



Vegetable Crop Update

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

No. 1 – March 23, 2012

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Calendar of Events

April 11 – UW-Hancock Ag Research Station, Variety Trial Demonstration, 8AM-4:30PM
May 17 – UW-Hancock Storage Research Updates, 10AM-3:30PM
July 24 – UW-Hancock Ag Research Station, Field Day

Vegetable Crop Update – A.J. Bussan, Department of Horticulture, UW-Madison, Tel. No. 608-225-6842, email: ajbussan@wisc.edu.

As a long-term Wisconsin resident, I have grown to love Spring. This is mostly due to the fact that it is completely unpredictable. The past 10 days have been absolutely amazing as someone who enjoys working outside, but also seems likely that it will have no correlation with the next 8 to 10 weeks. Two things to remember: 1) the warm weather has allowed for spring field work and 2) we still have more than 50 days until the frost free date.

Potatoes: The warm weather is posing particular challenges to the stored potato crop – especially in those facilities with no refrigeration. Potato piles stored at 38 to 42°F have likely warmed over the past several weeks. Chipping and processed potatoes are not impacted as much as run-time appears to be available to keep those storages from warming.

Now what do we do? The warming of the potato pile is going to increase respiration for 2 reasons. Warmer temperatures increase the physiological activity in the tubers leading to increases in CO₂. Secondly, the warmer temperatures occurring at the end of a long storage season likely triggers signals within the tuber to break dormancy and begin sprouting which is also going to promote respiration. The bins without refrigeration have elevated CO₂ levels well above 3,000 or even 5,000 ppm within 12-24 hours if the outside doors remain closed.

CO₂ levels above 3,000 ppm can lead to much worse storage issues as anaerobic bacteria will begin to become more active (especially with the warmer pile temperature). Low temperatures above 50 and the high humidity has been commonly occurring over the past two weeks which is limiting the amount of run time or periods where the outside doors can be opened to cool the pile. The pile is going to warm under these conditions, so it becomes crucial to manage the CO₂ and avoid creating conditions that are favorable for disease development and negatively affect tuber quality

To avoid the accumulation of CO₂ levels above 3000 the outside doors need to be opened for at least 30 to 60 minutes every day. Splitting the run-time between morning and evening may prove more effective. This may warm the pile, but that has appeared to have happened anyway and avoiding both higher temps and elevated CO₂ will maintain better tuber quality.

Finally, we have seed bins that have potentially warmed to 45°F or warmer, yet we are still 3 to 6 weeks away from planting in some Northern parts of the state. The past couple of days, low temperatures have been back in the 30s providing us an opportunity for cooling air. However, be cautious in rapidly cooling seed potatoes. Large and rapid fluctuations in seed temperature can have negative effects on how this spring's crop will grow. We had soil conditions that led to large and rapid fluctuations in seed temperatures after planting last spring. We are hypothesizing that these conditions may have caused secondary dormancy and led to large delays in emergence and uneven emergence in several thousand acres of potatoes in 2011.

To avoid this in 2011, do not rapidly cool the seed. When fresh cooling air is available – slowly cool the piles by ramping the plenum temperature 0.1°F every 4 to 8 hours. We believe a slower ramp is preferable, but have little data to provide a precise recommendation. Do not return seed to below 42°F. Depending on how warm the pile became, do not cool the potatoes more than 3 to 5°F. Definitely keep the pile above 42 now that it has warmed.

Fresh Market: After the past several years the current weather is a welcome sight. Cover crops have grown very well in many different fields. Any spring seeded cover crops should have been planted under these conditions as well.

The past few weeks also presents an opportunity for early planting – especially for frost tolerant crops such as peas, lettuce, spinach, cole crops, onions, carrots, and others. Be risk averse in your plantings to not invest too much in terms of seed costs, but also recognize the opportunity available to begin an earlier harvest for 2012.

Also recognize that we are still at risk of frost and many crops can be damaged.

I would plant a little sweet corn as it can tolerate frost until the 5 leaf stage and still survive. Soil temperatures have been warm enough to promote emergence in some areas. If these weather conditions persist, we might have sweet corn several inches high by mid-May. There might be frost damage, but it could also be a rewarding early harvest for this crop.

Many summer annual crops simply cannot be planted in the field until after the frost free date. That said, tomatoes should be planted in high tunnels by now. Tomato productivity is limited until a minimum of 14 hr of daylength is available (April 28 in Madison). However, early vegetative growth will result in faster fruit development once pollination occurs.

Vegetable Disease Update – Amanda J. Gevens, Vegetable Plant Pathologist, UW-Madison, Dept. of Plant Pathology, 608-890-3072 (office), Email: gevens@wisc.edu.

Vegetable Pathology Webpage: <http://www.plantpath.wisc.edu/wivegdis/>

Potatoes: Growers have been curious about the use and efficacy of Bayer CropScience's new insecticide and nematostat, Movento (spirotetramant). Movento received federal labeling in 2011

for use on aphids, psyllids, and whiteflies of potato. The nematode suppression Section 2(ee) was released for Wisconsin and several other states (CA, CO, DE, GA, ID, IN, ME, MD, MI, MN, MS, MT, NE, NV, NJ, ND, OR, PA, TX, UT, VA, WA, and WI) on Feb 23, 2012 allowing the additional use of Movento at a 5.0 fl oz/acre rate for nematodes, two-spotted spider mites, western flower thrips larvae, wireworms, and including disease suppression for Potato virus Y (PVY), Potato leafroll virus (PLRV), Corky ringspot virus (CRS), Verticillium wilt, and Zebra chip.

As per the 2(ee) label, and recommendation from the University of Idaho researcher, Dr. Saad Hafez, Movento is most effective for potato root lesion control when applied just prior to hooking (10-14 days post emergence or at hilling) and 14 days later. The use of a spray adjuvant/additive with spreading and penetrating properties (such as methylated spray oil or MSO) to maximize leaf uptake and systemicity down to roots is required. Tank-mixing with sticker-type adjuvants or products containing stickers may result in decreased efficacy. For optimized control of nematodes, the label recommends a pre-plant fumigant and/or an at-plant nematicide such as Mocap or Vydate. The material is also considered as an effective systemic insecticide when applied as a foliar treatment when insect pests (e.g. colonizing aphids) have reached or exceeded established thresholds.

For further information on any fungicides that may be mentioned in this newsletter or that you are interested in for 2012, please see the updated 2012 Commercial Vegetable Production in Wisconsin Guide A3422. An online pdf can be found at the link below or a hard copy can be ordered through the UWEX Learning Store.

<http://learningstore.uwex.edu/assets/pdfs/A3422.PDF>

Vegetable Insect Update – Russell L. Groves, Vegetable Entomologist, Applied Insect Ecologist, UW-Madison, Department of Entomology, 608-262-3229 (office), (608) 698-2434 (cell), or e-mail: groves@entomology.wisc.edu.

Vegetable Entomology Webpage: <http://www.entomology.wisc.edu/vegento/index.html>

Amazingly, the 2" average soil temperatures at the Arlington Agricultural Research Station (http://www.soils.wisc.edu/uwex_agwx/awon/daily_soil) averaged between 19.1 and 20.9°C (66.4 – 69.6°F) over the past week from Monday, March 19 through Friday, March 23. These temperatures are well ahead of projected averages and significant activity of overwintered insects has been observed during this very unusual warm period. Several important vegetable insect pests have emerged and are becoming reproductively active and searching for sites to lay eggs. Insects observed have included striped cucumber beetle, several species of flea beetles (crucifer and corn flea beetle), seed and root maggots, but I have yet to see the first Colorado potato beetle – it will not be long! However, this circumstance may provide a unique opportunity if producers can be patient and delay the urge to plant during these unseasonably warm conditions. In particular, many of these insects are actively seeking host plants on which to feed and oviposit (lay eggs). With few available emerging (susceptible) crop plants, early season populations of these insects may be substantially reduced if host resources remain unavailable for several more weeks. So, if you can resist the urge to plant and lessen your overall risk for losses due to frost, it may adversely affect the success of these early emerging insects.

Seed and Root Maggots: Early plantings of several vegetable crops are especially susceptible to damage by seedcorn maggot, cabbage maggot, or onion maggot. All of these species overwinter in the pupal stage, and adults of a first generation emerge in the spring. Flies prefer to lay eggs in fields where organic matter is high (recently incorporated manure or cover crops), and damage is greatest in cold, wet soils where plant growth is slowed.

Seedcorn maggots most commonly feed on the seeds and seedlings of corn, beans, peas, and cucurbits; they also may be found along with onion maggot or cabbage maggot infesting onions and plants in the cabbage family (*Brassicaceae*). Flies typically emerge in April and May, but have now begun to emerge and are actively seeking direct seeded crops. Females prefer to lay eggs in fields with abundant decaying organic matter (where manure or a cover crop was recently incorporated). Peak emergence of flies occurs at 360 degree-days ($^{\circ}\text{F}$) above a base of 39°F (with accumulations beginning when ground has thawed); damage to seeds or seedlings is greatest over the 10 days after this peak (Fig. 1). Larvae feed on decaying plant material in soils but also tunnel into seeds (and transplants) and reduce successful germination and stand establishment. Losses to seedcorn maggot can be reduced by incorporating manure or cover crops at least 3 weeks before planting or transplanting, preparing a well-tilled seedbed, and waiting until soil temperatures have warmed so that germination and early plant growth are rapid. Seeds of several vegetable crops can now be treated with novel seed treatments (e.g. Cruiser, Sepresto, Farmore) to prevent seedcorn maggot damage; soil insecticides used for corn rootworm control in sweet corn also kill seedcorn maggots. Neonicotinoids used on cucurbits in-furrow when planted or transplanted are less effective for seedcorn maggot control. Where damage results in reduced stands, replanting or resetting transplants can be done 4-5 days later without likelihood of damage to the seeds or transplants.

Seedcorn Maggot Fahrenheit D.D. from 1 Jan to 22 March 2012

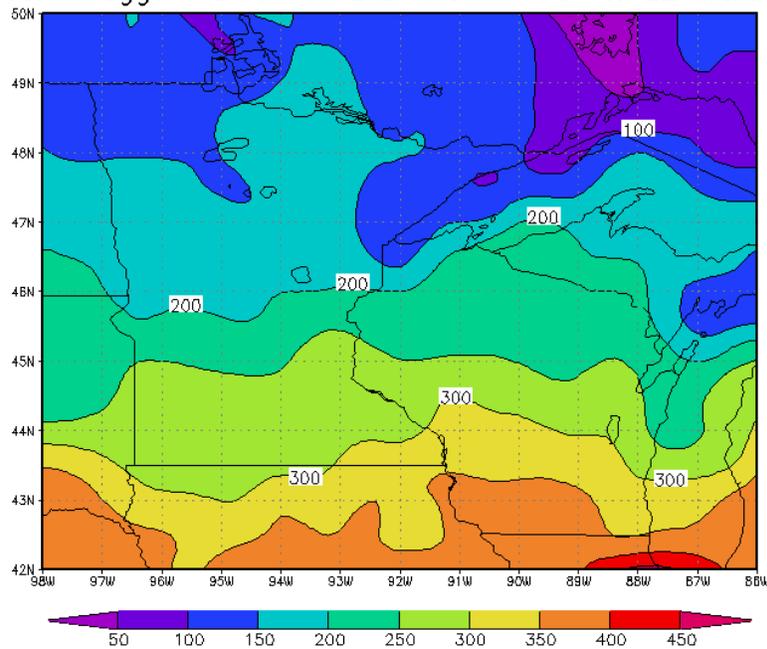


Figure 1. Current DD accumulations (degrees Fahrenheit) as reported by the University of Wisconsin, Agriculture Weather web-page:

http://www.soils.wisc.edu/uwex_agwx/thermal_models/scm

First generation cabbage maggot flies also typically emerge in late April or May, and they too prefer to lay eggs in soils with high amounts of organic matter. Peak flight of first generation flies occurs at 300 degree-days (base 43°F) after March 1. Larvae tunnel into the roots and stems of cabbage, broccoli, Brussels sprouts, cauliflower, radishes, turnips, and rutabagas. Early cabbage and turnips are especially susceptible to injury. Damage is reduced by delaying planting and by avoiding fields with high amounts of fresh organic matter. Soil application of Capture LFR, Lorsban, or Diazinon provides the best control of first generation maggots for cabbage, broccoli, Brussels sprouts, and cauliflower, but these insecticides are not labeled for short-season crops such as radishes and turnips.

The first generation of onion maggot flies often emerges in May and lays eggs at the base of plants, where larvae tunnel into underground portions of plants. Here again, the emergence of this insect, as well as the cabbage maggot, can be expected very early with forecast temperatures in the week ahead. Subsequent generations in July and August-September can also damage onions. Cultural control of onion maggot centers on removing and destroying cull onions and rotating this year's plantings as far as possible from last year's. As onions mature, they are less susceptible to onion maggot infestation unless they are damaged by cultivation equipment. Soil applications of Lorsban can be used to control onion maggot in dry bulb onions, and the new Farmore DI 400 and 500 formulations are available to minimize damage.

Potato Crop Update from the Wisconsin Seed Potato Certification Program – Amy Charkowski, Administrative Director of Certification Program, Department of Plant Pathology, UW-Madison, Tel. No. 608-262-9711, email: amyc@plantpath.wisc.edu

Submitted by Rick Hafner, Senior Inspector with the Wisconsin Seed Potato Certification Program – Wisconsin Certified Seed Potatoes are storing well in spite of the recent warm weather. Overall quality is very good and shipments are proceeding rapidly. Shipping point inspectors from WDATCP report very nice size and type with very good appearance in the seed lots that they are currently inspecting. Virus levels were low overall in the Winter Virus Test, due to continued use of agricultural oil sprays during the growing season and the appropriate application of insecticides for aphid control. Seed growers and their customers are benefiting from UW Extension Research where effective control measures were developed.