

Vegetable Crop Update - #11

August 21, 2007

The vegetable crop update is archived on the Wisconsin Crop Manager website at: <http://ipcm.wisc.edu/wcm/>.

Potato and Vegetable Crop Update 8-21-07 – Alvin J. Bussan, UW-Madison, Department of Horticulture, 608-262-3519, cell 608-225-6842 or e-mail ajbussan@wisc.edu

Seems we have received the entire summer's worth of precipitation over the past 5 to 10 days depending on where you are located in Wisconsin. The heavy rains were preceded by some of the warmest conditions of the summer that did cause some stress on crops such as potato. The hot conditions followed by rain has led to rapid fruit development in other crops such as tomato which has led to fruit cracking and other physiological damage to the harvested crop. The rain also poses challenges for storability or shelf life of a number of crops like onions and potatoes. Finally, wet soil conditions make harvest difficult for nearly all crops.

Potato - Vine health varies widely from field to field across Wisconsin. Hot conditions in early August led to rapid senescence of crops nearing maturity or being affected by early dying or other diseases. In contrast other fields still appear to be in good to excellent condition which should continue to promote good tuber bulking through at least the end of the month.

The challenge facing growers for the remainder of the growing season is trying to determine the relative maturity of the current crop to allow for optimum harvest. This is particularly important for chip and process growers as chemical maturity or the concentration of sucrose in the tubers influences the storability of the crop. Estimating the chemical maturity of the current crop will allow for optimal vine kill timing, harvest and storage management necessary to optimizing quality through the winter.

Sucrose concentrations of round white potatoes ranged from 0.80 to 1.5 mg/g fresh weight two weeks ago. The relative sucrose concentration varied by field, variety, and other factors. For Snowden, chemical maturity occurs when tuber sucrose concentrations drop below 1.0 mg/g fresh weight. Newer varieties appear to have slightly lower critical sucrose levels in order to optimize fry quality of potatoes during storage.

One of the issues threatening the storage quality of this year's crop is the potential for over maturation of potatoes. The early development of the crop as well as early senescence of some fields may lead to earlier chemical maturation of potatoes. Delaying harvest will lead to continued aging of the crop in the field and lead to potential over maturation. Over maturation of potatoes can increase sugar concentrations in storage leading to darker chip or fry color, shorter dormancy and earlier sprouting, and increased shrink.

Monitoring chemical maturity can allow for identification of fields that are maturing early and allow for optimal vine-kill and harvest timing to prevent over maturation. In order to help growers estimate current status of sugar levels within their fields we are willing to assay chemical maturity status of fields on a limited basis. Chip and process growers interested in participating in a pilot program to monitor crop maturity should contact me directly at my cell phone or e-mail. We simply require 3 - 10 tuber samples per field be delivered to the processing lab at the potato storage research facility between noon on Monday and noon on Tuesday. There will be a small fee for processing the samples as several private labs outside of Wisconsin provide this service.

The other concern is optimal harvest of potatoes based on the wet soil conditions of fields. Saturated soil conditions led to opening of tuber lenticels that could allow for infection by pathogens. In addition, the saturated soil conditions promote anaerobic conditions on the tuber surface that can promote infection by several pathogens. In addition, anaerobic conditions have been linked to development of pink eye on potato. Potatoes and other vegetables harvested and stored even for short durations will require good air circulation around the tubers to promote drying of any free moisture. In addition, oxygen should be managed and minimal carbon dioxide allowed surrounding potatoes to promote wound healing and prevent development of diseases.

Processing Vegetables – Processing vegetables, in particular sweet corn, snap bean, and cucumber have been developing well through much of the summer. Warm conditions have promoted crop maturity 5 to 7 days earlier than predicted in many for many of these crops throughout the summer. Recent rains were critical for many non-irrigated fields, but excess rain could cause issues as well. We have seen a large increase of white mold in snap bean plots. In addition, harvesting fields with excessively wet soils can cause wheel track compaction. Track fields harvested over the next few days and make sure to implement practices to remediate soil compaction including deep tillage, planting of deep rooted green manure crops, and other practices. Pay special attention to headlands or areas that are repeatedly driven over.

Tomato fruit disorders - Now that tomato fruit have begun to ripen, growers are beginning to notice various anomalies in the uniformity of the fruit color. Specific observations include the appearance of blotchy ripening, tomato yellow shoulder, and grey wall. Each of these disorders is characterized by uneven color through the tomato fruit. In each case, the disorder is believed to be a physiological disorder that persists even after the fruit has ripened. More importantly, each disorder causes the fruit to develop a woody and sometimes bitter flavor reducing the salability of the crop. Although the specific cause of blotchy ripening, tomato yellow

shoulder, or grey wall is unknown, several factors are believed to contribute to their development. Stressful growing conditions such as drought, warm temperatures, or sudden changes in the environment contribute to the development of all three disorders. However, adequate potassium fertility has been shown to contribute to the development of blotchy ripening, tomato yellow shoulder, and grey wall.

If any one of these disorders is developing and persisting within your tomato crop, evaluate your potassium fertility program closely. Potassium is important for fruit color development in tomato. Tomato requires 180 lb/a K₂O which is much more than is required for other vegetable crops such as sweet corn, pepper, or pumpkin. Potassium deficiencies have occurred in multiple problem fields I have inspected with tomato yellow shoulder or grey wall. Within several of these fields manure was applied to meet the nitrogen demand of tomato, but the application resulted in 1/3 to 1/2 the required K rate. In one other case, no potassium was applied, even though nitrogen and phosphorous had been applied. Potassium fertility needs in tomato can be met with broadcast applications of potash in the fall or spring prior to planting. If disorders are already occurring, foliar fertilizers containing potassium at appropriate rates can be applied to help alleviate the disorder.

Early maturing pumpkins - Powdery mildew, drought stress, and/or inadequate fertility have led to early vine death and resulting maturation of pumpkin and winter squash in several areas of Wisconsin. The question is what to do with the ripened fruit 5 to 6 weeks prior to the targeted harvest date. I would recommend harvesting the crop and storing fruit in well ventilated building. Cut the fruit off of the vines with a sharp shears. Do not set the fruit directly on the ground or on cement, rather place on racks several feet off of the ground. Keep the fruit out of direct sunlight to minimize potential for sun damage on ripened crop. Fruit setting in direct sunlight can quickly warm to greater than 95 F causing damage to the tissue.

Pumpkins and winter squash can typically be stored for 2 to 4 months. Store whole mature pumpkins in a dry, airy location. Cure pumpkins at 80 to 85 F with 80 to 85% relative humidity for 10 to 14 days after harvest. This allows the fruit to heal any damaged tissues that occurred during handling. Preventing any damage to pumpkins during harvest minimizes potential infection points for pathogens into the fruit. After curing, store the pumpkins and squash at 50 to 55°F with a relative humidity of 60 to 75%. Remove pumpkins showing any signs of spoilage from storage shelves.

Vegetable Insect Update 08/17/07 – 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.

Although populations of the **potato leafhopper (PLH)** continue to persist in alfalfa, these insects now appear to be declining in other susceptible vegetable crops, including snap beans. Snap bean plots at the Arlington and Hancock Agricultural Experiment Stations averaged 0.25 and 0.2 adult leafhoppers per sweep, respectively; now well below the prescribed action threshold of 1.0 adult PLH / sweep in mature crops. Damage caused in later plantings of snap beans can, in some cases, be easily confused with early symptoms of non-persistently transmitted viruses (e.g. alfalfa mosaic virus and cucumber mosaic virus). Recall that the typical symptoms of 'hopperburn' caused by feeding of both adult and nymphal PLH, include leaf curling, crinkling, and a characteristic V-shaped necrotic area at the leaf tip. Further damage on late-planted snap beans include shortened internodes, fewer flowers, and a stunted plant. Plant disease caused by infection of cucumber mosaic virus often consists of leaf curling, green mottling, and sometimes severe blistering while infection by alfalfa mosaic virus often causes only local lesions widely scattered on leaf surfaces. Both viruses are spread by many aphid species.

Continued captures of adult **European corn borer**, resulting from the second flight, remains under way in several locations of southern and now central Wisconsin. Sweet corn in tassel and beyond, peppers and snap beans with flowers and developing fruit should be protected. European corn borer larvae can be effectively controlled by several insecticides identified in the Wisconsin Guide to Commercial Vegetable Production (A3422). The current degree day accumulations further indicate that peak periods of flight reach as far north as north central Wisconsin along a line extending from Spooner southeast to Manitowoc. Steady increases in the numbers of adult **Corn earworm** continue to occur through the early part of this week with elevated temperatures over last weekend. Trap counts should continually be monitored at this time of year to determine if treatment is necessary. Moth collections greater than 10 moths per night in pheromone traps or 5 moths per night in black light traps suggest that the risk of oviposition (egg laying) is sufficiently high enough to warrant treatment. In turn, as corn reaches the silking stage and adult counts increase to 100 moths per night in pheromone traps, or 25 moths per night in black light traps, insecticides should be applied 3 - 4 days, or until silks turn brown. Corn earworm is a migratory pest and recent weather conditions over the last two weeks have been conducive for insect migration into Wisconsin from southern areas.

Vegetable Disease Update – 8-18-07 - W. R. Stevenson, Department of Plant Pathology, UW-Madison, Tel. No. 608-262-6291, Email: wrs@plantpath.wisc.edu

Potato: There's roughly three weeks left in the growing season before vine desiccation of storage potatoes. There's significant vine desiccation going on as fresh market potatoes are being harvested and as tubers for processing and seed reach critical size. Still no late blight in Wisconsin, but there are reports of late blight in Maine, Nebraska and Colorado. Keep up your spray program, especially now that cooler nights bring prolonged periods of fog and dew. It sure would be great to go another year without late blight. We

don't want to drop our guard this late in the season. Early blight pressure is moderate and fungicide programs on commercial fields seem to be effective. Our plots at Hancock are showing beautiful treatment separation. The next two weeks are prime times for viewing. Remember that Vaughan James will be at Hancock on Monday, August 20 from 10 am to 2 pm that day to help guide you through the plots and answer questions. Data from these plots are being posted on our web site for your examination. I know that you'll want to visit this site to see how your favorite program is faring under heavy disease pressure.

P-Day and Severity Value Accumulations are listed in the table below. I've highlighted those P-Day and Severity Value totals that are above potato treatment thresholds.

Current P-Day (Early Blight) and Severity Value (Late Blight) Accumulations

Weather Station Site	Planted:	50% EMERGENCE	P-Days	Severity Values	Calculation Date
Antigo area	Early - May 8	May 31	519	40	8/13/07
	Mid - May 21	June 10	444	33	8/13/07
	Late - June 1	June 18	386	33	8/13/07
Grand Marsh area	Early - Apr 16	May 12	661	54	8/13/07
	Mid - Apr 20	May 18	628	54	8/13/07
	Late - Apr 27	May 28	563	54	8/13/07
Hancock area	Early - Apr 16	May 8	658	37	8/13/07
	Mid - Apr 24	May 14	617	37	8/13/07
	Late - May 2	May 23	564	37	8/13/07
Plover area	Early - Apr 14	May 8	700	59	8/13/07
	Mid - Apr 20	May 15	652	59	8/13/07
	Late - May 2	May 22	608	59	8/13/07
Spooner	Mid - May 4	May 30	528	14	8/10/07

Visit our web site at (<http://www.plantpath.wisc.edu/wivegdis/index.htm>) where you can find updated P-Day and Severity Value information throughout the growing season.

Other Vegetable Crops:

Cucumbers, Melons, Pumpkins and Other Cucurbits –

Disease Alert – I remain concerned about the threat of downy mildew on cucurbit crops. The disease is still present in Michigan and Illinois and with a strong southerly air flow pattern, my guess is that downy mildew appearance in Wisconsin is only a matter of time. We have seen no samples with verified downy mildew yet in Wisconsin. If and when downy mildew appears, products registered for **downy mildew** control include Previcur Flex, Forum, Ranman, or Tanos, each mixed with chlorothalonil or mancozeb. Gavel (already contains mancozeb) can also be used, but does not need a tank mixed companion product. For **powdery mildew**, consider a long list of materials that includes Flint, Pristine, Nova, Topsin-M, Procure, Quadris, Amistar or Cabrio. Please review reentry intervals, PHI's (preharvest intervals) and worker safety precautions for each material before use. We are still seeing samples of pumpkins, squash and cucumber arriving with symptoms of angular leaf blight, a bacterial disease. Fungicide sprays will not help and even copper sprays are of limited value once there are symptoms of this disease are present.

Virus symptoms are beginning to show up on the new growth of cucurbit crops, likely the end result of aphid flights over the past 2-3 weeks. It's hard to prevent infection, but a few tips include stylet oils applied to the foliage to reduce transmission efficiency and planting green cover crops around fields and in drive rows. Wheat, rye, oats seem to work as a means to confuse the aphids coming into your fields. Aphids tend to key in on sharp boundaries between green plants and brown bare soil. Give them a chance to clean their stylets before aphids enter your fields and you might just see a reduction in virus losses. We've been using this approach at the UW Lelah Starks Elite Foundation Seed Potato Farm in Rhinelander the past few years and it seems to help.

Snap Beans – Symptoms of cucumber mosaic virus are beginning to appear in commercial fields in southern and central WI. So far, we haven't seen reports of blossom drop or "chocolate" pods. Plants that were in the two week period before flowering during the past 2-3 weeks seem to be the most prone to losses.

Sweet Corn – Rust is being reported on sweet corn as far north as central Wisconsin. Many varieties have useful levels of resistance and there are several fungicides labeled for rust management if the level of infection continues to increase.

Vegetable Disease Update – 8-21-07 - W. R. Stevenson, Department of Plant Pathology, UW-Madison, Tel. No. 608-262-6291, Email: wrs@plantpath.wisc.edu

Potato: Although the past week has brought conditions that are ideal for late blight, we have received NO reports of late blight in Wisconsin, but there are reports of late blight in Maine, Nebraska and Colorado. Keep careful watch on your fields for any symptoms

or signs of late blight. At this point in the season, if late blight is identified, the critical thing is to vinekill affected areas in the field as quickly as possible to kill diseased plants – this will diminish the potential for sporulation and dissemination of the pathogen to other areas and to the tubers. Tubers from an affected area should be harvested and processed as quickly as possible to remove them. Tubers from these areas would not be good candidates for storage. With all the rain and high soil moisture, keep an eye out for pink rot, enlarged lenticels, Pythium leak and Erwinia soft rot – all of these can contribute significantly to storage problems.

Early blight pressure has increased, but our plots at Hancock continue to show some great treatment differences. The last spray is scheduled for these plots the week of August 20. Final disease rating is scheduled for August 31 with vinekill anticipated that afternoon. Stop by the plots before then if you want see how your favorite program is faring under heavy disease pressure. Data from these plots are being posted on our web site for your examination.

P-Day and Severity Value Accumulations are listed in the table below. I've highlighted those P-Day and Severity Value totals that are above potato treatment thresholds. (We are having problems with solar powered cell phones due to lack of sun, so we don't have all the latest data for some of the sites.)

Current P-Day (Early Blight) and Severity Value (Late Blight) Accumulations

Weather Station Site	Planted:	50% EMERGENCE	P-Days	Severity Values	Calculation Date
Antigo area	Early - May 8	May 31	519	40	8/13/07
	Mid - May 21	June 10	444	33	8/13/07
	Late - June 1	June 18	386	33	8/13/07
Grand Marsh area	Early - Apr 16	May 12	734	82	8/22/07
	Mid - Apr 20	May 18	701	82	8/22/07
	Late - Apr 27	May 28	637	82	8/22/07
Hancock area	Early - Apr 16	May 8	731	62	8/22/07
	Mid - Apr 24	May 14	690	62	8/22/07
	Late - May 2	May 23	638	62	8/22/07
Plover area	Early - Apr 14	May 8	771	86	8/22/07
	Mid - Apr 20	May 15	723	86	8/22/07
	Late - May 2	May 22	678	86	8/22/07
Spoooner	Mid - May 4	May 30	606	19	8/20/07

Visit our web site at (<http://www.plantpath.wisc.edu/wivegdis/index.htm>) where you can find updated P-Day and Severity Value information throughout the growing season.

Other Vegetable Crops:

Cucumbers, Melons, Pumpkins and Other Cucurbits –

Disease Alert – Although weather has been ideal for downy mildew on cucurbit crops and the disease is present in Michigan and Illinois, there are still no reports of this disease in Wisconsin. If and when downy mildew appears, products registered for **downy mildew** control include Previcur Flex, Forum, Ranman, or Tanos, each mixed with chlorothalonil or mancozeb. Gavel (already contains mancozeb) can also be used, but does not need a tank mixed companion product. **Powdery mildew** has shown up the last week in our pumpkin variety evaluation trial at the Hancock station. For **powdery mildew** consider a long list of materials that includes Flint, Pristine, Nova, Topsin-M, Procure, Quadris, Amistar or Cabrio. Please review reentry intervals, PHI's (preharvest intervals) and worker safety precautions for each material before use. We are still seeing samples of pumpkins, squash and cucumber arriving with symptoms of angular leaf blight, a bacterial disease. Fungicide sprays will not help and even copper sprays are of limited value once there are symptoms of this disease are present.

Snap Beans – Recent weather has been ideal for white mold development so be on the lookout for it. If you do see it in your fields at harvest, consider applying the biocontrol Contans® after harvest, before crop debris is disked in. We have had good results from application of this product in trials in past years.

Carrots – Alternaria and Cercospora blight are increasing on carrots also due disease-favorable weather so attention to fungicide programs on carrots is also important.

Vegetable disease reports during the last week from Brian Hudelson, Plant Disease Diagnostics Clinic, include a variety of problems on cucurbits (angular leaf spot, Verticillium wilt, Fusarium wilt, Pythium root rot) and Bacterial leaf spot spots on peppers.