



# Vegetable Crop Update

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

No. 2 – April 3, 2015

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## Calendar of Events

**July 15** – UW-Hancock ARS Field Day, 1:00PM, Hancock, WI  
**July 17** – Rhinelander State Farm Field Day, Lelah Starks Elite Foundation Seed Farm, Rhinelander, WI  
**August 25-27** – Wisconsin Farm Technology Days, Statz Bros., Inc. Farm, Sun Prairie, WI

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## Potato fungicide updates for Spring 2015:

### Updates:

With **azoxystrobin** (Quadris, Syngenta) now off patent, several generic formulations have presence in the market place. For potatoes, Azoxystrobin (Willowood), Satori (Loveland) and Equation (Cheminova) are now available. All four of these azoxystrobin fungicides contain the same amount of active ingredient (22.9%, Equation has 22.8%) and have same rates for in-furrow application for soilborne disease control, 0.4-0.8 fl oz/1000 row ft. As for the foliar rates for disease control, Quadris, Willowood Azoxystrobin, and Equation have rates of 6-15.5 fl oz/acre. Satori has a foliar rate of 6-20 fl oz/acre. Azoxystrobin is in the fungicide group 11.

**Blocker** (pentachloronitrobenzene, AMVAC) received a 2(ee) recommendation label addition for use against common scab of potato just last year in 2014. The primary federal label allows for use against Rhizoctonia/black scurf, silver scurf, and white mold. AMVAC is recommending that the usage of Blocker on a crop destined for fresh market of smaller tuber sizes (<4 oz) be limited. For further details, please contact an AMVAC representative. Blocker is primary used in fields with common scab pressure. Common scab is a challenging soilborne disease to manage. In our multi-year WI trials, Blocker provided the most consistent control of this disease among all treatments. Other control measures include varietal resistance, management of pH (less than 5.2) and water (avoid dry hills during tuberization), and use of soil fumigation (chloropicrin). Other fungicides applied at time of planting that have provided some control (albeit variable from year-year and field-field) include Serenade Soil and EF400.

## **From AMVAC news release on 22 December 2014: AMVAC to Cease Sales and Marketing of Rejuvenate Seed Treatment for Potatoes**

Newport Beach, CA (December 22, 2014) — Since 2013, AMVAC Chemical Corporation has been distributing and marketing Rejuvenate® Seed Treatment for potatoes on behalf of Stehekin, LLC. Effective January 1, 2015, AMVAC will no longer sell or market Rejuvenate. Although AMVAC believes Rejuvenate has demonstrated strong performance in the control of excessive stem numbers in potatoes, Stehekin will assume responsibility for all aspects of distributing and

marketing Rejuvenate Seed Treatment and AMVAC will no longer sell or market the product. Please direct your inquiries to Stehekin at 509- 580-0359.

### **New registrations:**

**Ariston** (chlorothalonil + cymoxanil, Sipcam Advan) contains the base protectant chlorothalonil (ie: Bravo, Echo, Equus, etc....) premixed with cymoxanil (Curzate) for control of black dot, early blight, and late blight. Chlorothalonil is in the fungicide resistance group M5; cymoxanil is in 27. The chlorothalonil component will need to be tracked in your season-long total for this active ingredient.

**Zing!** (chlorothalonil + zoxamide, Gowan) is a newly registered foliar fungicide containing the base protectant chlorothalonil and zoxamide which is a component of Gavel (mancozeb + zoxamide). Zing! provides a new formulation with zoxamide which offers late blight control along with the broad spectrum control of chlorothalonil against early blight, black dot, and botrytis. Chlorothalonil is a group M5 fungicide; zoxamide is a group 22.

**Zampro** (ametoctradin + dimethomorph, BASF) is a newly registered fungicide containing a new fungicide group 45, ametoctradin, premixed with dimethomorph (Forum, formerly known as Acrobat) which is a group 40 fungicide. Another group 40 fungicide that you may be familiar with is Revus (mandipropamid, Syngenta). In potato, Revus Top is more commonly used (mandipropamid + difenoconazole, Syngenta). The pre-mix of Zampro provides two active ingredients which specialize in foliar late blight control.

**Omega 500F** (fluazinam, Syngenta) is not new to registration, but I wanted to remind growers that this fungicide has a Special Local Needs registration 24(c) for Wisconsin for management of powdery scab. The in-furrow application rate is 1.5-3.0 pt/acre. This special registration will expire in December of 2015. As needed, I can support a re-application of the special registration for future years. The federal label allows for use of Omega on potato for late blight and white mold control. Fluazinam is in the fungicide group 29. Powdery scab can be a very challenging disease to manage in an infested field or in a field planted to infected seed. A combined approach of cultural and chemical strategies is necessary to manage powdery scab if the pathogen is present. Be aware of symptoms of this disease and avoid introducing the pathogen into 'clean' fields. Pictures of symptoms are included below.



Symptoms of powdery scab on 'Dark Red Norland' potato tubers. Symptoms can sometimes be easily confused with common scab.



**Elixir** (chlorothalonil + mancozeb, UPI) is a newer registration of a pre-mix foliar fungicide containing the two primary base protectants available in potato for broad spectrum disease control (early blight, late blight, black dot, botrytis). Chlorothalonil is a group M5 fungicide; mancozeb is a group M3. Keep in mind that the pre-mix contains less % a.i. than is in most common chlorothalonil formulations. As such, the amount of active ingredient per acre is reduced. Elixir is 62.5% mancozeb which is greater than the 37% in Dithane F45; less than the 80% in Dithane M45. Note that use of Elixir will have to be considered in your seasonal total limits for use of both chlorothalonil and mancozeb. Recall, seasonal limitation of chlorothalonil is 11.25 lb a.i./acre. Currently, we have a Special Local Needs registration in Wisconsin for long season potatoes for Syngenta Bravo Zn and Bravo Weather Stik (until Dec 31 2017). The submission for renewal of the Special registration for Sipcam Advan Echo fungicides is in process through the registrant. I will provide update when this is approved. Mancozeb season limit is 11.2 lb active ingredient/acre.

**Double Nickel 55** (*Bacillus amyloliquifaciens* strain D747, Certis) is a biological fungicide with OMRI approval for organic usage. The fungicide is registered for use against a broad range of diseases including early blight, botrytis, white mold, black leg and bacterial soft rot, late blight, and soilborne diseases including black scurf/Rhizoctonia, and other wilting diseases. We are further evaluating this fungicide in potato and cabbage research trials in the field this season.

**Vertisan** (penthiopyrad, DuPont) is a recent registration in group 7 for use against early blight, brown spot, gray mold/botrytis, black dot, powdery mildew, white mold, and rhizoctonia/black scurf. There is a new special 2(ee) recommendation for program use of Vertisan (1.0 pt/acre in-furrow) with the insecticide/nematicide Vydate C-LV for suppression of the potato early dying complex when associated with control of Rhizoctonia stem canker/tuber black scurf, early blight, brown spot, gray mold, powdery mildew, black dot, white mold, and/or nematodes. The registration recommends use of Vertisan and Vydate in-furrow, followed by 2 additional foliar applications of Vertisan, and multiple (every 2 weeks) applications of Vydate. This special registration is for potatoes in CO, ID, NE, NV, ND, OR, SD, UT, WA, and WI only.

**Priaxor** (fluxapyroxad + pyraclostrobin, “Xemium Brand” BASF) is a relatively new registration which offers management of early blight, brown spot, black dot, and suppression of white mold, botrytis, and late blight. Priaxor contains two active ingredients, fluxapyroxad which is a group 7 fungicide and pyraclostrobin which is an 11 (Headline). We have trialed Priaxor in our yearly early blight fungicide study at Hancock and this treatment does perform well in controlling early blight.

**Emesto Silver** (penflufen + prothioconazole, Bayer) is a relatively new seed potato fungicide offering management of fusarium, Rhizoctonia/black scurf, and silver scurf. The rate of application is 0.31 fl oz per 100 lb of seed pieces. Penflufen is a group 7 fungicide and prothioconazole is a group 3.

**Top MP** (difenoconazole, Syngenta) is a relatively new foliar fungicide for early blight, brown spot, black dot, and powdery mildew control in potato. Difenoconazole is a group 3 fungicide. This active ingredient is premixed in a few fungicides including Revus Top and Quadris Top. Difenoconazole is also a component of the post-harvest fungicide, Stadium.

**Stadium** (azoxystrobin + fludioxonil + difenoconazole, Syngenta) is a relatively new post harvest potato fungicide for control of silver scurf and fusarium dry rot. Azoxystrobin is a group 11 fungicide; fludioxonil is a group 12; difenoconazole is a 3. Stadium is applied at a rate of 1.0 fl oz/2000 lb of potato. This treatment is not to be used on seed potatoes.

**Cruiser Maxx Potato Extreme** (fludioxonil + difenoconazole + thiamethoxam insecticide, Syngenta) is a new seed treatment fungicide/insecticide pre-mix. Fludioxonil is a group 12 fungicide. Difenoconazole is a group 3. Fusarium, Rhizoctonia, and silver scurf diseases are managed with use of this seed treatment.

**Keep an eye out for upcoming fungicide registrations.** Advertising is going well for these new materials, as I'm already getting many calls on their efficacy and availability!

Syngenta has announced the trade name for a new potato and vegetable fungicide, **Orondis**, which contains the active ingredient oxathiapiprolin which offers management of late blight, downy mildews, and root and stem rots. As per Syngenta, Orondis is a new mode of action (group U15) with no known cross resistance to other fungicide active ingredients, as well as systemic, translaminar movement and redistribution to developing leaves. The fungicide is rainfast in 30 minutes, offers flexible application methods at low rates. Syngenta is currently seeking Orondis product registration for use on vegetables, potatoes, and tobacco.

Syngenta is also expecting registration of **Elatus** sometime in 2015. Elatus will be a premix of a QoI (azoxystrobin, group 11) and a third generation SDHI (succinate dehydrogenase inhibitor, group 7) known as solatenol. This fungicide will offer control of Rhizoctonia – black scurf and stem canker.

**Hop Updates (with Michelle Marks, UW-Plant Pathology graduate research assistant:**



Hops are emerging in Dodge County, WI (Mar 30, 2015, Michelle Marks).

Downy mildew has been of great concern and incidence in recent years. Be familiar with the earliest of symptoms and signs for best preventive control (photos below). Updated fungicide lists for 2015 are available at the UW-Potato and Vegetable Pathology website at the “Hops Information” tab.

<http://www.plantpath.wisc.edu/wivegdis/>



Masses of downy mildew pathogen sporulation on leaf undersides, 2014.



Multiple stunted downy mildew spikes showing pale yellow-green leaves in 'Santiam' in early June 2014.

We have several new hop disease fact sheets available through the University of Wisconsin Extension Learning Store! Hop Downy Mildew, Hop Powdery Mildew, and Hop Viruses. Graduate student, Michelle Marks, and I are pleased to share the documents!

<http://learningstore.uwex.edu/Assets/pdfs/A4053-01.pdf>

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