



# Vegetable Crop Update

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

No. 4 – April 22, 2016

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## Calendar of Events

July 21, 2016 – UW-Hancock Agricultural Research Station Field Day

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**National Late Blight Updates.** While no new detections of late blight have been made in the past two weeks, this season has had several cases confirmed in Florida (tomato and potato, US-23) and South Carolina (tomato). US-23 has predominated over the past few years in tomato and potato late blight epidemics across the U.S. As a reminder, US-23 is a genotype that can be controlled with mefenoxam/metalaxyl fungicides (ie: Ridomil Gold SL); this type can infect both tomato and potato.



Left: Screen capture of [usablight.org](http://usablight.org) on April 22, 2016 depicting counties in Florida and South Carolina that have had confirmed reports of late blight. Reports are all older than 7 days (indicated by dark blue coloration).

**Wisconsin Hop Downy Mildew Updates (with Michelle Marks, UW-Madison Plant Pathology Graduate Research Assistant).** On April 20, 2016, the first confirmed report of downy mildew on newly emerged hops was reported in Pepin County. Just this morning, on April 22, 2016, Michelle confirmed hop downy mildew in Dodge County. This disease is known to be systemically associated with the perennial hop crop. As such, when weather conditions are favorable for the disease, infection can readily occur. Hallmark symptoms include downward cupping of basal shoots of pale green color and shortened internodes. This misshapen and necrotic basal shoot growth is referred to as a basal “spike”, seen below in the photo. Also common on spikes is a thickened stem. When humidity is high, you may also see the pathogen

producing spores on the leaf undersides that appear dark brown to black in color. Management recommendations can be found at: [www.plantpath.wisc.edu/wivegdis/contents\\_pages/hops.html](http://www.plantpath.wisc.edu/wivegdis/contents_pages/hops.html)



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**Diquat registration update.** Diquat, the active ingredient in Reglone and other third-party products, is currently in the registration review process at the U.S. Environmental Protection Agency (EPA). The EPA reviews all pesticide active ingredients every 15 years and includes a human health and environmental risk assessment. In this process, EPA identified environmental risks associated with the current use pattern. In September 2015, EPA published their draft risk assessment that indicated that reductions in the rates, number of applications and timings may be needed to continue the diquat registration. Most importantly, the potential changes included limiting applications to fall and winter months. Obviously, such a change would eliminate all diquat use as a potato desiccant in our production system.

The draft risk assessment was open for public comment through late November 2015. During this time, many of us submitted comments as researchers, growers and state and national potato associations. **At this point, Syngenta, the registrant for Reglone, has indicated that they don't anticipate any changes to the current diquat registration during the 2016 potato growing season.** Any changes beyond that are unknown. We will keep growers updated on any news via this newsletter.

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**Temperature management in high tunnel vegetable production.** Adapted from University of Minnesota High Tunnels website: <http://hightunnels.cfans.umn.edu/structures/temperature/> Springtime temperatures in Wisconsin can vary greatly. In high tunnels, especially warm days can lead to extremely high temperatures in high tunnels, resulting in dangerous conditions for vegetable crops, especially tomatoes.

Every crop has specific cardinal temperatures at which growth and development are best. Plants can tolerate temperatures above or below these cardinal temperatures, but growth and

development processes are best when within the minimum and maximum range and close to the optimum cardinal temperature. Specific crops vary in their cardinal temperatures.

Table 1. Approximate Temperatures for Best Growth and Quality of Selected Vegetable Crops.\*

Temperature (°F)			Crop
Maximum	Optimum	Minimum	
85	55-75	45	Onion, Garlic
75	60-65	40	Beet, Broccoli, Cabbage, Chard, Radish
75	60-65	45	Carrot, Lettuce, Pea, Potato Snap Bean, Lima Bean
80	60-70	50	Cucumber
90	65-75	60	Tomato, Sweet Pepper
80	70-75	65	Eggplant, Hot Pepper, Okra

\*Adapted from Knott's Handbook for Vegetable Growers. Lorenz and Maynard. 1988. P 70.

Table 1 (on left), adapted from Knott's Handbook for Vegetable Growers, lists the approximate temperatures for the best growth and quality development of those vegetable crops that are suited for high tunnel production. **Vegetable crops vary greatly in their temperature tolerance, and the best success with high tunnel production will occur when crops requiring similar temperature ranges are grown together.** For example, tomatoes and peppers grown together in the same tunnel will certainly do better than if tomatoes and broccoli are grown together.

While the optimum cardinal temperature is an important factor to consider for optimum crop performance, temperature fluctuations are also significant. The best growth and development rates occur for all vegetable crops when temperature fluctuations remain within their cardinal temperature range. With tomatoes, for example, fluctuating daily temperatures between 70°F and 75°F are optimum for good plant growth, fruit set, and red color development. Fluctuating temperatures are most critical during blossoming. Temperatures below 60°F or above 80°F for any length of time during bloom can cause flowers to abort or drop even if they are pollinated. Once fruit set has occurred, higher temperatures are not as harmful.

High tunnel growers should try to maintain tunnel temperatures as close to the cardinal maximum and minimum as possible but realize that it may not always happen. During warm days, temperatures can rise well over 90°F during the late morning or early afternoon in the high tunnels. Ideally, night temperatures should not drop below 60°F but many Minnesota (and Wisconsin) nights are not that warm. Fluctuating temperatures are not a problem during summers. The biggest concern will be to maintain the temperatures above the minimum cardinal temperature, especially during blossoming and fruit set. Further information on temperature management for vegetables grown in high tunnels can be found at:

<http://anr.ext.wvu.edu/commercial-horticulture/high-tunnels/temperature-management>

Ventilation in the high tunnel is an important consideration for management. Further details on both low and high tech systems can be found at:

<http://hightunnels.cfans.umn.edu/structures/ventilation/>

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The 2016 A3422 Commercial Vegetable Production in Wisconsin guide is available for purchase (\$10) through the University of Wisconsin Extension Learning Store website:

<http://learningstore.uwex.edu/Commercial-Vegetable-Production-in-Wisconsin2016-P540.aspx>

A pdf of the document can be downloaded for free at the following direct link:

<http://learningstore.uwex.edu/Assets/pdfs/A3422.pdf>