Apply in a tank-mix with effective protectant. Can be applied as a broadcast or banded application over the row, post-emergence.
<u>Priaxor</u> (4-8 fl oz)	fluxapyroxad+ pyraclostrobin	7 days	12 hours	7+11	Cannot apply more than 3 applications/season. Follow label for resistance management. Xemium and Headline pre-mix.
<u>Quadris, Satori,</u> <u>Willowood Azoxy</u> <u>25C, Aframe,</u> <u>Equation SC</u> (6 to 15.5 fl oz)  <u>Trevo, Azoxystrar,</u> <u>Azoxystrobin</u> (6-20 fl oz)	azoxystrobin	14 days	4 hours	11	Alternate away from Group 11 fungicides to manage resistance.
<u>Quadris Opti</u> (1.6 pt)	azoxystrobin+ chlorothalonil	14 days	12 hours	11+M5	Alternate away from Group 11 fungicides to manage resistance.
<u>Ranman</u> (1.4 to 2.75 fl oz)	cyazofamid	7 days	12 hours	21	Follow label for resistance management.
<u>Reason</u> (5.5 to 8.2 fl oz)	fenamidone	14 days	12 hours	11	Follow label for resistance management.
<u>Revus Top</u> (5.5 to 7 fl oz)	mandipropamid+dif enoconazole	14 days	12 hours	40+3	Addition of an adjuvant is recommended.
<u>Tanos</u> (8 to 10 oz)	cymoxanil + famoxadone	14 days	12 hours	27+11	Must be tank-mixed with an effective protectant fungicide.
<u>Ridomil Gold SL</u> (1 to 2 pt)	mefenoxam	14 days	48 hours	4	Do not apply beyond the at-planting stage.
<u>Ridomil Gold Bravo</u> <u>SC</u> (2.5 pt)	mefenoxam+ chlorothalonil	14 days	48 hours	4+M5	Follow label for resistance management.
<u>Ridomil Gold</u> <u>Copper</u> (2 lb)	mefenoxam+ copper hydroxide	14 days	48 hours	4+M1	Tank-mix with an effective protectant.

**Potato Late Blight Fungicides Registered for WI, 2017.**

Trade Name (rate/A)	Active Ingredient(s)	PHI	REI	FRAC #	Comments
<u>Ridomil Gold MZ</u> WG (2.5 lb)	mefenoxam+ mancozeb	3 days	48 hours	4+M3	Follow label for resistance management.
<u>Zampro</u> (11-14 fl oz)	ametoctradin+ dimethomorph	4 days	12 hours	45+40	Do not make more than 2 sequential applications. Follow label for resistance management. Ametoctradin is new a.i.; dimethomorph is Forum (formerly Acrobat).
<u>Zing!</u> (32-34 fl oz)	toxamide+ chlorothalonil	7 days	12 hours	22+M5	Do not make more than 2 sequential applications before alternating with another fungicide of a different mode of action. Do not make >8 applications or apply >1.52 lb of toxamide and 8.88 lb of chlorothalonil per season per acre.